



BITS Pilani

Pilani Campus

BITS Pilani presentation

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SE ZG544 S2-23-24

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



Additional Reference Books

1. Agile Practice Guide (ENGLISH) by Project Management Institute Published by Project Management Institute, 2017 (Agile methodologies)
2. Head First Agile by Jennifer Greene; Andrew Stellman Published by O'Reilly Media, Inc., 2017 (Scrum)
3. Introduction to Agile Methods by Sondra Ashmore Ph.D.; Kristin Runyan Published by Addison-Wesley Professional, 2014 (XP)

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 (Standish Group Chaos report 2015)
- Agile emerged as an 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

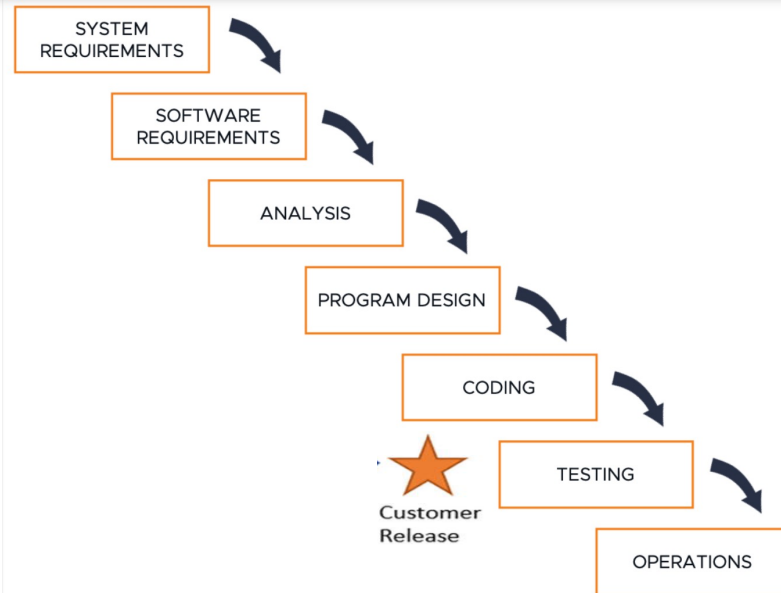
Basic Project Management concepts



- 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 that 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

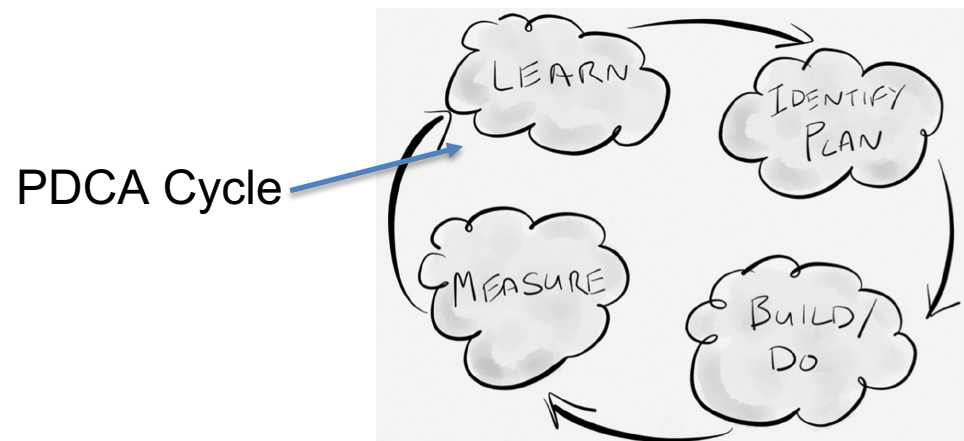
(Different terminologies that refer to same approach)

- 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

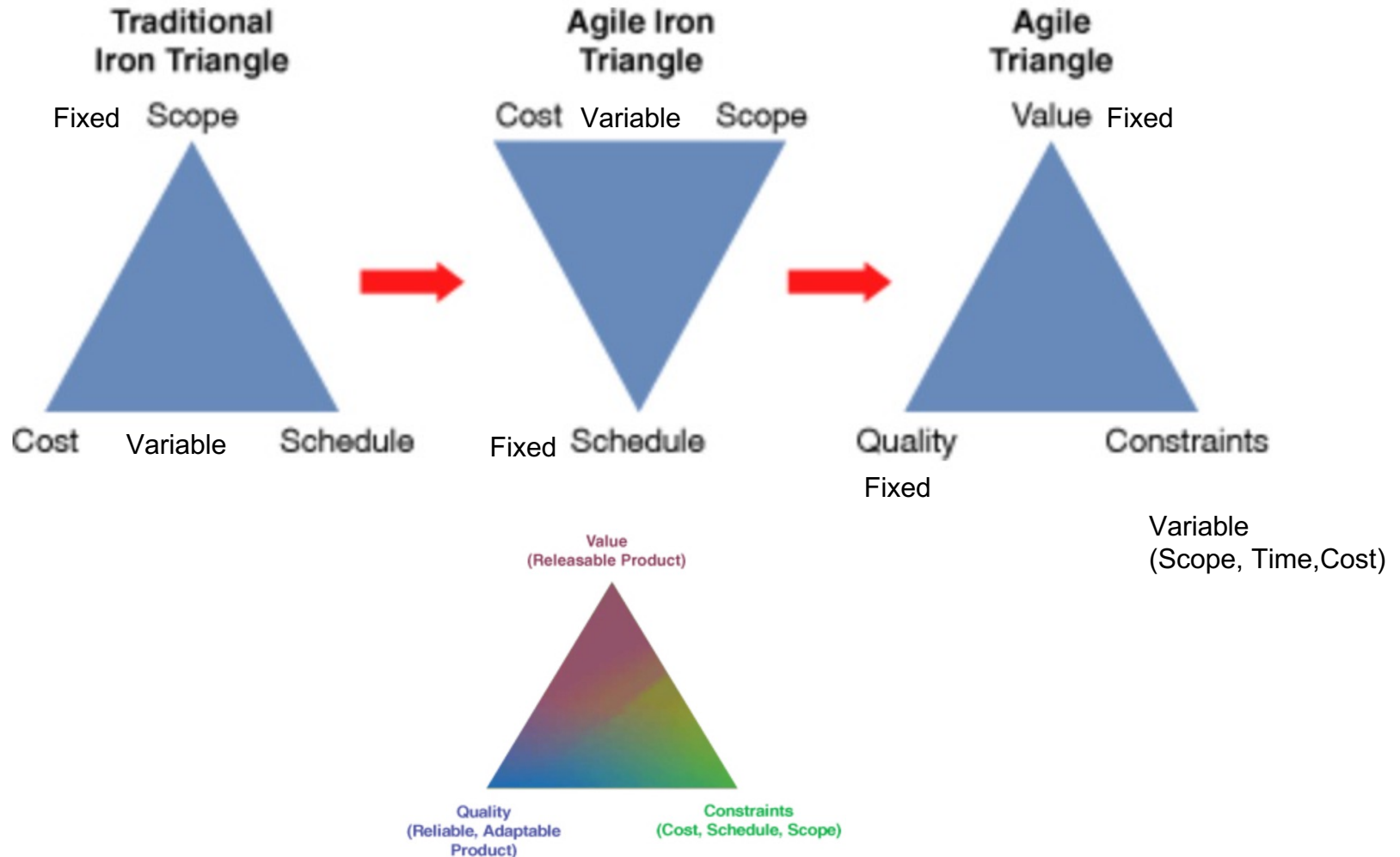
Agile is based on Empirical Process Control

- 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 – 5 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



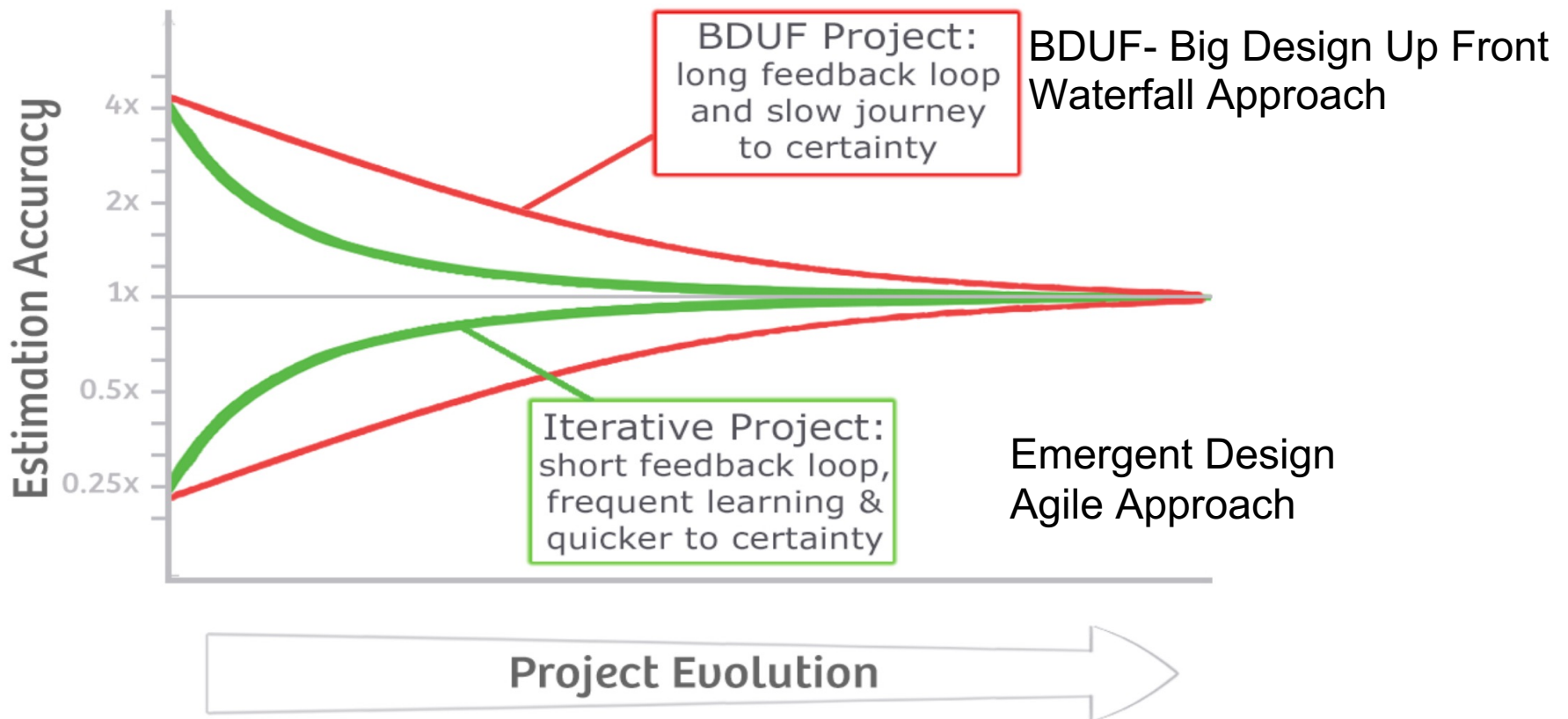
Waterfall

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

Agile

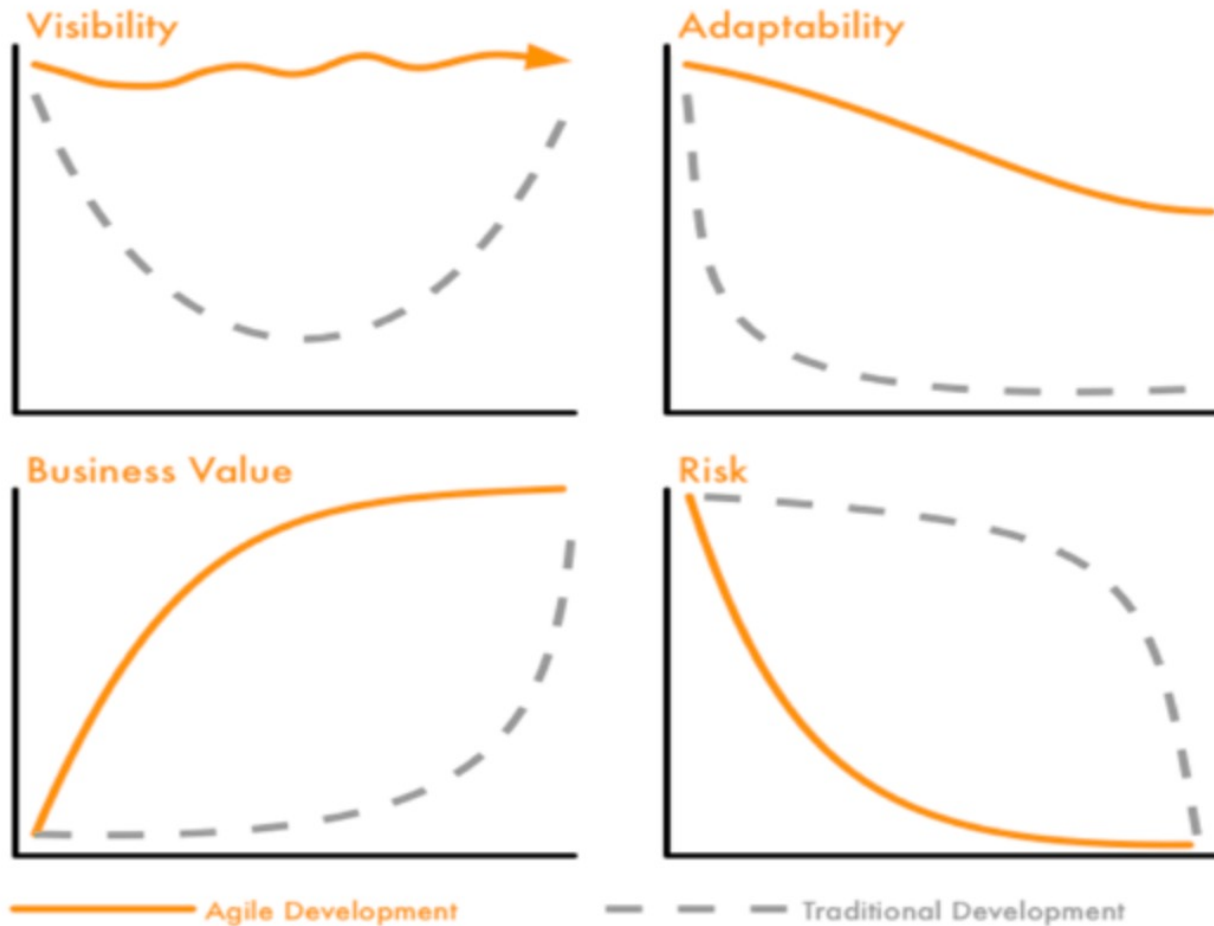
- Fast Changing deliverables - New Technology Emerging projects
- Projects without clear requirements in the beginning.
- New Product Development Projects
- Early Visibility, Quality, Risk identification

Cone of Uncertainty



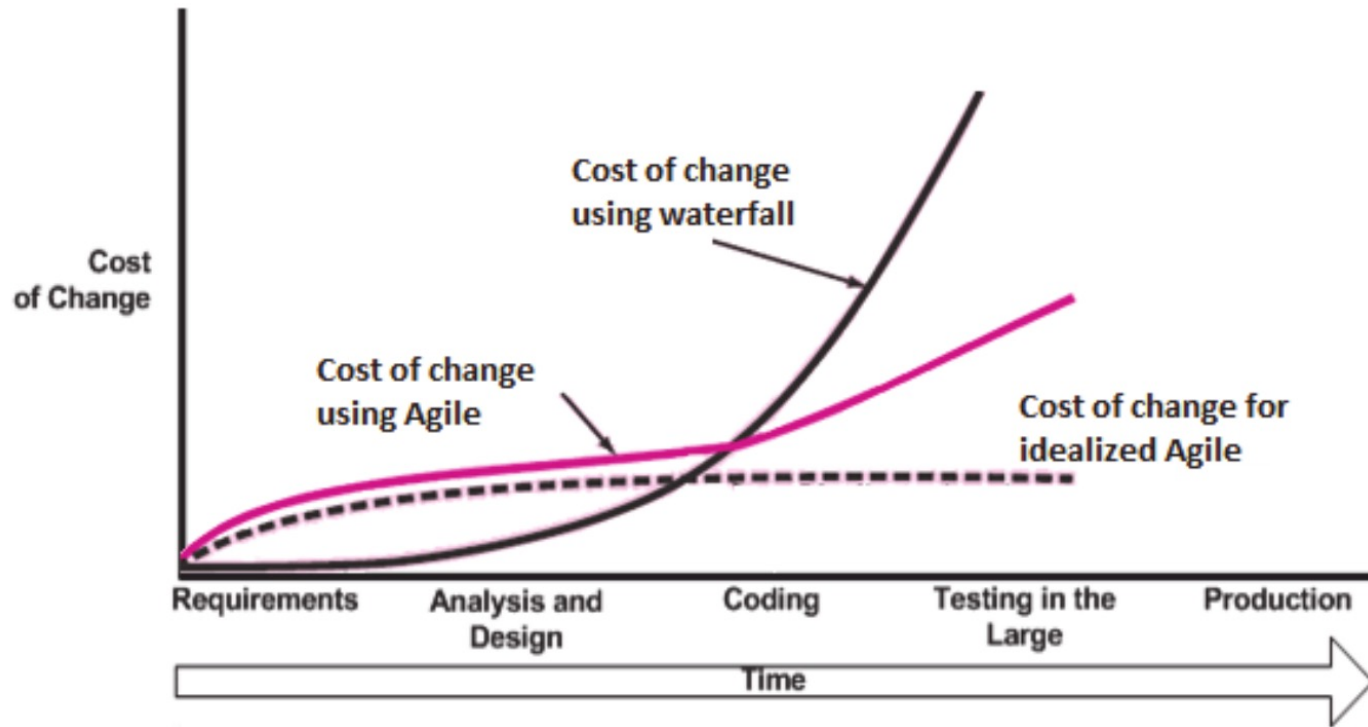
Reference/: <https://agilecoffee.com/wp-content/uploads/2016/12/07-cone-of-uncertainty.jpg>

Other benefits of agile approach



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

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 2006, 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