

AGILE-PARADIGM SHIFT IN SDLC

Session - 12

Comparing Agile with Traditional Models



Objectives

- ◆ List the parameters for selecting a right SDLC model
- ◆ Compare Agile with traditional Waterfall SDLC model
- ◆ Describe a case study for Waterfall and Agile approach
- ◆ Compare features of different SDLC models

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Introduction

- ◆ The critical factor in ensuring success of a project is the SDLC methodology used in it.
- ◆ By choosing an inappropriate SDLC, you can expose your project to various risks.
- ◆ The risks are as follows:

Damage to the quality of software product

Inability to maintain the budget of the project

Difficulty in meeting deadlines

Impair the initial goals

Hamper the software project management best practices

Parameters to Choose Right Model 1-2

- ◆ The SDLC process models and practices adopted should align with the business objectives of your organization.
- ◆ A mix of two or more methodologies based on the project requirements, is often chosen for the best fit.

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Parameters to Choose Right Model 2-2

◆ Factors to select the SDLC methodology are as follows:

Nature of the product—new product or a new feature

Complexity of the functionalities in the project

Size and resource availability in your project team

Team composition and location – if the entire team is in-house or if it is spread-out geographically

Identifying your organization's business nature and strategies

Work atmosphere and culture—SDLC methodologies such as Agile, emphasize on teamwork

The potential and competence of your team members, in terms of engineering

Comparing AGILE with Waterfall Model 1-4

- ◆ Table shows comparison between Agile model and Waterfall model.

AGILE	Waterfall
Idea and Design	
The important components are designed first giving a chance to the customer to alter their requirements, without affecting the progress of the project.	A detailed plan is drawn up from start to finish of the project. Problems can occur if inaccurate and inadequate information was provided, while the plan was being drafted.
Coordinated Actions	
The customer's team is involved in the development process and works hand-in-hand with the development team.	The development team works independently without barely any inputs or involvement from the customer.

Comparing AGILE with Waterfall Model 2-4

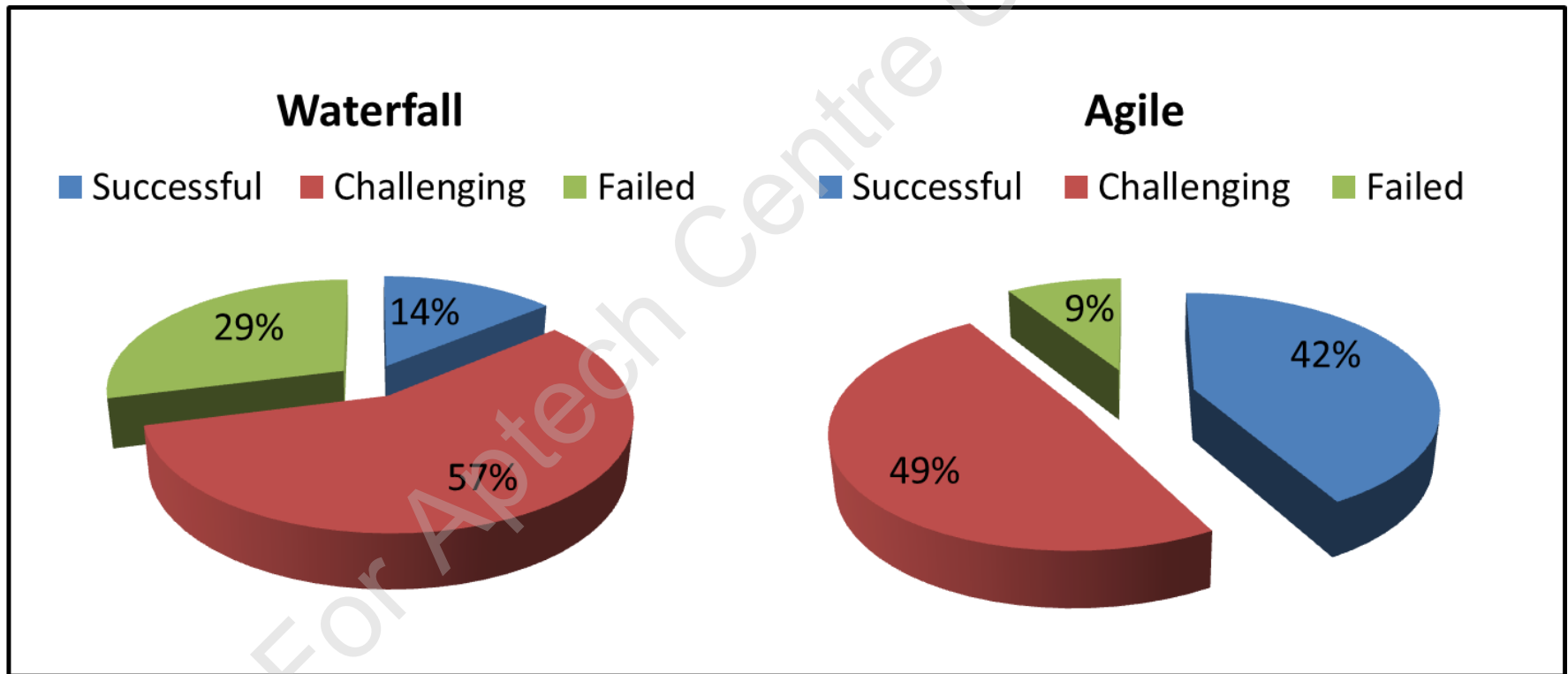
AGILE	Waterfall
Project Execution	
The development process works in iterations.	The development process works in phases which requires thorough planning and considerable time.
Testing	
Testing is incorporated into each iteration as a phase which allows regression testing before deployment of new functions and releases.	Testing can be done post completion of all modules.
Deliverables	
The important features are completed first, they can be delivered to the client, upon completion of an iteration.	The features are developed in the implementation phase and are delivered all at once to the client.

Comparing AGILE with Waterfall Model 3-4

AGILE	Waterfall
Documentation	
Software development is given precedence in this process. The documentation is more of a handbook which is easy to understand.	Documentation is a vital part of this process. All kinds of documents are drawn up – user guides, instruction manuals, and other written material.
Design Time	
The development time for small projects is estimated and implemented quickly, however, it is a challenge to calculate the development time for larger projects.	The schedule for delivery of the software is worked into a detailed plan and the release date can be calculated for all the projects.

Comparing AGILE with Waterfall Model 4-4

- ◆ Figure provides a snapshot of success and failure percentage for Agile and Waterfall models based on a study by the Standish Group.



Case Study for AGILE and Waterfall Models 1-2

- ◆ Consider a case study of Bill Holst, the president and consulting software engineer for Prescient Software Engineering.
- ◆ It outsourced the development work of two projects based on distribution design systems to two teams of software engineers.
- ◆ The first team handled an electric project. The project is based on the Waterfall approach.
- ◆ Similarly, the second team handled a gas project which is based on the consideration of Time and Materials pricing.

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Case Study for AGILE and Waterfall Models 2-2

◆ Efforts of First Team

- ◆ In the Waterfall approach, the first task was to define the scope and list the requirements of the project.
 - ◆ Initial Design
 - ◆ Result

◆ Efforts of Second Team

- ◆ In the Agile process, user-collaboration is continuous which acted as a key to the success of the project.
 - ◆ Agile Process – Initial Transition
 - ◆ Turning Point
 - ◆ Results

Comparison between Different SDLC Models 1-4

- ◆ Table comparing various process models.

Model/Features	Waterfall	V-Model	Prototype	Incremental	Spiral	RAD
Requirement Specifications	Beginning	Beginning	Changed frequently	Beginning	Beginning	Time-boxed
Understanding Requirements	Well understood	Easily understood	Not well understood	Well understood	Well understood	Easily understood
Cost	Low	Expensive	High	Low	Expensive	Low
Guarantee of Success	Low	High	Good	High	High	Good
Resource Control	Yes	Yes	No	Yes	Yes	Yes
Cost Control	Yes	Yes	No	No	Yes	Yes

Comparison between Different SDLC Models

2-4

Model/Features	Waterfall	V-Model	Prototype	Incremental	Spiral	RAD
Simplicity	Simple	Intermediate	Simple	Intermediate	Intermediate	Very simple
Risk	High	Low	Low	Easy to manage	Low	Very low
Involvement	High	Medium	Medium	High	High	Medium
Expertise Required	Difficult	Difficult	Easy	Easy	Easy	Easy
Changes Incorporated	Only at beginning	Yes	No risk analysis	No risk analysis	Yes	Low
Risk Analysis	Only at beginning	At beginning	High	Intermediate	High	Only at the beginning
User Involvement	Only at beginning	At beginning	High	Intermediate	High	Only at the beginning

Comparison between Different SDLC Models

3-4

Model/Features	Waterfall	V-Model	Prototype	Incremental	Spiral	RAD
Overlapping Phases	No overlapping	No	Yes	No	Yes	No
Flexibility	Rigid	Little flexible	Highly flexible	Less flexible	Flexible	Highly flexible
Maintenance	Least	Least	Routine maintenance	Promotes maintainability	Typical	Easily maintained
Integrity and Security	Vital	Limited	Weak	Robust	High	Vital

Comparison between Different SDLC Models

4-4

Model/Features	Waterfa II	V- Model	Prototype	Incremental	Spiral	RAD
Reusability	Limited	To some extent	Weak	Yes	Yes	To some extent
Interface	Minimal	Minimal	Crucial	Crucial	Crucial	Minimal
Documentation and Training Required	Vital	Yes	Weak	Yes	Yes	Limited
Time Frame	Long	Acc to project size	Short	Very long	Long	Short

Summary

- ◆ Choosing the correct SDLC approach can determine the success or failure of your project.
- ◆ There are several parameters that help you make this crucial decision, such as, complexity and nature of the project, nature and size of the organization, the structure of the team, work culture, engineering capacity, and industry.
- ◆ Agile, an SDLC methodology can be compared with traditional approaches, such as the Waterfall model, depending on the nature of the project and organization.
- ◆ Agile focuses less on documentation and more on active participation and discussion amongst the team-members.
- ◆ The SDLC methodology and practices adopted should align with the business objectives of the organization.
- ◆ All SDLC methodologies have their advantages and disadvantages.
- ◆ A mix of two or more methodologies, based on the project requirements, is often chosen for the best fit.