

## \* Assignment 1 \*

- 3) Study & evaluate the historical and contextual factors that contributed the rise of Agile software development methodologies.

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### The Rise of Agile Software Development Methodologies: Historical and Contextual Analysis

#### ① Historical Context & Need of Agile

During the late 20th century, software development process faced significant challenges due to rapidly change requirements, increasing project complexity, and an expanding need for customer-centric solutions. Traditional models like waterfall model and spiral model, while groundbreaking at their inception, struggled to address these challenges effectively:

##### • Waterfall Model Drawbacks:

- Linear and sequential: Each phase must be completed before moving to the next, leading to long project timelines.
- Lack of flexibility: Poor adaptability to changing requirements.
- Customer feedback is limited to the end of the development cycle, increased the risk of delivering a product misaligned with user needs.

### • Spiral Model Drawbacks:

- Complex and resource-intensive: The iterative nature with repeated risk assessments added overhead.
- Difficult to manage for small projects due to its emphasis on extensive documentation and analysis.
- Overemphasis on risk management.

The rise of Agile methodologies by the publication of the Agile Manifesto in 2001, was a response to these challenges.

### ② Key Principle of Agile

- Customer collaboration
- Responding to change
- Working software
- Individuals and interactions

These principles is used to tackle the limitations of traditional model.

### ③ How Agile Overcomes Drawbacks to Traditional Models

- Flexibility to changing Requirement
- Frequent Deliverables
- Reduced Overhead
- Focus on Collaboration



## ④ Agile in Practice: E-commerce Website Development example.

### → Waterfall Model:

All requirements (e.g. user authentication, product catalog, payment) are gathered upfront. Development proceeds sequentially (Design → Implementation → testing). Changes mid-project (e.g. adding a subscription model) require revisiting earlier stages, delaying delivery.

### → Spiral Approach:

Development happens in iterative cycles, each with risk analysis and deliverables. While flexible, the heavy focus on risk management and documentation can become cumbersome for a moderately complex project like an e-commerce website.

### → Agile Approach:

It divides the project into smaller, prioritized sprints:

- Sprint 1: Basic product catalog & authentication.
- Sprint 2: Shopping cart & payment gateway.
- Sprint 3: Advanced features like recommendations or discount.

⑤ Conclusion:- Hence we successfully study & evaluate the historical & contextual factors that contributed the rise in Agile software development methodologies.