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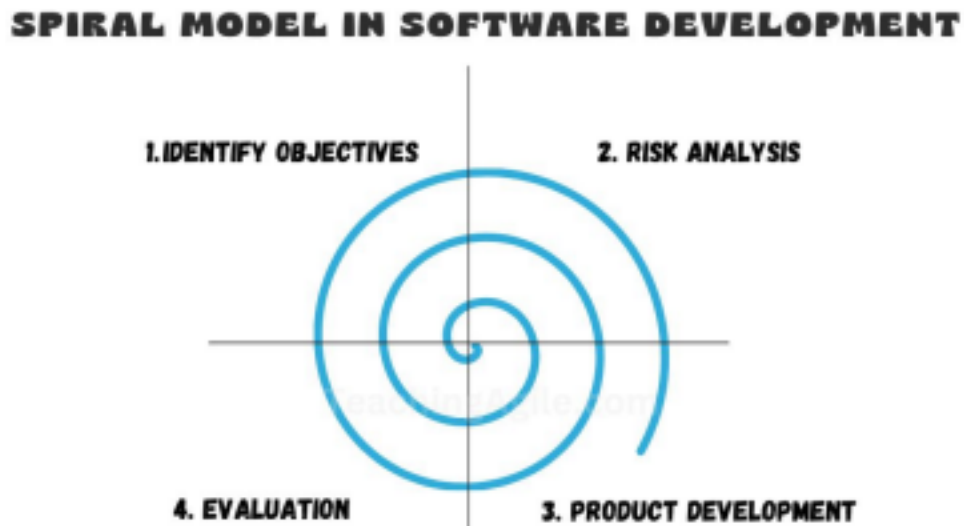
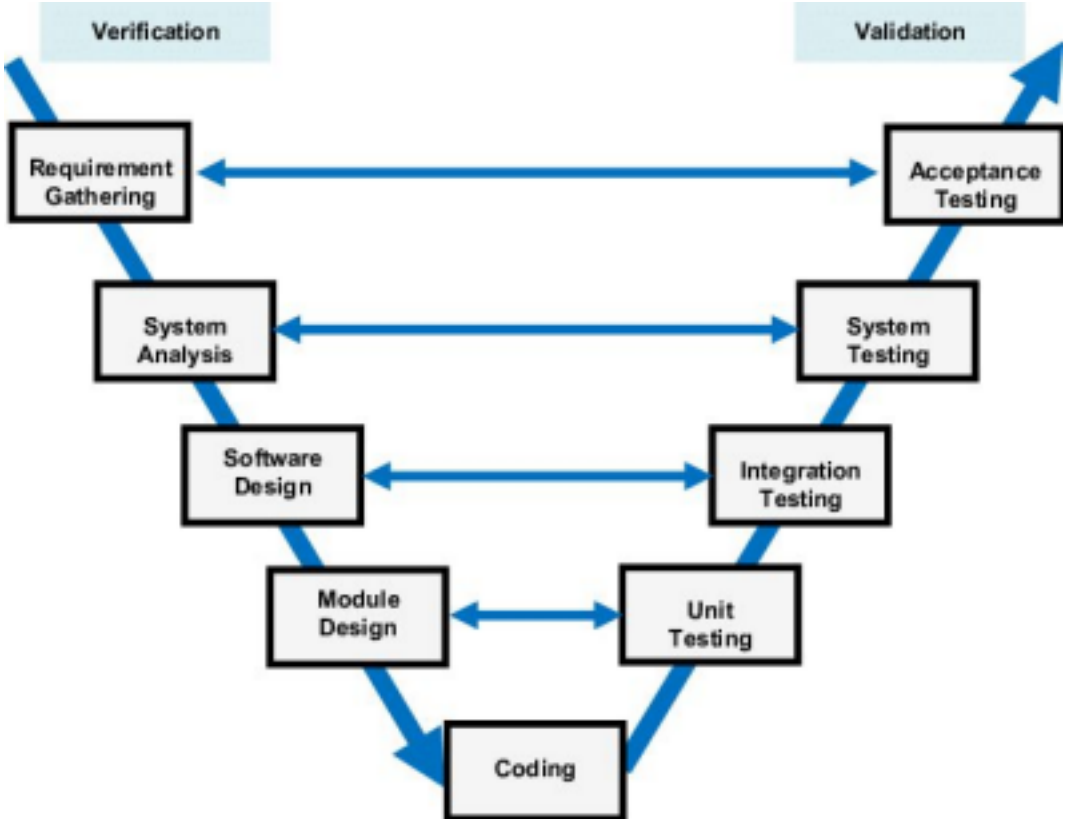
Traditional Methodologies



Waterfall: Linear, rigid, one phase must finish before the next.

Spiral: Combines Waterfall with iterative refinement;



adds risk analysis at every loop

V-Model: Emphasizes Verification and Validation at each state

Limitations of Traditional

Methods

- These models assume that requirements don’t change. But in reality, customers often don’t know exactly what they want until they see a working project.
- Late testing = late feedback = higher cost - Too much documentation, too little working product

Why not break work into smaller parts and deliver every

2-4 weeks? That’s the idea behind iterative development.

- Introduction to Agile Mindset
  - Agile emerged in response to frustration with slow, inflexible models.
  - Agile values collaboration, continuous delivery, adaptability.

Agile is not just a process– it’s a mindset shift. It says, ‘Expect change, welcome feedback and deliver value fast’

- Need for Flexibility and Rapid Delivery -
    Market trends, startups and tech evolution required faster releases.
    - Agile supports customer collaboration and shorter release cycles.

Amazon deploys code every 11.6 seconds. That’s not possible with Waterfall.

Agile Manifesto

Four Agile Values

- Individuals & Interactions over Process and Tools
- Working Software over comprehensive documentation
- Customer collaboration over contract negotiation.
- Responding to change over following a plan.

Agile Principles

- Early and continuous delivery of valuable software - Welcome changing requirements, even late in development

- Deliver working software frequently (e.g., every 2 weeks)
- Business and developers must work together daily
- Build projects around motivated individuals - Use face-to-face communication

Agile Principles

- Working software is the primary measure of progress
- Sustainable development pace
- Continuous attention to technical excellence
- Simplicity—the art of maximizing the amount of work not done
- Self-organizing teams produce the best designs

- Teams regularly reflect and adjust

In Agile, retrospectives help teams look back every sprint and improve their process. It’s like sports teams watching their match to get better.

Agile vs Traditional Mindset

Aspect	Traditional Mindset	Agile Mindset
Planning	Fixed upfront	Evolving and adap
Communication	Formal, documentation-heavy	Open and continuo
Delivery	End of cycle	Continuous
Testing	After coding ends	Parallel and early
Success Metric	Meeting plan	Delivering value qu

Benefits and Challenges

- Benefits of Agile
    - Customer Satisfaction: Frequent delivery of valuable features
    - Faster delivery: Small, shippable increments - Adaptability: Can change course based on feedback - Team Ownership: Empowered and self organizing teams

In Agile, teams feel a sense of ownership. They don’t just follow instructions—they solve problems together.

- Challenges in Agile
    - Scope Creep: Continuous change without proper control

- Cultural Resistance: Traditional organizations resist flat structures
- Enterprise Policies: Legal and compliance requirements may not match Agile flexibility
- Requires Maturity: Agile fails if people don't collaborate well.

Agile gives freedom– but freedom without discipline leads to chaos.

When to Use Agile

Use Agile when:

- Requirements are likely to change
- Quick feedback is needed

- Innovation is a priority

Avoid Agile when:

- Fixed scope, timeline, and budget
  - Regulatory or safety-critical projects (e.g., aviation software)