



Spiral Model

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I.

- Define the scope, objectives, and constraints for the current iteration.
- Identify potential risks and their impacts on the project, then develop mitigation strategies.
- Implement the design and create working software that can be tested.
- Evaluate the progress so far, obtain feedback from stakeholders, and make decisions for the next iteration.
- Based on the evaluation, decide whether to continue with the next cycle, adjust the scope, or cancel the project.

II.

1. Iteration (Spiral Cycle) Reports

- Document the outcome of each spiral loop.
- Include objectives achieved, work completed, and work pending.
- Helps track progress from one cycle to the next.

2. Risk Assessment and Mitigation Reports

- Identify technical, cost, schedule, and operational risks.
- Record risk severity, probability, and impact.
- Describe mitigation actions taken and their effectiveness.

3. Prototyping and Proof-of-Concept Reviews

- Use prototypes to validate requirements and reduce uncertainty.
- Report findings from prototype evaluation.
- Highlight design changes made based on results.

4. Stakeholder Review and Feedback Sessions

- Conduct formal reviews with clients or users at the end of each spiral.
- Record feedback, approvals, and requested changes.
- Ensures alignment with user expectations.

5. Milestone and Progress Tracking

- Use timelines, Gantt charts, or burn-down charts.
- Report completion status of planned tasks and milestones.
- Helps monitor schedule adherence.

6. Quality and Testing Reports

- Document testing activities (unit, integration, system testing).



- Report defects found, fixed, and remaining.
- Ensures quality goals are being met.

7. Decision and Go/No-Go Reports

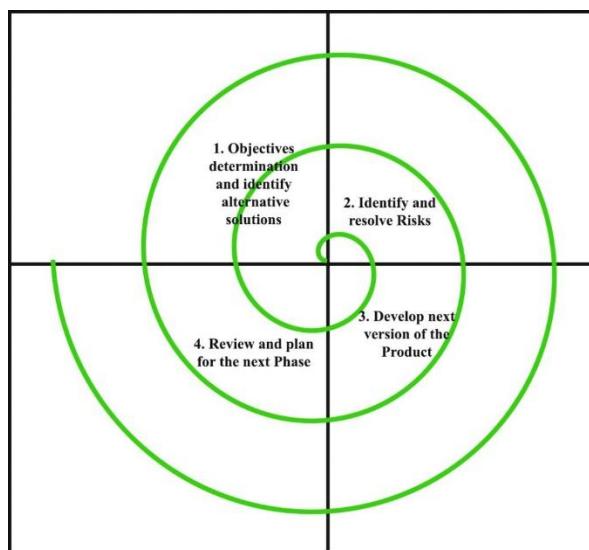
- Summarize evaluation results at the end of each spiral.
- Support decisions to continue, modify, or terminate the project.
- Based on risk resolution and stakeholder approval.

8. Documentation Updates

- Update requirement specifications, design documents, and user stories.
- Maintain version history to reflect iterative changes.
- Provides traceability across spiral cycles.

III.

The **spiral model** is a risk-driven software development process that combines elements of the waterfall model and the iterative model. It is suitable for large, complex, and high-risk projects with evolving requirements because it emphasizes risk analysis and management throughout multiple iterations or "spirals". Each loop of the spiral consists of four main phases: planning, risk analysis, engineering, and evaluation.



Key characteristics

Risk-driven: It emphasizes identifying and mitigating risks at each stage of development.

Iterative and incremental: The project is developed in a series of cycles, with each cycle building upon the last and producing a potentially shippable product increment.



Customer involvement: It allows for continuous customer feedback to guide the project and adapt to changing requirements.

Flexibility: It is adaptable and can accommodate changes in requirements as they are discovered or as new risks are identified.

Advantages of the Spiral Model

- **Risk Management:** The Spiral Model emphasizes risk assessment and management, making it suitable for projects with high uncertainty or complexity.
- **Flexibility:** It allows for changes and refinements throughout the development process, accommodating evolving requirements.
- **Stakeholder Involvement:** Continuous feedback from stakeholders ensures that the final product aligns with user needs and expectations.

Disadvantages of the Spiral Model

- **Complexity:** The model can be complex to manage, requiring careful planning and risk assessment.
- **Cost:** Due to its iterative nature and emphasis on risk management, the Spiral Model can be more expensive than other models.

References

Spiral model - Wikipedia

https://en.wikipedia.org/wiki/Spiral_model

Spiral Model: Definition, Phases, Advantages & Disadvantages (2025)

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SDLC Spiral Model

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