Risk Projection in Software Engineering

Definition:
Risk projection is the process of analyzing identified risks to estimate their likelihood of occurrence and potential impact on a software project. It helps prioritize risks to ensure the team focuses on the most critical ones.

Purpose of Risk Projection

1. **Prioritize Risks:** Focus on the most severe and likely risks.
2. **Plan Mitigation:** Prepare strategies to reduce or handle risks.
3. **Avoid Surprises:** Minimize unexpected problems during the project.

Steps in Risk Projection

1. **Estimate Probability:**
   - Assign a likelihood of the risk happening (e.g., Low, Medium, High).
   - Example: *The chance of missing a deadline is 60% (Medium probability).*
2. **Evaluate Impact:**
   - Determine how badly the project will be affected if the risk occurs.
   - Example: *If a key team member leaves, the project may be delayed by 2 months.*
3. **Calculate Risk Exposure:**
   - Use the formula:
     Risk Exposure = Probability × Impact
   - This helps to rank risks by severity.
4. **Create a Risk Matrix:**
   - Visualize risks in a table based on probability and impact.

Example:

Impact ↓ / Probability →	Low	Medium	High
Low	1	2	3
Medium	2	4	6
High	3	6	9

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5. **Prioritize Risks:**
    - Address risks with the highest exposure values first.

Types of Risk Projection

1. **Qualitative Projection:**
    - Uses descriptive terms like High, Medium, or Low for probability and impact.
2. **Quantitative Projection:**
    - Uses numbers or percentages for precise measurement of risk.

Example of Risk Projection

Risk	Probability (%)	Impact (1-10)	Risk Exposure
Missed deadlines	70%	8	5.6
Hardware failure	30%	9	2.7
Requirement changes	50%	7	3.5

- **Highest priority risk:** *Missed deadlines* because it has the highest exposure (5.6).

Benefits of Risk Projection

1. **Proactive Management:** Helps in taking early action against critical risks.
2. **Efficient Resource Use:** Focuses time and effort on high-priority risks.
3. **Improved Project Success:** Reduces the chances of project delays or failures.

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