

Risk Management

Option 1: Deal with the problem when it occurs



Caller: I have a slight problem,
I'm trapped in my burning
house
911: Fire truck on it's way

Option 2: Contingency plan: Plan ahead what you will do when the risk occurs



Option 3: Risk mitigation: Lessen the probability of the risk occurring. Reduce the impact of occurrence



Reduce probability



Reduce impact

Risk Management Paradigm



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- **1.Identify:** Search for the risks before they create a major problem
 - **2.Analyze:** understand the nature , kind of risk and gather information about the risk.
 - **3.Plan:** convert them into actions and implement them.
 - **4.Track:** we need to monitor the necessary actions.
 - **5.Control:** Correct the deviation and make any necessary steps.

Reactive versus proactive risk strategies

- A reactive strategy monitors a project for likely risks.
 - **“Never worrying about problems until they happened.**
 - Resources are set aside to deal with them .
 - The team flies into action in an attempt to correct the problem rapidly.
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- A proactive strategy begins long before technical work is initiated **potential risks are identified, their probability and impact are assessed and they are ranked by importance.**
 - Then the software team establishes a plan for managing risk.

Software risks

- **Project risks** threaten the project plan.
- Because of this risks, the project schedule will slip and costs will increase.
- **Technical risks** threaten the quality and timeliness of the software to be produced.
- If a technical risk becomes a reality, implementation may become difficult or impossible.

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- **Business risks** threaten the viability of the software to be built.
 - Different business risks are:
 - Building an excellent product or system that no one really wants (**market risk**)
 - Building a product that no longer fits into the overall business strategy for the company (**strategic risk**)
 - Building a product that the sales force doesn't understand how to sell (**sales risk**)
 - Losing the support of senior management due to a change in focus or a change in people (**management risk**)

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- Another risk categorization are:
 - **Known risks** –can be uncovered after careful evaluation of the project plan. (e.g., unrealistic delivery date)
 - **Predictable risk** are got from past project experience. (e.g., past turnover)
 - **Unpredictable risks** are extremely difficult to identify in advance.

Risk management

- Risk management is an attempt to minimize the chances of failure caused by unplanned events.
- The aim of risk management is not to avoid getting into projects that have risks but to minimize the impact of risks in the project that are undertaken.
- risk management is the area that tries to ensure that the impact of risks on cost , quality and schedule.
- The two main elements in risk management are
 - Risk assessment**
 - Risk control**

- **Risk assessment**

- Risk assessment is an activity that must be undertaken during project planning.
- This involves identifying the risks, analyzing them and prioritizing them on the basis of the analysis.
- The goal of risk assessment is to prioritize the risks so that attention and resources can be focused on the more risky items.
- **Risk identification** is the first step in risk assessment which identifies all different risks for a particular project.

Risk identification

- Risk identification is a systematic attempt to specify threats to the project plan.
- By identifying known and predictable risks, the project manager takes a first step toward avoiding them when possible and controlling them when necessary.

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- Next tasks that comes after risk identification are
 - Risk analysis
 - Prioritization
 - In risk analysis the probability of occurrence of a risk has to be estimated along with the loss that will occur if the risk does materialize.
 - The other approaches for risk analysis include studying the probability and the outcome of possible decisions.
 - Once the probabilities of risk materializing and losses due to materialization of different risks have been analyzed they can be prioritized.

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- One approach to prioritization is risk exposure or risk impact
 - Risk Exposure = Probability x Impact (cost)
 - Where P is the probability of occurrence of risk, and C is the cost (impact) to the project should the risk occur.
 - Estimate the probability of occurrence
 - Estimate the impact on the project on a scale of 1 to 5, where
 - 1 = low impact on project success
 - 5 = high impact on project success
 - Higher the RE , higher the priority of risk

- **Risk control**

- The main objective of risk management is to identify the top few risk items and then focus on them. once the risks have been identified and prioritized the question is how to resolve them.
- One obvious strategy is risk avoidance.
- For most risks, the strategy is to perform the actions that will either reduce the probability of the risk materializing or reduce the loss due to the risk materializing .
- Risk monitoring is the activity of monitoring the status of various risks and their control activities.

Risk Mitigation, Monitoring, and Management

- **mitigation**—how can we avoid the risk?
- **monitoring**—what factors can we track that will enable us to determine if the risk is becoming more or less likely?
- **management**—what contingency plans do we have if the risk becomes a reality?