

RISK IDENTIFICATION , ANALYSIS AND REDUCING THE RISK

Product-specific risks - the project plan and software statement of scope are examined to identify any special characteristics of the product that may threaten the project plan.

Risk Impact:

- ❖ Risk components - performance, cost, support, and schedule.
- ❖ Risk impact - negligible, marginal, critical, and catastrophic.
- ❖ The risk drivers affecting each risk component are classified according to their impact category.

Risk Projection (Estimation):

- ❖ Establish a scale that reflects the perceived likelihood of each risk.
- ❖ Delineate the consequences of the risk.
- ❖ Estimate the impact of the risk on the project and product.

Risk Table Construction:

- ❖ List all risks in the first column of the table.
- ❖ Classify each risk.
- ❖ Determine a probability for each risk.
- ❖ Enter the severity of each risk.
- ❖ Sort the table by probability and impact value.
- ❖ Determine the criteria for deciding where the sorted table will be divided.

Assessing Risk Impact:

Factors affecting risk consequences - nature (types of problems arising), scope (combines severity with extent of project affected), timing (when and how long impact is felt).

Risk Assessment:

Define referent levels for each project risk that can cause project termination (performance degradation, cost overrun, support difficulty, schedule slippage).

Risk Refinement:

Process of restating the risks as a set of more detailed risks that will be easier to mitigate, monitor, and manage.

- ❖ **Risk Mitigation** - Proactive Planning for Risk Avoidance.
- ❖ **Risk Monitoring** - Assessing whether predicted risks occur or not, ensuring risk aversion steps are being properly applied, collect information for future risk analysis, attempt to determine which risks caused which problems.

- ❖ **Risk Management and Contingency Planning** - actions to be taken in the event that mitigation steps have failed and the risk has become a live problem.

Safety Risks and Hazards:

Risks are also associated with software failures that occur in the field after the development project has ended.

Risk Information Sheets:

- ❖ Each risk is documented individually.
- ❖ RIS components - Risk Id, Date, Probability, Impact, Description, Refinement, Mitigation/Monitoring, Management / Contingency / Trigger, Status, Originator, Assigned Staff Member.

REDUCING THE RISK

Strategies For Risk Reduction

Hazard Prevention

- Some hazards can be prevented from occurring or their likelihood reduced to insignificant levels.
- The risk of key staff being unavailable for meetings can be minimized by early scheduling.

Likelihood Reduction

- Some risks, while they cannot be prevented, can have their likelihoods reduced by prior planning.
- The risk of late changes to a requirements specification can, for example, be reduced by prototyping.
- Prototyping will not eliminate the risk of late changes and will need to be supplemented by contingency.
- Planning.

Risk Avoidance

A project can, for example, be protected from the risk of overrunning the schedule by increasing duration estimates or reducing functionality.

Risk Transfer:

The impact of some risks can be transferred away from the project by, for example, contracting out or taking out insurance.

Contingency Planning:

Some risks are not preventable and contingency plans will need to be drawn up to reduce the impact should the hazard occur.

Risk Reduction Techniques

Risk	Risk Reduction Techniques
Personal shortfalls	Staffing with top talent , matching , team building, training and career development and early scheduling of key personals
Unrealistic time and cost estimates	Multiple estimation techniques, design to cost, incremental development, recording and analysis of past projects and standardization of methods
Developing the wrong software functions	Improved project evaluation, formal specification methods, user surveys, prototyping and early user manuals.
Developing the wrong user interface	Prototyping, task analysis and user involvement.
Gold plating	Requirements scrubbing, prototyping
Late changes to requirements	Stringent change control procedures, high change threshold, incremental prototyping and incremental development.
Shortfalls in external supplied components	Benchmarking, inspection, formal specification, contractual agreements and quality assurance procedures and certification.
Shortfalls in external performed tasks	Quality assurance procedures, competitive design or prototyping, team building and contract incentives.
Real time performance shortfalls	Simulation, benchmarking, prototyping, tuning and technical analysis.
Development technically too difficult	Technical analysis, cost benefit analysis, prototyping, staff training and development.