

10 Managing Risks *

• **Risk:** possibility that the project will **not turn out** as planned or desired.

* Lives / Safety

* Time / Schedule

* Money / Waste

* Reputation

* Product Quality

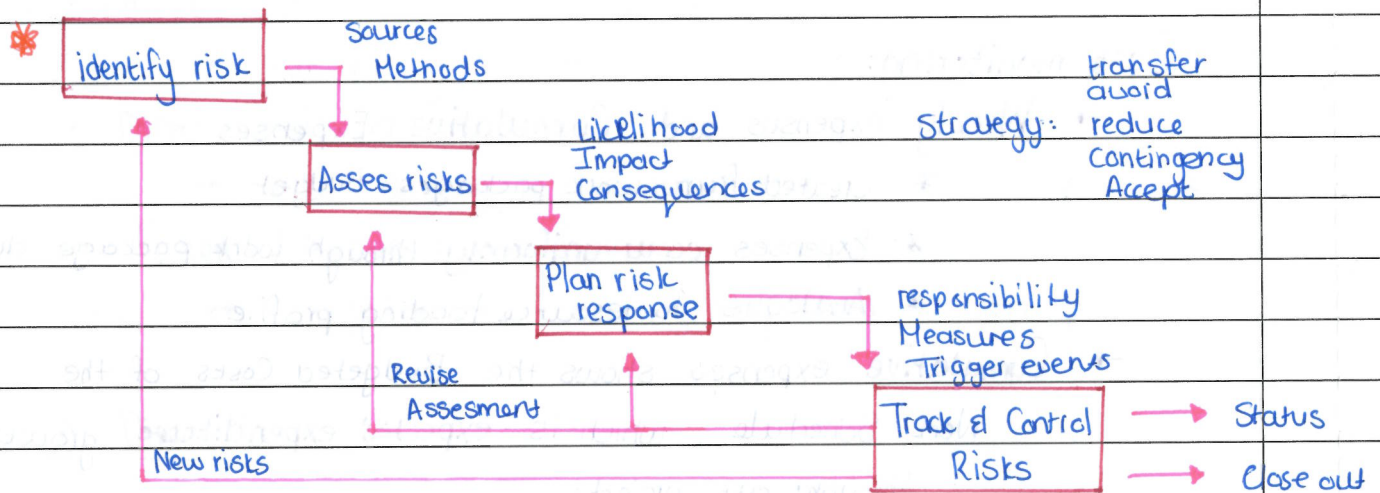
Two concepts:

• **likelihood** that some event will occur

• **impact** of the event if it does occur

Risk is a **function** of the two:

$$\text{Risk} = f(\text{likelihood}, \text{impact})$$



1. Identify Risks: Sources

Internal:

• Needs and definition Risk

→ Failure to correctly identify or define current changing customer needs

• Technical Risks

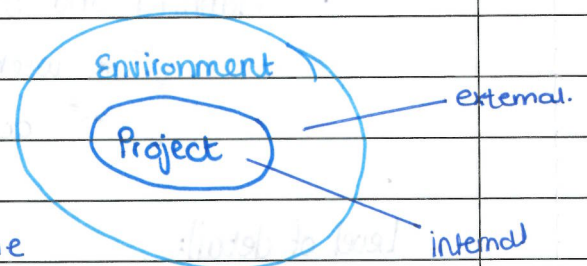
→ Failure of the end-item. Risk due to the nature of the end-item

* High complexity

* low maturity

* low reliability, testability or productivity

* high concurrency



External:

→ Risks in the project environment

- * Market conditions
- * Government mandate
- * Physical environment
- * Labour & resource availability
- * Project priorities
- * Customer relationships
- * Exchange rates

Individual Review:

→ Analogy

- experience in similar projects
- Post completion summary

→ Checklists

- Risks - checklist (Assignment 1)

Team Review:

- WBS or work packages
- Process flow chart
- Project Network Diagram → convergence points
- Brainstorming

Causes



Effect

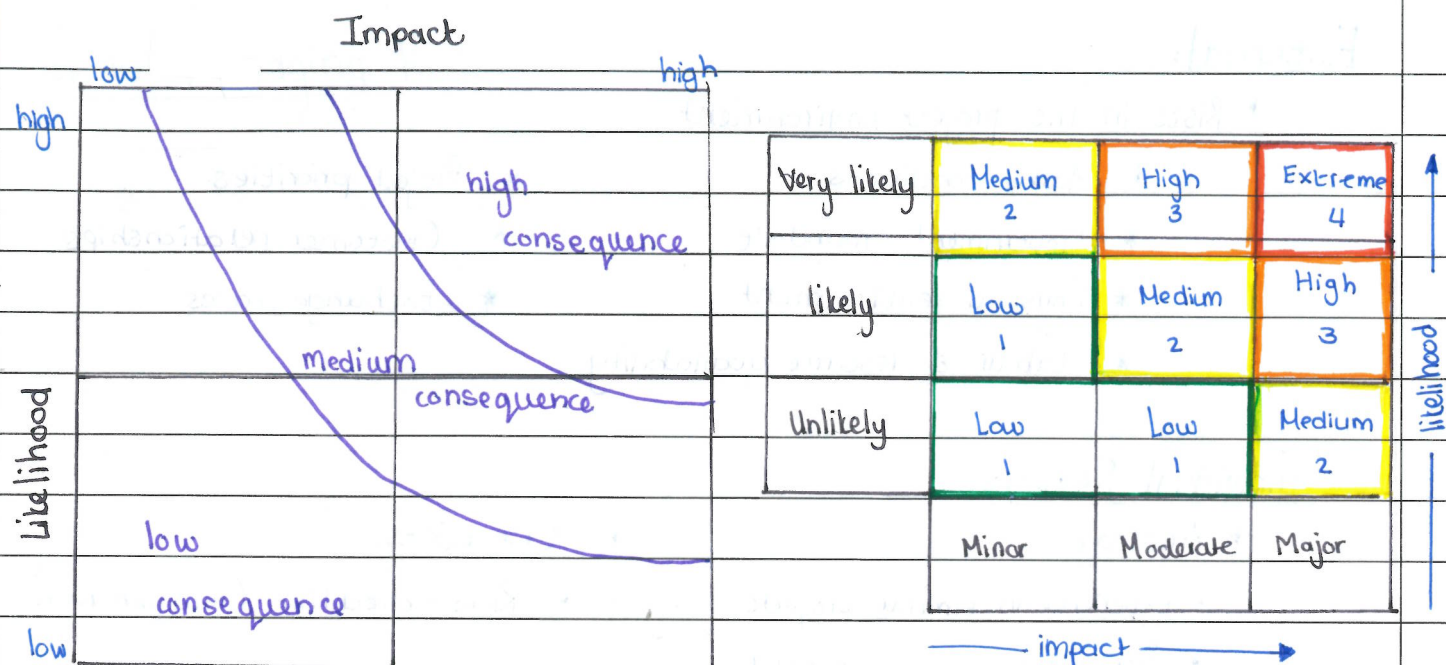
Risk sources / hazards

Outcomes / Consequences

Cause / Effect diagram → Visgraat diagram.

2. Assess the Risk

- Quantitative → need data
 - 1 in 1000 fatalities per year
- Qualitative
 - high, medium, low risk
- Semi-quantitative
 - combined objective and subjective risk estimations



Alternative

• Assessment tables

Rating	Level	Outcome description
5	Catastrophic	Disaster with potential lead to collapse of business
4	Critical	Critical event can be endured but prolonged impact
3	Serious	Major event can be managed but requires effort
2	Significant	Event can be managed under normal conditions
1	Minor	Consequences readily absorbed

Purpose:

- To identify risks that merit attention
- to Prioritise
- Create a risk log / register — risk are orderd from largest to smallest
- Exposure = impact x likelihood

3. Risk Response Planning

- is the process that identifies, evaluates, selects and implements one or more strategies in order to get risk to an acceptable level.
- Includes:
 - * What should be done ?
 - * Accomplished when?
 - * Who is responsible
 - * Cost involved

* Strategies:

- Risk transfer: "Its not my problem, its yours"
- Risk avoidance: "I will not choose this alternative, risk is too high"
- Risk reduction/control: "I will take measures to reduce the risk and take control of it" plan B/c
- Contingency plan: "When it happens this is what I will do"
- Accepting the risk: "I know the risk but I will wait and see"

Transfer risk:

- Insurance

- property damage
- damage to material
- equipment damage
- equipment theft
- injury of workers

- Contracts

- Fixed price vs cost-plus

Avoid Risk

- Eliminate sources of risk
- Micromanage

Reduce Risk

- Employ best workers
- Use tested technology
- Parallel efforts
- Strong work incentives
- Reduce system complexity
- Design margins

Contingency plan

- study possible what-if scenarios and develop plan for each

4. Risk tracking and Response

- Create a risk log/register — risk ranked according to greatest risk 1st
- Continuously monitor project for trigger points of identified risks, systemptom for newly emerging

Policies:

• Risk management Plan

→ Methods to identify, profile, assess, monitor and handle risks

→ Risk officer → not pm, oversee project risks

→ Budget and schedule reserves

• Risk profile

→ likelihood, impact, trigger symptoms, monitoring methods and response strategy

• Risk schedule / Budget Reserve

→ time and dollar amount in schedule and budget

7 Advanced Project Scheduling

* Time-Cost Trade-off → direct cost

Reducing the project duration:

→ Reduce amount of work.

→ Support from executives

→ Appropriate technology

→ More expensive resources

→ Motivation

→ More resources.

• Better resources costs more money [duration is a function of cost]

Case where the duration is reduced by more resources

→ More people

→ Technology

→ Overtime

→ Equipment

Normal: work effort considered the norm → least costly

Crash: maximum resources applied → most costly

• Normal Time (T_n) and Crash Time (T_c) are fixed

• CPM time cost trade off takes no variability (barring cost) into account

→ $T = f(\$)$

→ $T \neq f(\text{Murphy})$