GEPM-375

Project Planning and Construction Management

Evaluation of Project Risks

What we learned in the last class.

- **What is project risk?**
- How the risks to be analyzed**?**
- **Risk management plan.**
- Stages of risk management**.**
  - **-Stage 1: Risk awareness**
  - **-Stage 2: Risk identification**
- Processes/methods of risk identification**.**
- Risk owners**.**

Stage-3: Risk Assessment

What is to be done to select most probable risks from the long lists of risks?

•To reduce the number of risks being seriously considered from the very long list, **some form of screening** will be necessary.

•Only **those risks which pass certain criteria** need to be **examined more closely for risk assessment.**

•Risk assessment is the **qualitative stage** at which the **two main attributes** of risk, ***Probability* and *Impact*** *are examined.*

- **Probability of risk** has to be assessed using:
  - **Experience** and /or
  - **Statistical data** ie. Historical weather charts, or
  - **Close-out reports** from previous projects.

•Each risk can then be given **a probability rating** of **HIGH, MEDIUM, or LOW.**

- **Impact of risk has to be assessed taking into account all the**:

  -available data,

  -past project histories and

  -expert opinion.

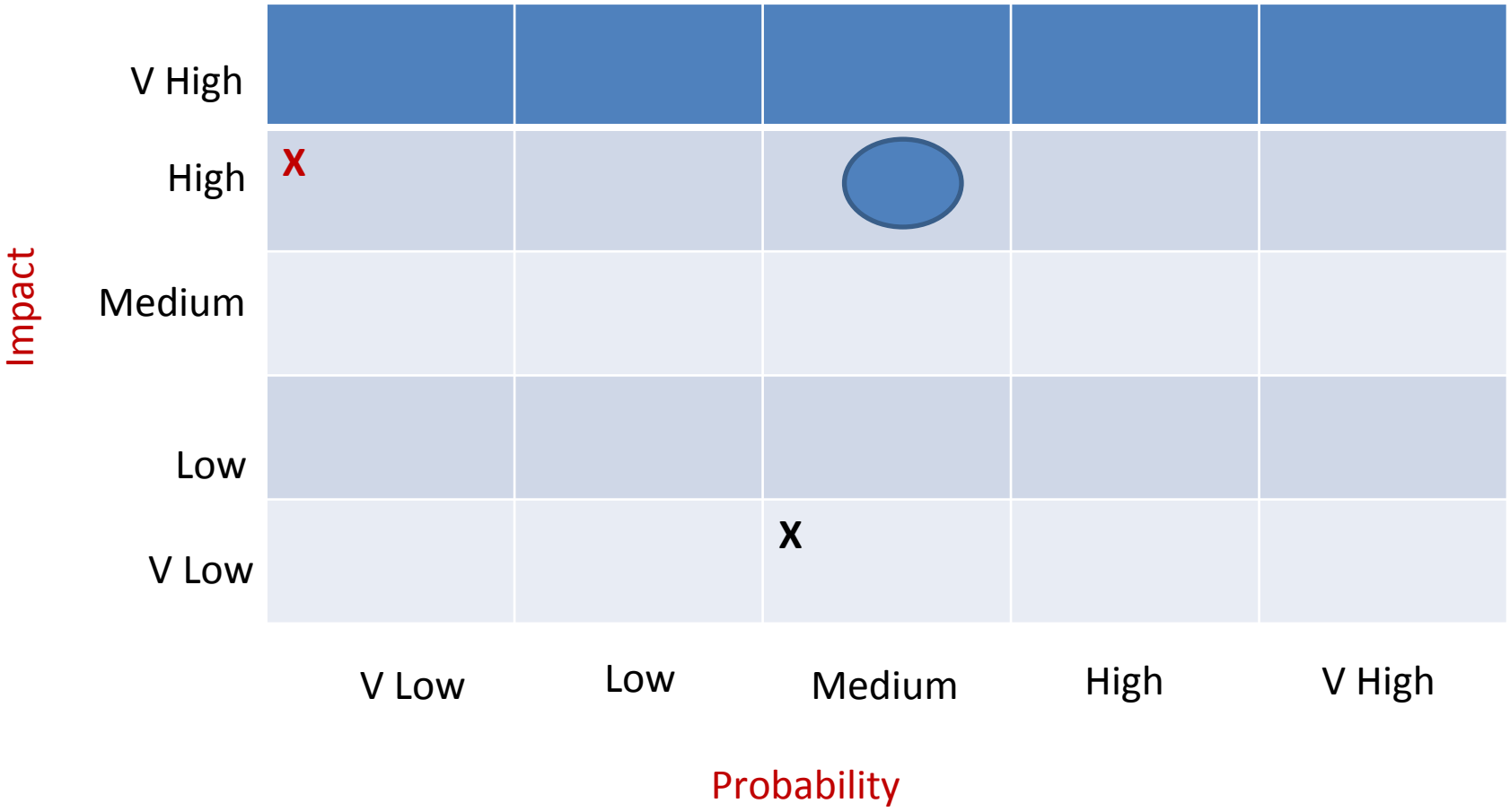
- Impact or effect on the project can be **rated** a **Very High, High, Medium or Low.**

- A **simple matrix can now be drawn up** which identifies whether a risk should be taken any further.

- **Probability v impact table** (Figure) could be **used for each risk worthy** and to **assess all major risks** to a project or program.

Table: Probability vs. Impact

Unforeseen weather- Severe Flood



- Each risk can now be given a **risk number** to **draw up a simple chart** which **lists all the risks** so far considered.

- **Risk summary Chart** will include:

  -risk **number**,
  -a short **description,**
  -probability **rating**,
  -impact **rating** and
  -risk owner.

	Risk summary Chart			
Risk No.	Description	Probability Rating	Impact Rating	Risk Owner
1.	Severe Flood	Medium	High	Mr. X
2.				

Figure: Risk Summary Chart

Probability of risk has to be assessed using:

- **Experience and**
- Statistical **data ie.** Historical weather **Charts,**
- Close-out **reports** from previous projects

Impact **h**as to be assessed taking into account all the:

- available **data,**
- past project **histories** and
- expert **opinion.**

Step-4: Risk Evaluation

- After the preparation of Risk summary Chart, a **quantitative analysis can now follow**, **which is known as Risk evaluation.**

- Now, **comparative values**, often to **scale 1-10, are given to the probability and impact of each risk**.

- By drawing up a **matrix of the risks**, an **order of importance or priority** can be established**.**

Question: Describe the process of risk evaluation of a project.

Risk Evaluation

Exposure rating:

- By **multiplying** the **impact rating** by the **probability rating**, the **exposure rating** is obtained.

- A **convenient indicator**, which may be used **to reduce the list** to only the top dozen, that require serious attention.

- But an **eye should always be kept on other minor ones**, some of which may **suddenly become serious** if unforeseen circumstances arise.

- Exposure table (Figure) shows clearly that the **higher the value, the greater the risk** and **more attention** it must receive to manage it.

Exposure Table:

Description of Risk: **Severe Flood**

Exposure Table- 1. Sever Flood								
	Probability							
	Rating		Very Low	Low	Medium	High	Very High	
Impact		**Value**	**1**	**2**	**3**	**4**	**5**	
	Very High	**5**						
	High	**4**			**3x4=12 (1)**			
	Medium	**3**						
	Low	**2**						
	Very Low	1						

Exposure Rating

5 X 5 Matrix

Number the Rating:

- To quantify both the **impact and probability** is to number the ratings from 1 for very low to 5 for very high.

- By multiplying the appropriate numbers in the boxes, a **numerical exposure rating** is obtained.

- **Numerical exposure rating gives a measure of seriousness and importance** for further investigation.

- If the impact is rated 3 (ie. Medium) and the probability 4 (ie. High), the exposure rating is **3x4=12.**

- Establish lists of prioritized risks.

5 X 5 Matrix

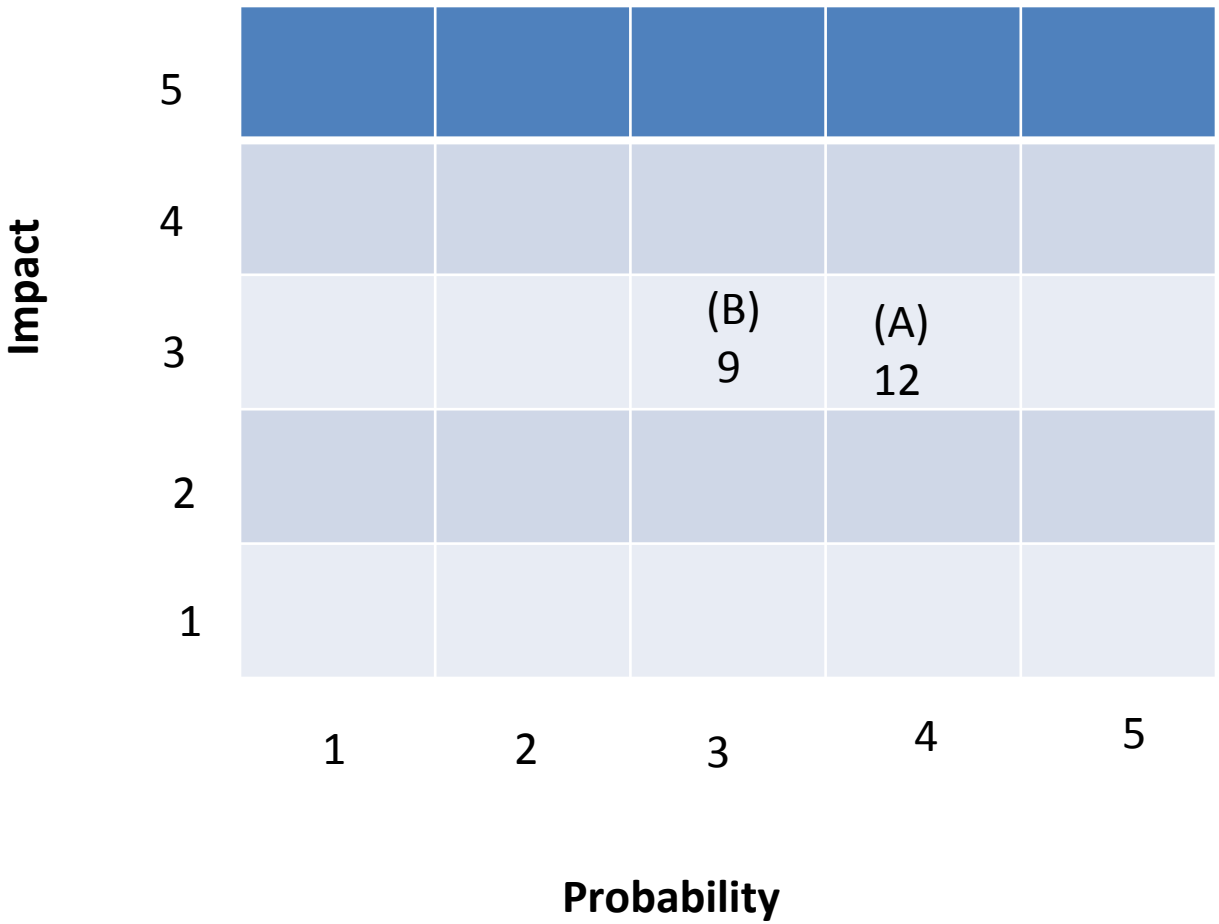


Figure: 5x5 matrix

Example:

Risk A:

Impact=3

Probability=4

Risk rating=3x4=12

Risk B:

Impact=3

Probability=3

Risk rating=3x3=9

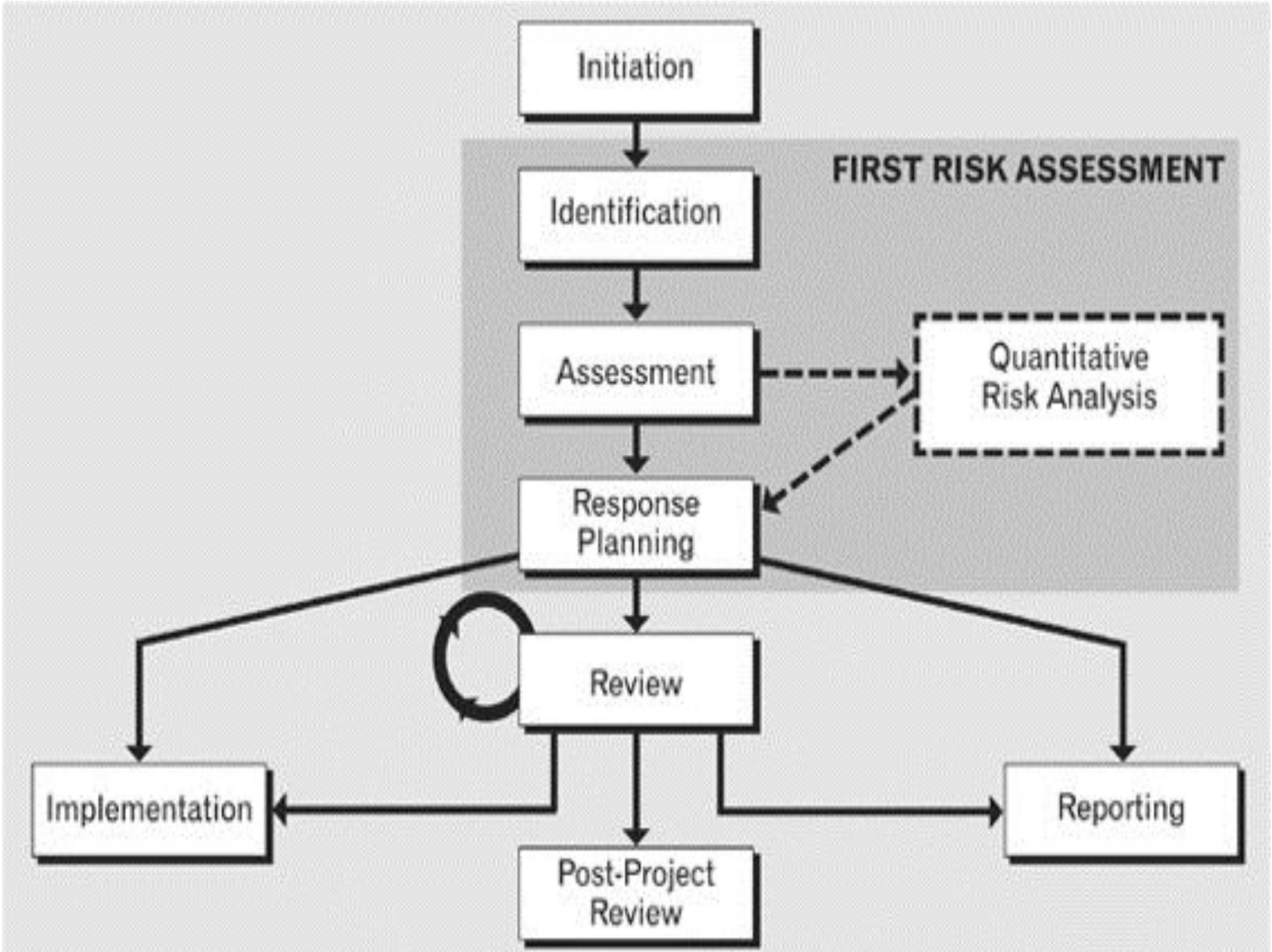
5 X 5 Matrix

Stage 5: Risk Management

- Having **listed and evaluated the risks and established a table of priorities**, the next stage is to **decide how to manage the risks.**

- **Manage the risks**, means **what to do about them and who should be responsible for managing them.**

- A **risk owner** to be appointed to every risk, who has to monitor and control the risk.


Initiation
FIRST RISK ASSESSMENT
Identification
Assessment
Quantitative
Risk Analysis
Response
Planning
Review
Implementation
Reporting
Post-Project
Review

Risk Owner

•Employed by project management team.
•An individual or team
•Well trained
•Responsible for managing and mitigating effects of risks by monitoring, assessing, developing response plan and setting up strategies to execute during risks.

Rules of Risk Owner:

- Owns risks
- Determine risk rating,
- Reassess or change rating.
- Implement risk response plan
- Monitor and reports.

Options Available

Options available to the Project Manager (PM)/Risk Owner when he faced with a set of risks:

- **Avoidance** – keeping away from.
- **Reduction** - act of making something smaller or less.
- **Sharing** - process of dividing and distributing.
- **Transfer** - move from one to another.

Options available to the project manager when he faced with a set of risks (cont):

- **Deference** – to put off (an action or event) to a later time; postponement.
- **Mitigation** - to lessen in severity
- **Contingency** - something that might happen in the future
- **Insurance** - protection from financial loss.
- **Acceptance** - action of consenting to receive or undertake something offered.

Options for a set of Risk faced by PM/Risk Owner are explained with

Example:

"Owner of **semi-detached** house **decides to replace part of his roof with solar panels** to save on his hot water heating bill".





Risk 1 : **Installer may fall off the roof**.

Option: Transfer –Employ a builder who is covered by insurance.

Risks can all be managed by applying one or several of options available to Project Manager:

Risk 1 : **Installer may fall off the roof**.
Option: Transfer –Employ a builder who is covered by insurance.

Risk 2: Roof may leak after completion.
Option: Transfer – Insist on a two-year guarantee for the work.

Risk 3: Panel may break after installation.
Option: Insurance – Add the panel replacement to the house insurance policy.

Risk 4: Birds may befoul the panels..
Option: Mitigation – Provide access for cleaning.

Risk 5: Electronics control may not work.
Option: Reduction – Ensure a control unit is used which has been proven for a number of years

Risk management (cont..)

Risk 6: Heat recovered may not be sufficient to heat the water on a cold day.

Option: Contingency – Provide an electric immersion heater for cold spells.

Risk 7: It may not cover the cost if the house is sold within 2-3 years.

Option: Deference – Wait for three year before selling the house.

Risk 8: Cost of the work will probably never pay for itself.

Option: Avoidance – Don't go for the work.

Risk 9: Cost may escalate due to the unforeseen structural problems.

Option: Sharing – persuade the neighbor in the adjoining house to install a similar system at the same time.

Risk Monitoring

- To control of the risks, a **risk register should be maintained** which **lists all the risks** and **their method of management.**
- **Risk owners** if appointed, will be identified on the register.
- Risks must be **constantly monitored** at preset periods.
- Register must be **reassessed and if necessary amended**, to show the latest position.
- As the projects proceed, the **risks reduce in number**; contingency **sums** may be allocated to other area of the project.
- If **new risks emerge**, they must be taken care off.

Thanks