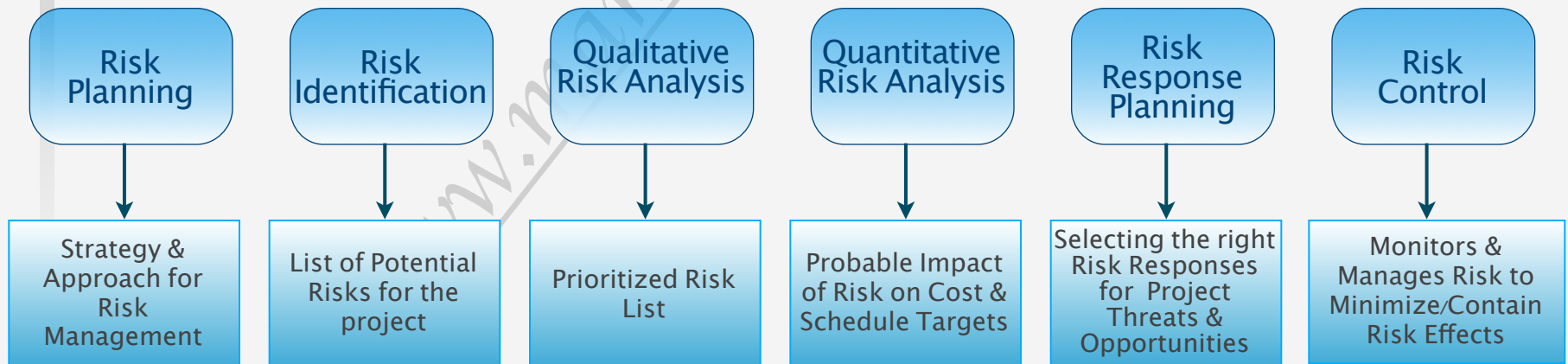
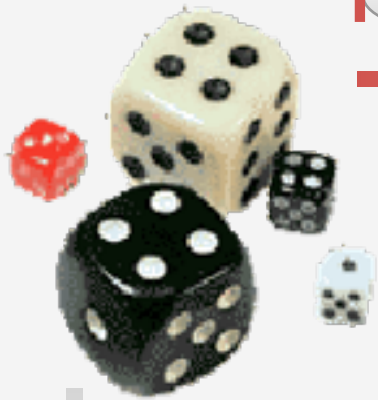


Understanding the internal & external project influences that can cause project failure/compromise



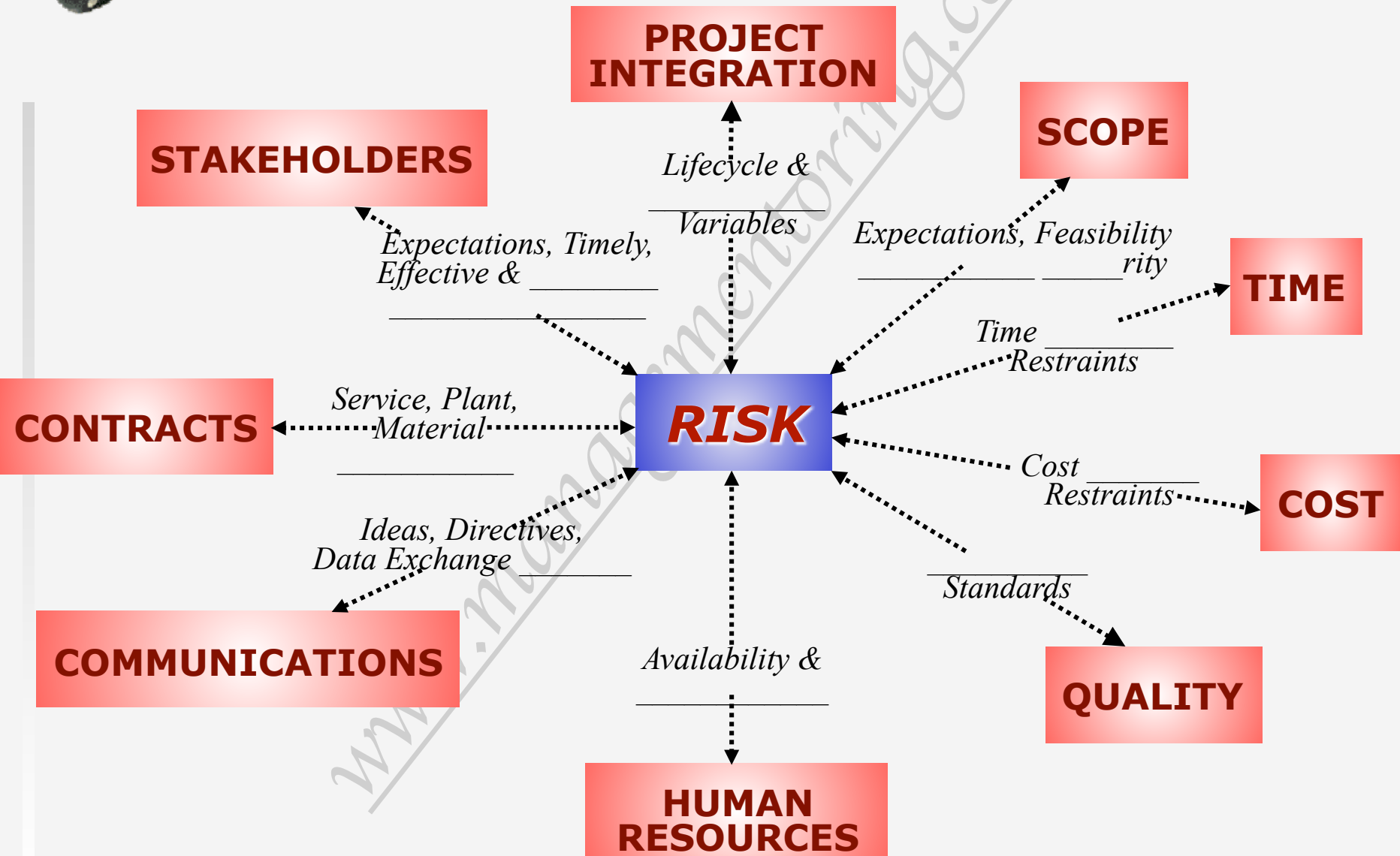
Project Risk Management

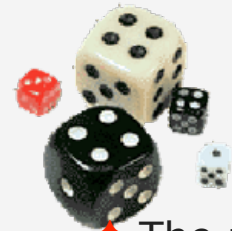
Chapter 11 in the *PMBOK*[®] *Guide*
5th Edition





The Integration Of PMBOK® Guide Knowledge Areas With Project Risk Management





The Risk Paradigm

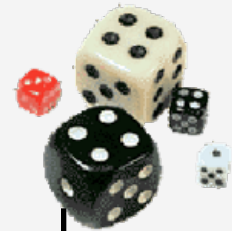
Behold the turtle - he/she only makes progress when he/she sticks the neck out

- ◆ The risks that activities bring are an exchange for the benefits (thrill) accrued by accepting the risk, specially if they are in balance with the reward that may be obtained (gamble?!)
- ◆ Risk management needs to be addressed throughout the project lifecycle because of the dynamics of the project environment
- ◆ An organization's commitment for addressing risk management is evidenced by the dedication to _____
- ◆ Most organizations have/leverage a _____ to facilitate the ease of reference for managers of current and future projects
- ◆ Risk conditions could include aspects of the organization's or project's environment that may contribute to project compromise such as:
 - ❖ _____ *practices*
 - ❖ *Lack of _____ systems*
 - ❖ *Concurrent multiple _____*
 - ❖ *Dependency on _____ who cannot be controlled*

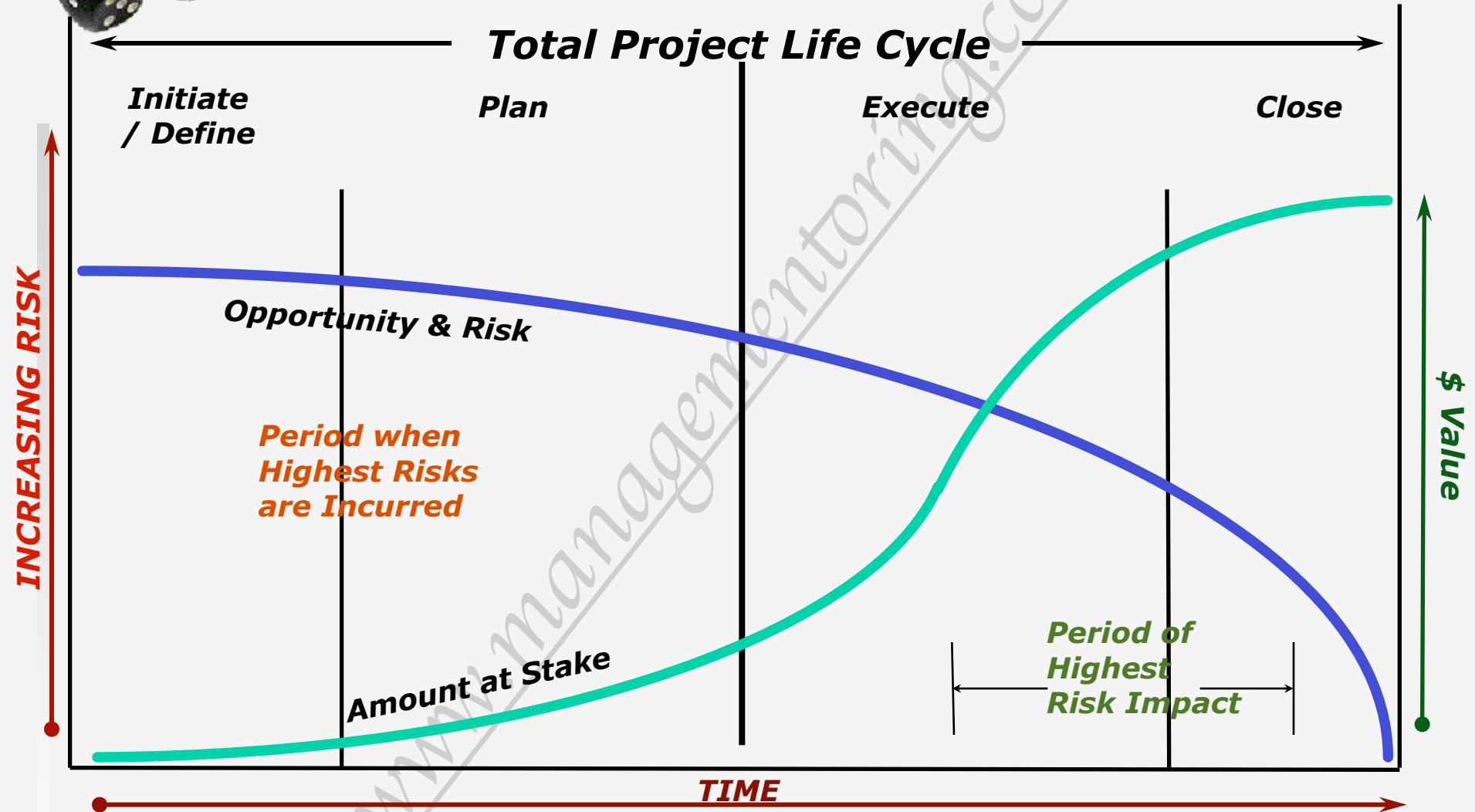
For this exam, please assume that you are using _____/Organizational Process Asset when selecting _____



1. The Probability of risk occurrence (Chance)
2. The possible range of outcomes (Impacts)
3. Timing (When) the risk occurs (in the project lifecycle)
4. The frequency of the risk event (How often)



Quantum Of Risk During Different Project Phases



Amount at Stake = Amount sunk into the project + _____



Introducing Risk Management Planning

- ◆ The Plan Risk Management process is the foundation for all the Risk processes that follow
 - ❖ *The Risk Management Plan assures _____*
 - ❖ *"Appropriate" is determined based on _____, and the _____*
 - ❖ *The most important function the risk management plan serves is _____*
- ◆ This process is concerned with detailing the Risk Management Plan for the project
 - ❖ *_____ _____ planning phase of the project, and provides an effective roadmap for addressing challenges with _____ & procurement, etc.*
- ◆ The risk management plan will:
 - ❖ *Detail and document an organized, comprehensive, and interactive risk management strategy for the project, explaining how the ongoing risk management process will be:*
 - _____
 - Risk identification
 - Qualitative & quantitative analysis
 - _____
 - Monitored, and
 - Controlled
 - Document responsibility for _____ risk areas; how _____ plans will be implemented, and how _____ will be allocated
 - ❖ *Help ensure that the level, type, and visibility of risk management are commensurate with both the risk and importance of the project to the organization to*
 - Provide sufficient resources and time for risk management activities
 - Establish an agreed-upon basis for evaluating risks
 - Ensure that salient risks management is incorporated in the project plan
- ◆ This plan will not address responses to individual risks – this should be accomplished in the risk response plan/project risk log/risk register, which is a dynamic extension of the risk plan

Having a plan to manage risk, allows one to reflect on risk possibilities & preemptive actions instead of having to innovate & deal with the fall-out and predicament posthumously

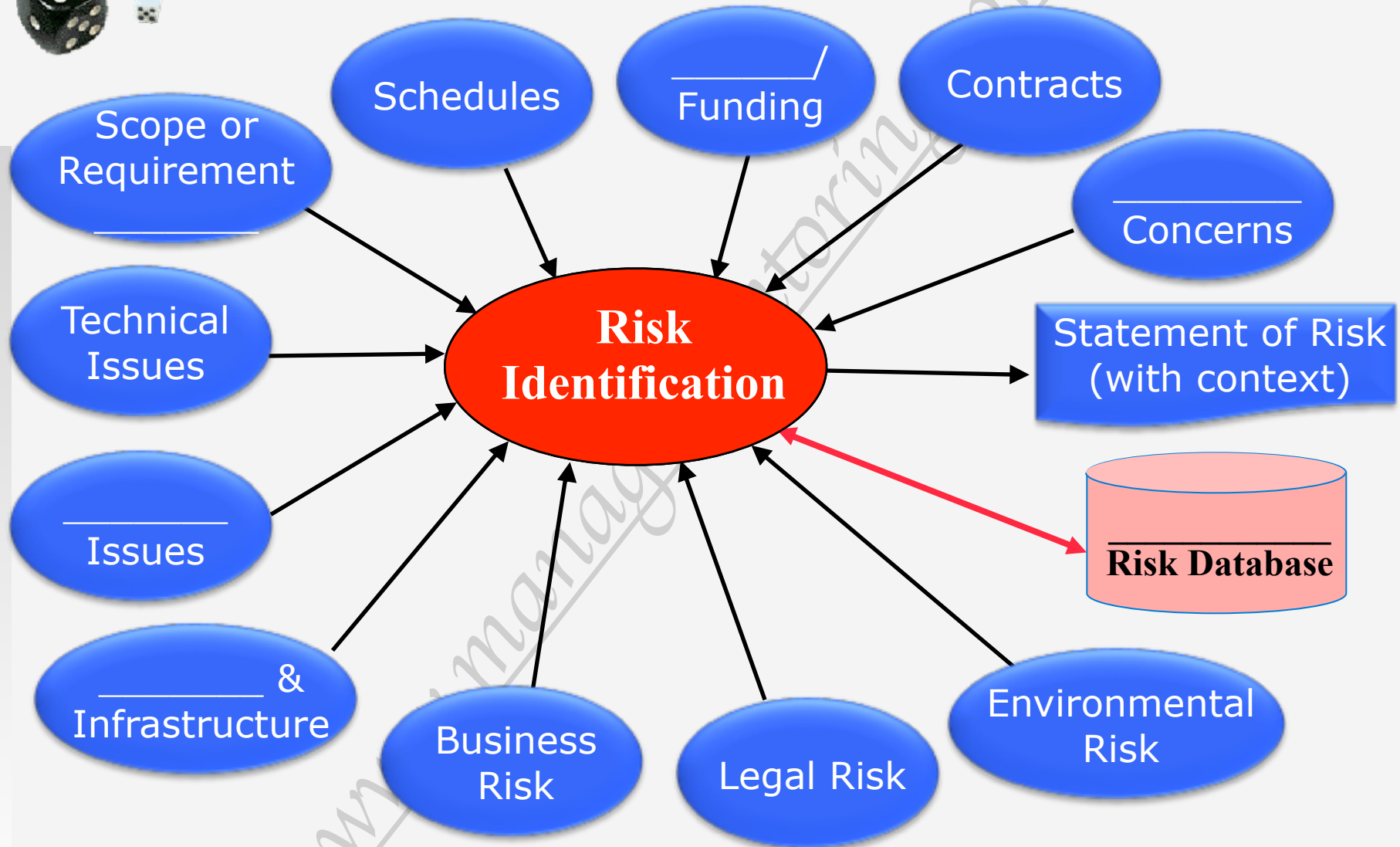




Plan Risk Management - T & T

1. Analytical Techniques are used to understand and define the overall risk management context of the project
 - ❖ *Risk management context is a combination of _____ and the strategic _____ of a given project based on the overall project context*
 - ❖ *_____ scoring sheets may be used to provide a high-level assessment of the risk exposure*
 - ❖ *These assessments can help the project team to _____ for risk management activities*
2. Expert Judgment should be considered from groups or individuals with specialized training or knowledge on the subject area to ensure a _____ of the risk management plan
3. Meetings
 - ❖ *The quality of this plan is dependent on the productive meetings of thoughtful individuals*
 - Attendees at these meetings may include the PM, selected project team members (primary participants) and relevant stakeholders _____
 - The purpose of these meetings is to create the Risk Management Plan and to determine the _____ for risk management activities
 - The key outcomes of performing these planning meetings help to:
 - Ensure risk _____ budget
 - Schedule activities associated with risk as an inclusion in the project _____
 - Document _____ responsibilities for this project
 - Review and establish necessary risk _____
 - Define or _____ for risk categories
 - Provide definitions of terms like _____ levels, etc.
 - Define or modify the _____ for this project

Sources Of Risk To A Project



In the early stages of the project there may be fewer risks (because their reality may not have been realized) - later on the list of risks can be expected to increase



Identify Risks - T & T

◆ Risk identification techniques include:

1. Documentation reviews

- Project documents, plans, & assumptions
- Contracts
- Organizational Database of Risks
- History from past projects

2. Information gathering techniques

- Brainstorming sessions
- Delphi technique
- Interviewing
- Root cause analysis

3. Checklist Analysis

- Checklists can be prepared on the basis of available historical data of similar project in the past
- The lowest level of the RBS may also serve as a risk checklist

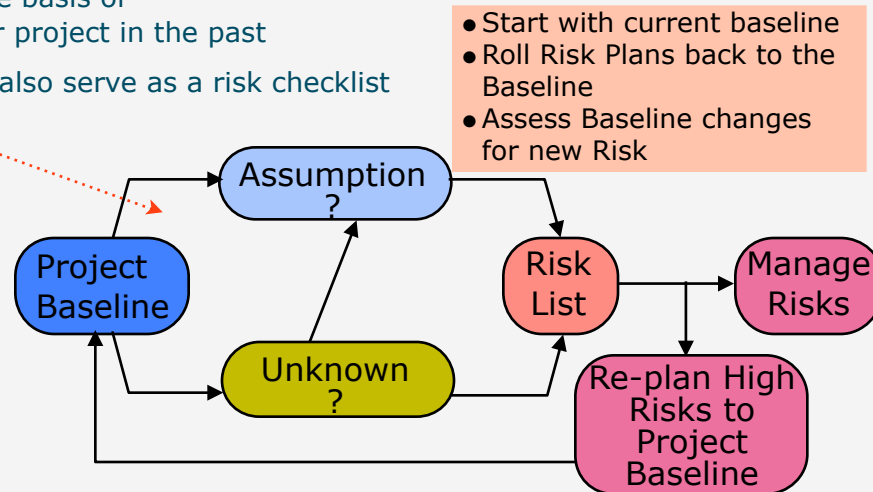
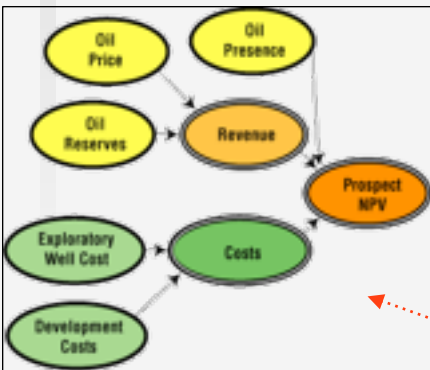
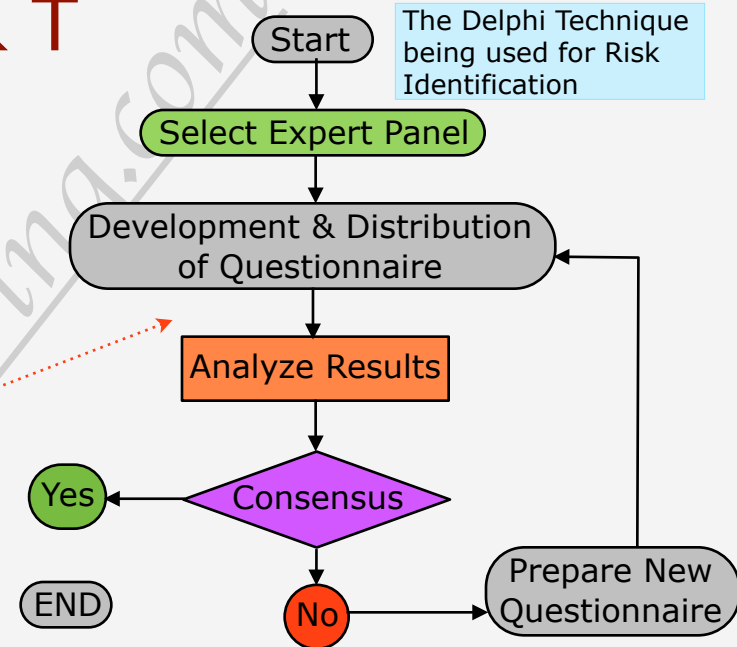
4. Assumption analysis

5. Diagramming techniques

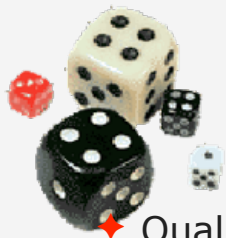
- Cause & effect diagrams
- System or process flow diagrams
- Influence diagrams

6. SWOT Analysis

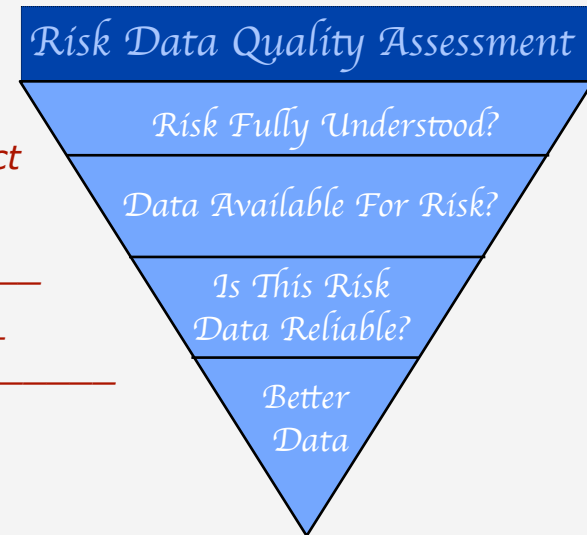
7. Asking Experts/Consultants



Introduction To Qualitative Risk Analysis



- ♦ Qualitative analysis of risks is the first and somewhat shallow assessment that needs to be done on individually identified project risks to justify them in terms of seriousness
 - ❖ Will clearly indicate a priority gradation of project risks using a subjective approach to organizing and prioritizing risks providing a rapid and cost effective means of
 - _____
 - _____
 - ❖ Provides a through, methodical, and logical approach to classify, and identify risks according to their probability & potential impact
- ♦ The outcome of Qualitative Risk Analysis ascertains:
 - ✓ A Listing of risks that can be directly used in _____
 - ✓ Pointers for risks that require _____ via _____ risk analysis along with an overall risk ranking for _____
- a.k.a Relative Ranking of Risk
 - ✓ Causes/source of Risk
 - ✓ Priority for project risks in each class _____
 - ✓ Risks that may proceed directly to risk response planning, and those _____
 - ✓ Documentation for "Watch List" risks and _____
 - ✓ Trends in project risks based on _____
- ♦ The "stage" of the project in its lifecycle will also have an effect on this process
 - ❖ In the _____ phases (planning) there may be more time to analyze & respond to risk
 - ❖ When looming deadlines near the project's end, there may be a _____ to address _____ risks



Perform Qualitative Risk Analysis - Outputs...

4. List of prioritized risks - for required response in the near-term

- Risks and conditions can be prioritized by a number of criteria
These include rank (high, moderate, and low) or WBS level
- Risks may also be grouped by those that require an immediate response and those that can be handled at a later date
- Risks that affect cost, schedule, functionality, and quality may be assessed separately with different ratings
- Significant risks should have a description of the basis for the assessed probability and impact



Here's the 5 day forecast. To be honest, after tomorrow, your guess is as good as mine!

5. Risks classified as high or medium would be prime candidates for _____ and _____

6. Watch-list of low-priority risks

7. Trends in qualitative risk analysis results will help _____ making it more or less urgent and important

2. The project's **Assumptions Log** (if it exists) will need to be **updated** with all the _____ and _____ assumptions that _____ as the project _____ through _____



Quantitative Risk Evaluation

Risk Description	Probability % (0.1-0.9)	Impact (1-3)	Severity % (P*1)	Risk Response Plan	Schedule Adjust- ment	Cost Adjust- ment
Resources may be constrained due to team members working on multiple projects with conflicting priorities	70%	2	1.4	Schedule bi-weekly meetings with the Sr Mgmt stake holders to provide status updates and resolve any resources/priority conflict that are causing schedule delays.	+20 hrs	\$0.00
Significant schedule delays may occur because the team is unfamiliar with the new application	80%	3	2.4	<ul style="list-style-type: none"> Send the Sr. Team Lead to training on the product before implementation begins. 	+40 hrs	\$2,000
				<ul style="list-style-type: none"> Contract with vendor for consulting services during the first week of planning and the critical week of implementation 	0 hrs	\$10,000

Risk Analysis - is the process of defining and analyzing the dangers to individuals, businesses and government agencies posed by potential natural and human-caused adverse events. A risk analysis report can be either quantitative or qualitative

- ◆ In Quantitative Risk Analysis, an attempt is made to _____ losses if a particular event takes place
 - ◆ Qualitative Risk Analysis, which is used more often, _____ predictions of loss
- Instead, the qualitative method _____ devising _____ should



Duration Estimation Using 2 _____ Methods

Task	Optimistic (O)	Most Likely (ML)	Pessimistic (P)	β Mean	Δ Mean	Standard Deviation (σ)	Variance (σ^2)
Lay Foundation	100	120	150	121.7	123.3	25.2	633.3
Erect supporting pillars	150	180	240	185.0	190.0	45.8	2100.0
Lay the road slabs	120	180	270	185.0	190.0	75.5	5700.0
Erect electrical lamp posts lay electrical conduits	50	60	120	68.3	76.7	37.9	1433.3
Erect side walls	90	120	180	125.0	130.0	45.8	2100.0
Complete concrete finishing & painting	45	60	90	62.5	65.0	22.9	525.0
Total	555	720	1050	747.5	775		12491.6

β Distribution Mean = $[(P+4ML+O)/6]$ Δ ar Distribution Mean = $[(P+ML+O)/3]$

Std Deviation = $SQRT(\sum (Xi(\text{Data point})-\text{Mean})^2/(N-1))$

Where N is the number of data points, i=1 to N

Standard deviation is based on a sample and is a measure of how widely values are dispersed from the

Variance for each activity is _____

Standard Deviation for multiple activities is _____

Sensitivity Analysis

(a.k.a. "what-if" analysis is a risk analysis technique not a risk identification technique - FYI)

In Design of Experiments one studies _____
_____ (Plan Quality Technique)

In Sensitivity Analysis _____ (Perform
Quantitative Risk Analysis Technique)

In both disciplines one strives to obtain _____

Cost Element	Estimate	15% Wage Increase	10% Price Hike	Both
Wages & Salary	1000	1150	1000	1150
Raw Material	2000	2000	2200	2200
Processing Expenses	600	600	600	600
Indirect Costs	200	200	220	220
Tax	300	300	330	330
Total Cost	4100	4250	4410	4560
% Cost Increase		1.04%	1.08%	1.11%

- ◆ Methodology
 - ❖ Choose a few variables with significant impact to project
 - ❖ Define the expected range of variation
 - ❖ Assess effect of _____
- ◆ For example, _____ determining break-even points based on different assumptions
- ◆ Spreadsheet software, _____





Expected Monetary Value (EMV)

- ◆ EMV is the result probability of the risk occurring multiplied by the impact of the loss, if the risk does occur
 - ❖ *It helps to evaluate what the result of the money or time that would be lost if a risk were to materialize*
 - ❖ *In the example below, this project has an EMV of (\$58,250), this means that you need to put aside \$58,250 in your "risk reserve account" for potential risks*

Risk	Probability	Impact	EMV
A	20%	\$ (-100,000.00)	\$(20,000.00)
B	90%	\$ 10,000.00	\$ 9,000.00
C	5%	\$ 30,000.00	\$ 1,500.00
D	65%	\$ (-75,000.00)	\$(48,750.00)
Total			\$(58,250.00)



Plan Risk Responses - T & T....

(Negative Risk Response Strategies)

3. Mitigation

- Mitigation seeks to _____
- Mitigation cost should _____
- Examples of this strategy includes _____, etc.

4. Accept (Passive or Active Acceptance)

- This strategy is adopted because _____ accepting the risk means you understand the risk, its _____, and you choose to _____
- This technique also indicates that the project team has decided _____ (a.k.a., _____ Acceptance) or is unable to _____ any other suitable _____ strategy
 - If the risk occurs, the project team will react appropriately
 - This is a common strategy when the consequences or probability that a problem will occur are minimal
 - As long as the consequences _____, this strategy makes sense
- The most common active acceptance strategy is to establish _____ to handle the risks



Q: The amount of money or time needed above the estimate to reduce the risk of overruns of project objectives to a level acceptable to the organization is normally referred to as the:

- Executive reserve
- Project manager's slush fund
- Contingency reserve
- Mitigation buffer

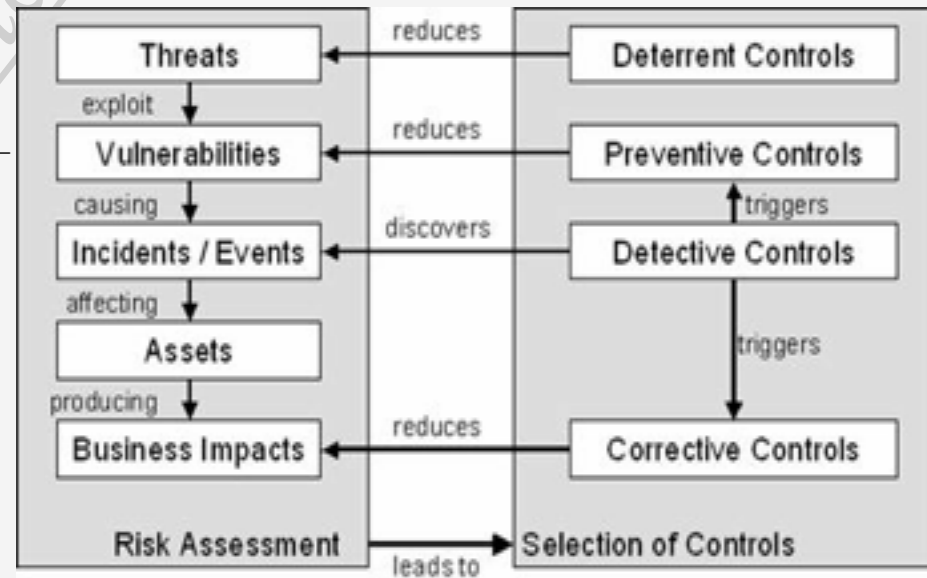
Please review the definition of answer ?? in the Glossary of the text book now!



Goals Of Risk Control



- ◆ As a project progresses, its risks may change due to unforeseen factors
 - ❖ _____
- ◆ Essential that the identified project's risks are continuously _____, regularly _____ and _____
 - ❖ _____ *but should be a mixture of periodic and event based reviews*
- ◆ Particular care must be taken to _____ risks to a project when:
 - ❖ _____
 - ❖ _____
 - ❖ _____
- ◆ Assess each identified risks regularly to _____
 - ❖ _____
 - ❖ _____
 - ❖ _____
 - ❖ _____
 - ❖ _____ *due to trends in the project progression*
- ◆ The Project team will also need to
 - ❖ _____
 - ❖ _____
 - ❖ _____
- ◆ Each key risk should be discussed at _____ progress meetings



Overview To Risk Monitoring & Control



- ◆ Planned risks responses that are documented in the risk register will be executed during the project's lifecycle when risk events occur
 - ❖ _____, *it may be a good idea to evaluate the risk response in context!*
 - ❖ *This process requires _____ risks that may creep in (especially those on the watch list)*
 - ❖ *Since the project operates in a dynamic environment, there should be _____ :*
 - _____
 - _____
 - _____
 - _____
 - _____
 - _____
- ◆ Monitoring and Control is concerned with:
 - ❖ *Documentation of the _____, and*
 - ❖ *Keeping records of metrics that _____*
 - ❖ *Modifying project contingency reserves for _____ and/or _____ to be _____*
 - ❖ *Making effective decisions in _____ occurrence*
- ◆ This is an active process that requires participation from the project manager, the project team, key stakeholders, and, in particular, risk owners within the project
- ◆ Periodical communication with project stakeholder is required to _____ level of the project



Control Risks - Outputs

4. **Project Documents** that may be **updated** as a result of the Control Risk process include, but are not limited to:

❖ *Risk register updates*

- ➔ _____
- ➔ _____
- ➔ _____
- ➔ _____

❖ *Outcomes of risk reassessments, risk audits, and periodic risk reviews*

- ➔ These outcomes may include identification of new risks, updates to probability, impact, priority, response plans, ownership, and other elements of the risk register
- ➔ Outcomes can also include closing risks that are no longer applicable **and releasing their associated reserves**

❖ *Actual outcomes of the project's risks and of the risk responses*

- ➔ This information can help project managers to plan for risk _____, as well as _____

5. **Organizational Process Assets (updates)**

❖ *All the processes of Risk Management will produce information and artifacts that can be leveraged for future projects in the organization*

❖ *Augment the organizational process assets like the risk database, RBS, and risk related inputs from the project's experiences*

- ➔ _____
- ➔ _____

❖ *Updates to risk identification checklists*

- ➔ Updated Checklists will help with the risk management of future projects

