

Project Risk Management

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PMG 510
Project Risk Management

Lecture 4



Outcomes of the chapter:

- **Risk management context:**
- **Components of the RM context**
- **Designing a risk register**
- **Project Risk Management Process**
- **Project Risk Management Planning**

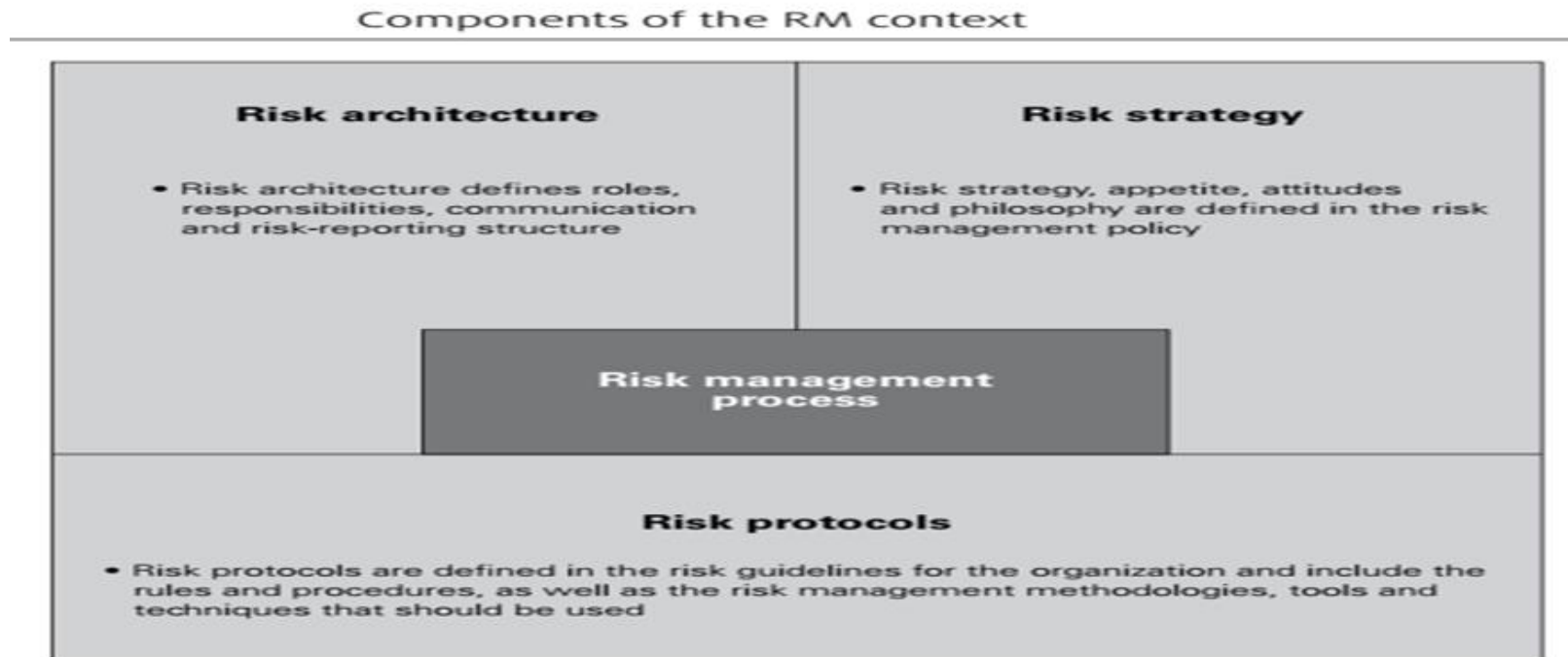
Risk management Standards

Risk management context:

- There needs to be a clear understanding of the risk management process, followed by a clear definition of the framework that supports the process.
- Because the risk management framework is a supportive structure.
- it is shown in the next Figure as a series of components built around and supporting the risk management process.

Risk management Standards

Risk management context:



Risk management Standards

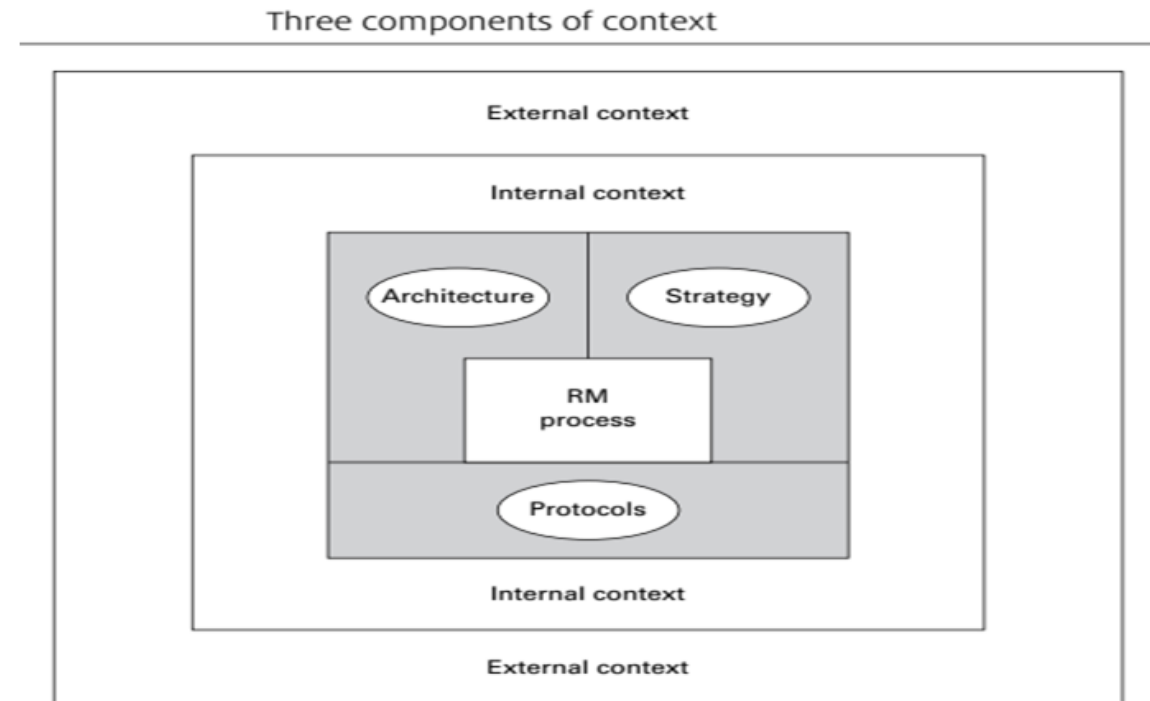
Components of the RM context:

- Risk architecture: defines roles, responsibilities, communication and risk-reporting structure.
- Risk strategy: Risk strategy, appetite, attitudes and philosophy are defined in the risk management policy
- Risk protocols: are defined in the risk guidelines for the organization and include the rules and procedures, as well as the risk management methodologies, tools and techniques that should be used

Establishing the Context

Scope of the context :

- The components the context are the risk management context, internal context and external context. The relationship between the three contexts is illustrated in the Figure.



Establishing the Context

The three components of context may be considered as follows:

1- Risk management context:

- Has already been described as the risk architecture, strategy and protocols or the risk management framework within the organization.
- **This framework must fulfil two functions:**
 1. Provide support for the risk management process within the organization;
 2. Ensure that the outputs from the risk management process are communicated to internal and external stakeholders.

Establishing the Context

The three components of context may be considered as follows:

2- Internal context:

- **Internal context** refers to **the organization itself**, the activities it undertakes, the range of skills and capabilities available within the organization, and how it is structured.
- **Internal stakeholders** and their expectations are part of the internal context.
- Internal context may be considered to be **the strengths and weaknesses** within the organization.

Establishing the Context

The three components of context may be considered as follows:

2- Internal context:

- The FIRM (Financial, Infrastructural, Reputational, Market Place) risk scorecard offers **one mechanism** for evaluating the internal and external context of an organization, but other approaches may be employed, including a SWOT analysis.
- Many organizations use the **political, economic, social, technological, legal and environmental/ethical (PESTLE)** risk classification system. The PESTLE risk

Establishing the Context

The three components of context may be considered as follows:

3- External context :

- **External** context is the environment within which the organization exists.
- This environment will include **consideration of the business sector** within which the **organization operates, external stakeholders** and their expectations and the external financial environment.
- This may be considered to be **the opportunities and threats** facing the organization.

Establishing the Context

Designing a risk register:

- A **risk register** is defined as the ‘**document used for recording risk Management process for identified risks**’.
- The **guide** adds that the purpose of **the risk register** is to **facilitate ownership and management of each risk**.
- The risk register will cover **the significant risks facing** the organization or the project.

Establishing the Context

Designing a risk register:

- The purpose of the risk register:

- ✓ is to form an **agreed record (documentation) of the significant risks** that have been identified.
- ✓ Also, the risk register will serve **as a record of the control activities** that are currently undertaken.
- ✓ It will also be a record of **the additional actions** that are proposed **to improve the control** of the particular risk.

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Establishing the Context

Designing a risk register:

Format for a basic risk register

Risk index	Risk description	Current level of risk			Controls in place
		Likelihood	Magnitude	Overall rating	
1	Serious traffic accident involving the transport of fuel/explosives. Anticipate fatalities and evacuation of 1 km radius, depending on substances involved. Potential for release of up to 30 tonnes of liquid fuel into local environment.	Low	High	Medium	Police emergency plans Highway Agency plans Local authority emergency plan Company emergency response Liaison with the families of staff Notification to customers
2	Storm-force winds affecting transport routes for up to six hours. Anticipate that most roads in the vicinity will be closed or restricted. Journey times will be extended and late deliveries probable.	Medium	Medium	Medium	Police emergency plans Highway Agency plans Investigate weather forecast Liaison with the families of staff Notification to customers

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Establishing the Context

Designing a risk register:

Project risk register

Risk index	Risk description	Current level of risk			Action to be taken
		Likelihood	Magnitude	Overall rating	
1	Project management arrangements unable to deliver project.	High	High	High	Clear project management structure in place, with executive team established to oversee project. Smaller project team runs project on day-to-day basis with expert support, as required. Clear links between various management functions to ensure co-ordinated approach.
2	Project resources inadequate with insufficient staff to support project.	Medium	Medium	Medium	Project management team established with support from other staff departments, including HR and Finance.
3	Project resources has insufficient funds for the necessary external professional technical advice.	Low	High	Medium	Sufficient budget identified to fund external advice.
4	Project not co-ordinated with other developments in organization.	Low	Low	Low	Project management team also oversees related projects with cross-representation on other groups.

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Establishing the Context

Designing a risk register:

Exhibit 1-1 Balanced Risk Management (Risk Tolerance)

Risk-seeking behavior in an organization is characterized by: • Paying too little attention to risk management • Not allocating resources for risk management • Surprise at bad news • Missing opportunities	Risk-aversion behavior in an organization is characterized by: • Over-allocation of resources on risk management • Low return on investment for risk management • Money spent on low-priority risks • Tedious processes
Balanced project risk management is characterized by: • Efficient processes that match the organization's tolerance for risk • A proactive approach to management of projects and risks • Effective allocation of resources for risk management • Well-managed projects with few surprises • Taking advantage of opportunities • Dealing with threats effectively	



Project Risk Management Guide

Project risk management delivers a number of values to the project, including:

1. **Recognizes uncertainty** and provides **forecasts of possible outcomes**.
2. Produces better **business outcomes** through more **informed decision making**.
3. Has a **positive influence on creative** thinking and innovation.
4. Creates **opportunities for improved** project monitoring and control.
5. Can aide in **addressing concerns** with respect to **overhead and time**.

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Project Risk Management Process

- Risk management, as an **integral** part of project management, **occurs on a daily basis**.
- With **proactive risk management**, we look at projects in a **comprehensive manner** and assess an **document** risks and uncertainty.
- The steps for risk management are provided below.

Project Risk Management Guide

Project Risk Management Process

1. Risk Management Planning
2. Identify Risk Events
3. Qualitative Risk Analysis
4. Quantitative Risk Analysis
5. Risk Response
6. Risk Monitoring & Control

Project Risk Management Guide

Project Risk Management Process

1. **Risk Management Planning:** Risk management planning is the systematic process of deciding how to approach, plan, and execute risk management activities throughout the life of a project. It is intended to maximize the beneficial outcome of the opportunities and minimize or eliminate the consequences of adverse risk events.

Project Risk Management Guide

Project Risk Management Process

2. **Identify Risk Events:** Risk identification involves determining and documenting which risks can affect the project. It may be a simple risk assessment organized by the project team, or an outcome of a formal risk assessment process such as the Cost Estimate Validation Process, CEVP.

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Project Risk Management Process

3. Qualitative Risk Analysis: Qualitative risk analysis involves Project teams assessing identified risks for probability of occurrence and impact on project objectives. Teams may elicit assistance from subject matter experts or functional units to assess the risks in their respective fields. Risks are measured by their “quality” in words rather than quantified in numbers.

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Project Risk Management Process

4. Quantitative Risk Analysis: Quantitative risk analysis is a way of numerically estimating the probability that a project will meet its cost and time objectives. Quantitative analysis is based on a simultaneous evaluation of the impacts of all identified and quantified risks.

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Project Risk Management Process

5. Risk Response : involves developing options and determining actions to reduce threats or enhance opportunities to project objectives. Actions are identified and assigned to parties that take responsibility for the risk response. This process ensures each risk requiring a response has an “owner.” The Project Manager and the project team identify a strategy that is best for each risk, and then select specific actions to implement that strategy.

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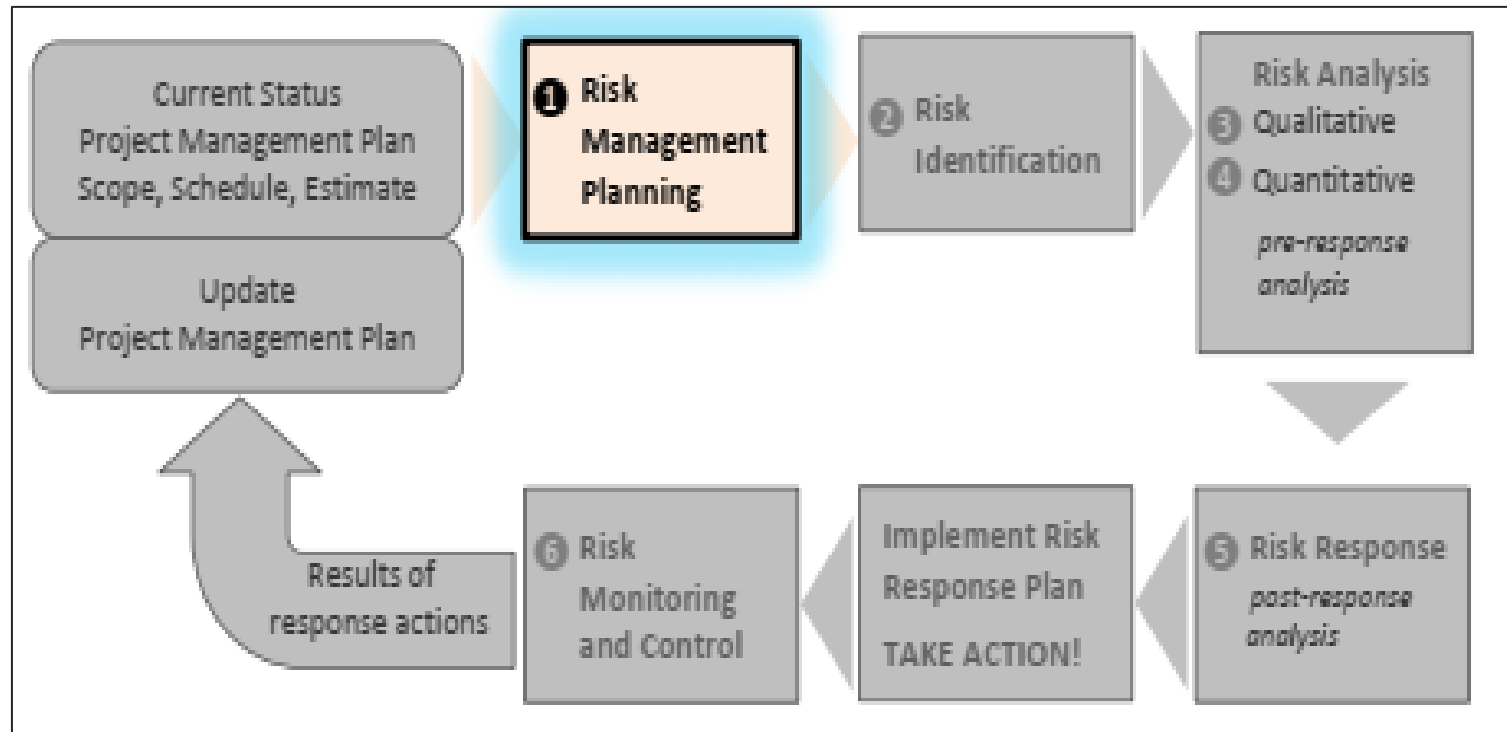
Project Risk Management Process

6. Risk Monitoring & Control: Risk monitoring and control tracks identified risks, monitors residual risks, and identifies new risks—ensuring the execution of risk plans and evaluating their effectiveness in reducing risk. Risk monitoring and control is an ongoing process for the life of the project.

- Much of project risk management relies on sound engineering judgment and knowing where to focus energy and resources. Knowing when to engage appropriate expertise is vital to good project risk management.
- provides a helpful comparison between risk and objectives for various types of risk management. For this document we are interested in project risk management.

Project Risk Management Guide

Project Risk Management Process



Project Risk Management Guide

The following table provides a helpful comparison between risk and objectives for various types of risk management. we are interested in project risk management

Type of Risk Management	Description	Sample Objectives
Generic	<i>Risk:</i> Any uncertainty that, if it occurs, would affect one or more objectives.	-----
Project Risk Management	<i>Project Risk:</i> Any uncertainty that, if it occurs, would affect one or more project objectives.	Time, cost, performance, quality, scope, client satisfaction.
Business Risk Management	<i>Business Risk:</i> Any uncertainty that, if it occurs, would affect one or more business objectives.	Profitability, market share, competitiveness, Internal Rate of Return (IRR), reputation, repeat work, share price.

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Type of Risk Management	Description	Sample Objectives
Safety Risk Management	<i>Safety Risk: Any uncertainty that, if it occurs, would affect one or more safety objectives.</i>	<i>Low accident rate, minimal lost days, reduced insurance premiums, regulatory compliance.</i>
Technical Risk Management	<i>Technical Risk: Any uncertainty that, if it occurs, would affect one or more technical objectives.</i>	<i>Performance, functionality, reliability, maintainability.</i>
Security Risk Management	<i>Security Risk: Any uncertainty that, if it occurs, would affect one or more security objectives.</i>	<i>Information security, physical security, asset security, personnel security</i>

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- Great project risk management requires good planning.
- Risk management must commence early in project development and proceed as the project evolves and project information increases in quantity and quality.

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Aim of the project risk Plan :

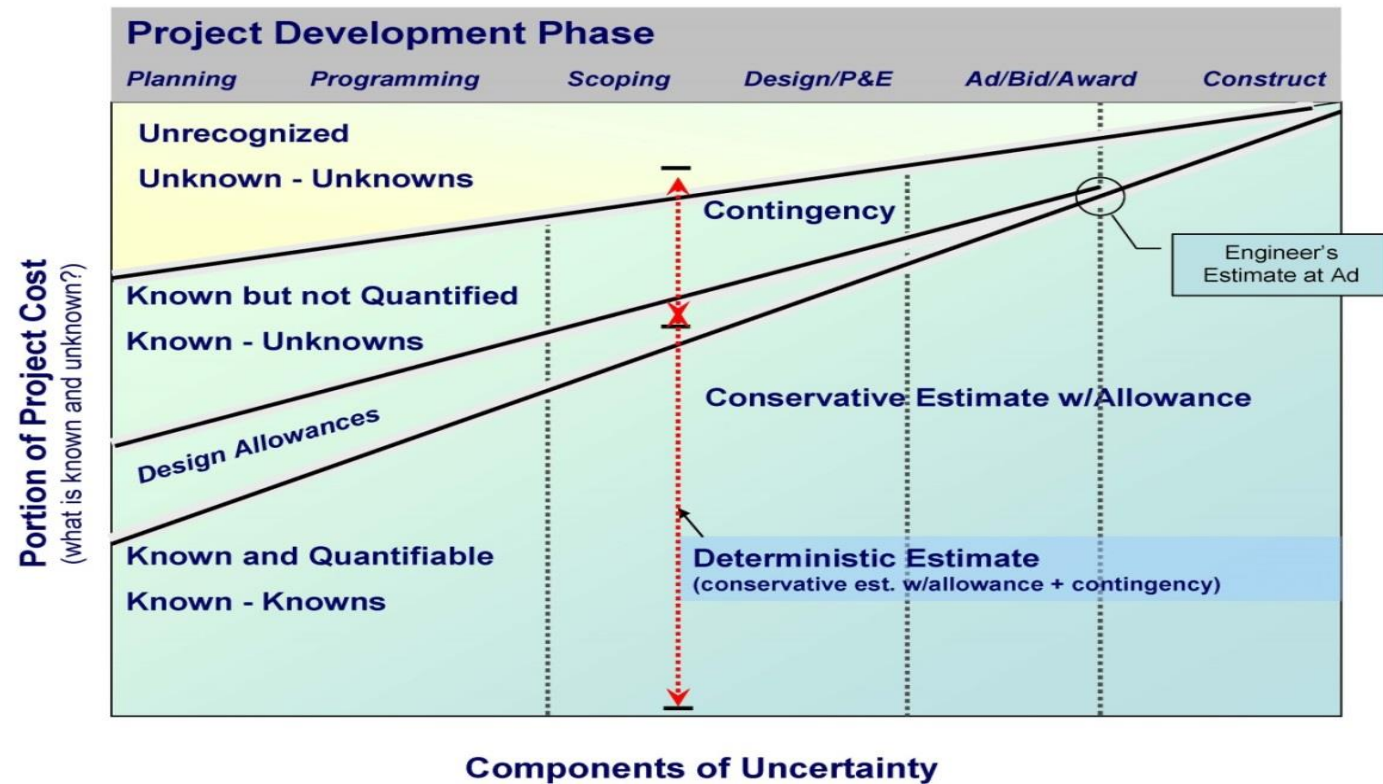
1. Identify, assess/analyze, and respond to major risks
2. Continually monitor project risks and response actions.
3. Conduct an appropriate number and level of risk assessments to update the Risk Management Plan and evolving risk profile for the project.

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Evolution of Project Knowledge Through Project Development



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Project Risk Management Planning:

1. The above figure illustrates how project information develops and evolves over time.
2. With rising project knowledge comes an understanding that contending with some elements of the project will require significant additional resources.
3. These elements could involve: scope; environmental mitigation and permitting; rising cost of right of way as corridors develop in advance of the project; utilities; seismic issues; and other elements.

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Project Risk Management Planning:

How to Plan for Project Risk Management

1. Determine the level of risk assessment for your project .
2. Incorporate risk management activities into the project schedule.
3. Make risk management an agenda item for scheduled project meetings.
4. Communicate the importance of risk management to the entire project team.
5. Establish the expectation that risk will be managed, documented, and reported.

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Project Risk Management Planning:

Tips for Risk Management Planning

- Risk assessment planning should begin early. There is a minimum level of project knowledge needed to understand what is being assessed.
- This varies depending on the point in project development at which the risk assessment is conducted (planning, scoping, design); hence, schedule risk assessments at appropriate times.

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Project Risk Management Planning:

Tips for Risk Management Planning

- At a minimum there must be an understood project scope of work, associated project cost estimate – with a basis of estimate complete, and an estimated project schedule.
- Allow a budget and time in the schedule for risk assessment, risk management, and risk response activities.
- Report on the status of project risk at regularly scheduled project meetings.

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Project Risk Management Planning:

Tips for Risk Management Planning

- Know the organization's tolerance for risk. Are Project Managers (and upper management) risk averse or risk seeking? How much risk is the organization willing to accept? Knowing the answers to these questions will help with risk management and contribute to the decision-making process when determining risk response actions.
- Contact the Strategic Analysis and Estimating Office (SAEO) and discuss the possibility of coordinating or integrating project risk assessment with value engineering

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Project Risk Management Planning:

	Project Size (\$M)	Risk Assessment Level	Notes
Less Formal Risk Assessment	0 to 10	Project Team Risk Assessment <i>Project Management Guide</i> Risk Management Plan Qualitative Tool	The project team assesses each identified risk for its probability of occurrence and its impact on project objectives. Project teams may request assistance from subject matter experts or functional units to assess the risks in their respective fields. The self-modeling spreadsheet can be used for any project.
	10 to 25	Project Team Risk Assessment Self-Modeling Spreadsheet Quantitative Tool	
More Formal Risk Assessment (Workshops)	25 to 100	Cost Risk Assessment (CRA) Workshop Quantitative Tool	The team, working collaboratively with independent subject matter experts, reviews and/or validates cost and schedule estimating and identifies, characterizes, and analyzes risks. Workshops are accomplished in a structured setting. Modeling can be accomplished with off-the-shelf software or using the self-modeling spreadsheet.
	Over 100	Cost Estimate Validation Process® (CEVP®) Workshop Quantitative Tool	



Thank You