



PERFORM QUANTITATIVE RISK ANALYSIS

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RISK PROCESSES

Processes by process group

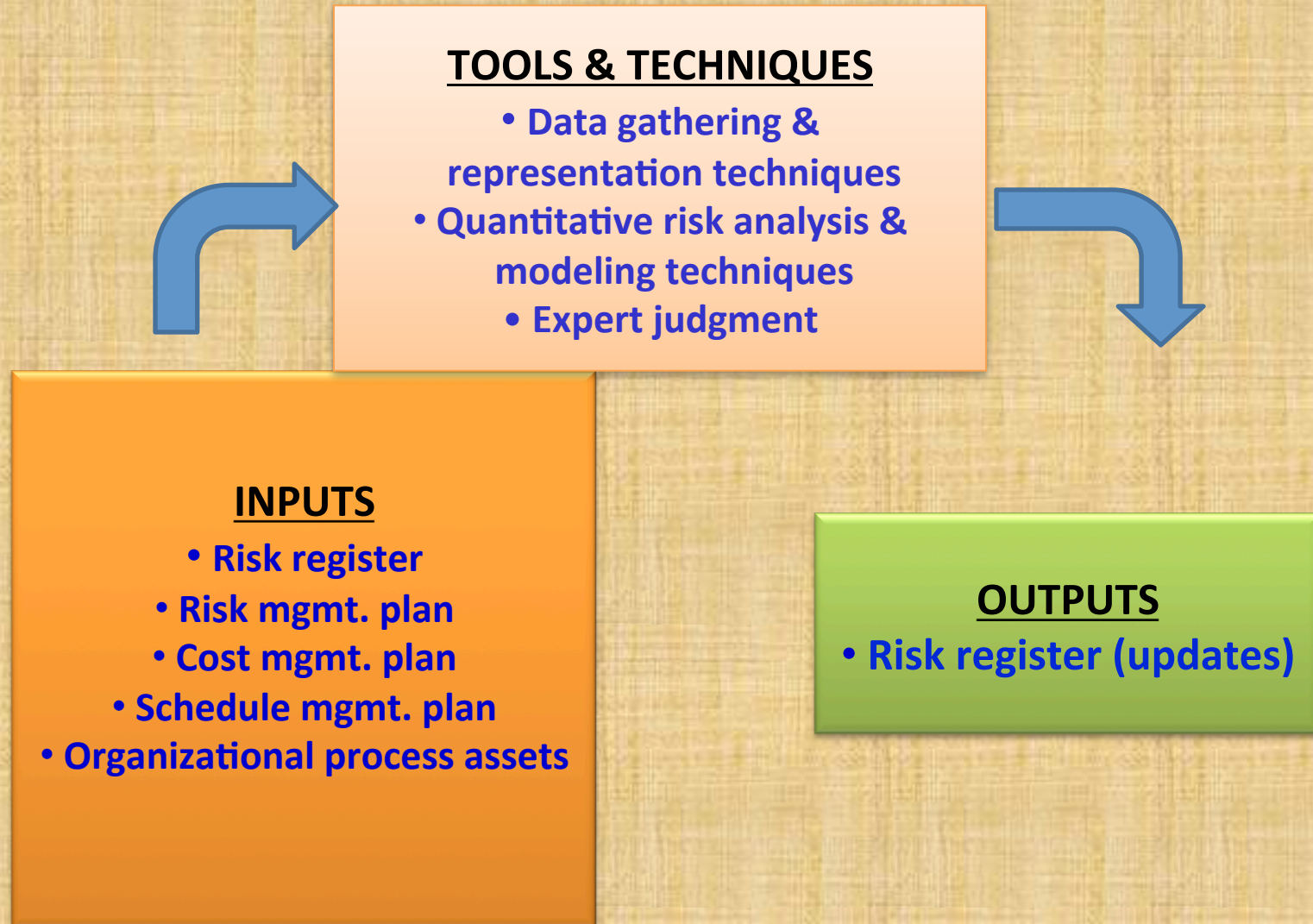
Planning	Monitoring and controlling
11.1 Plan Risk Management	11.6 Monitor and Control Risks
11.2 Identify Risks	
11.3 Perform Qualitative Risk Analysis	
11.4 Perform Quantitative Risk Analysis	
11.5 Plan Risk Responses	

PERFORM QUANTITATIVE RISK ANALYSIS

HOW DO YOU PERFORM QUANTITATIVE RISK ANALYSIS?

- **Analyze priority risks** (identified in Qualitative Risk Analysis)
- Analyzes the effect of those risk events and assigns a numerical (quantitative) rating to those risks
- It also presents a quantitative approach to making decisions in the presence of uncertainty
- The process uses techniques such as **Monte Carlo simulation** & decision tree analysis to:
 - Quantify possible outcomes for the project and their probabilities
 - Assess probability of achieving specific project objectives
 - Identify risks requiring the most attention
 - Identify cost, schedule & scope targets in the light of risk
 - Make best decisions when conditions or outcomes are uncertain
- Experienced risk managers sometime perform it directly after Identify Risk

PERFORM QUANTITATIVE RISK ANALYSIS



PERFORM QUANTITATIVE RISK ANALYSIS-INPUTS

INPUTS

Risk Register

Risk Management Plan

Cost Management Plan

Schedule Management Plan

Organizational Process Assets

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TOOLS & TECHNIQUES

Data Gathering & Representation Techniques

- **Interviewing:**
 - The info. needed depends upon type of probability distributions that will be used, e.g. three-point estimates for some commonly used distributions, and the mean & standard deviation for others
 - Documenting the rationale of the risk ranges is an important component of risk interview
- **Probability distributions** (beta and triangular) see Figure 11-14, p.298

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Quantitative Risk Analysis & Modeling Techniques

Commonly used techniques include:

- **Sensitivity Analysis**

Which risks have the most potential impact on the project (tornado diagram is used- will definitely get question in exam)

- **Expected Monetary Value (EMV) Analysis**

- Calculates average outcome from a group of conditional values when their future has events that may or may not occur
(Will definitely get question in exam)
- Multiply each possible impact by its probability (risk value), uses decision tree
- **Decision Tree diagram (see Fig. 11-15, page 299)**

- **Modeling & Simulation**

- Models that translate uncertainties at a detailed level into their potential impact
- Typically uses Monte Carlo technique
- Better for cost or schedule risk than EMV because EMV is subject to misuse

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Expert Judgement

- It is required to identify potential cost and schedule impacts, to evaluate probability, and to define inputs (such as probability distributions) into the tools
- It also comes into play in the interpretation of the data. Experts should be able to identify the weaknesses of the tools as well as their relative strengths.
- Experts may determine when a specific tool may or may not be more appropriate given the organization's capabilities and culture.

QUANTITATIVE RISK ANALYSIS - OUTPUT

OUTPUT

Risk Register (updates)

- Probabilistic analysis of the project
- Probability of achieving cost and time objectives
- Prioritized list of quantified risks
- Trends in quantitative risk analysis results