Chapter 7 : Risks Management

1. Risk Definition
2. Risk Management
3. Risk Identification
4. Qualitative Risk assessment and management
5. Quantitative Risk assessment and management

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7.1 Risk Definition

- ***Risk*** is the possibility of loss or injury.

- According to the PMBOK® Guide, ***project risk*** is “an uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives such as scope, schedule, cost, or quality.”

  Project risk is an uncertain event or condition that, if it occurs, has an effect on at least one project objective. However, the effect on the project can be :

  - Either Positive : in this case it is an opportunity
  - Or Negative : in this case it is a threat

  - Regardless, risk always involves something that will occur in the future.
  - A risk has 3 elements : an event , an probability to occur, an impact
  - A risk can be : know or unknown

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7.2 Risks Management

- ***Risk management*** focuses on identifying and assessing the risks to the project and managing those risks to minimize the impact on the project.
  - There are no risk-free projects because there are an infinite number of events that can have a negative effect on the project.
  - Risk management is not about eliminating risk but about identifying, assessing, and managing risk.
  - Risk management needs to be performed on **EACH** project
  - Risk Management needs to be performed **during ALL project life cycle to not impact time, cost and scope objectives**
  - **So Risk management is a continuous process**

7.2 Risks Management

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7.3 Risks Identification

- For PMBOK ® Guide : “determining which risks may affect a project and documenting their characteristics”
- All team members have to be involved to identify the risks
- There are several Risks categories :
  - Business risks / Customers risks
  - Technology risks
  - Human risks
  - Financial risks
  - External risks
  - …..

We can use **a Risk Breakdown structure (RBS)** to structure the different categories / sub-categories of risks → good tool to have an efficient and quality risk identification

7.3 Risks Identification

- **Risk Breakdown Structure Example**

7.3 Risks Identification

- **Tools and Techniques to identify the risks of Project**
  - **Review of Projects documents** (as Customers requirements, specifications …)
  - **Information gathering techniques** :
    - Brainstorming
    - Delphi
    - SWOT
    - …
  - **Checklists**
  - **Diagramming Methods** :
    - Cause and effect diagram
    - …

7.3 Risks Identification

- **Tools and Techniques to identify the risks of Project : Delphi**
  - The Delphi Technique is a method used to estimate the likelihood and outcome of future events. A group of experts exchange views, and each independently gives estimates and assumptions to a facilitator who reviews the data and issues a summary report.
  - The group members discuss and review the summary report, and give updated forecasts to the facilitator, who again reviews the material and issues a second report.
  - This process continues until all participants reach a consensus.
  - The experts at each round have a full record of what forecasts other experts have made, but they do not know who made which forecast. Anonymity allows the experts to express their opinions freely, encourages openness and avoids admitting errors by revising earlier forecasts.

7.3 Risks Identification

- **Tools and Techniques to identify the risks of Project : SWOT analysis**
  - **SWOT** analysis is an acronym of: **S**trengths, **W**eaknesses, **O**pportunities, **T**hreats.
  - **SWOT** analysis can be simple or complex.
  - When we use this tool we are analyzing internal factors (Strengths and Weaknesses), and external factors (Opportunities and Threats). Let's define them:

    • **Strengths**: List the advantages that the project team have that will help to reach project goals. It's important to know special skills that give it an advantage → **positive risks**

    • **Weaknesses**: List anything internal to the organization or team that could prevent to meet objectives. Something that gives a disadvantage relative to others → **negative risks**

    • **Opportunities**: An external situation or fact that could lead to a positive outcome in meeting objectives. Anything that could lead to a positive outcome

    • **Threats**: external elements that could jeopardize your project.

7.3 Risks Identification

- **Tools and Techniques to identify the risks of Project : SWOT analysis**

Those are the questions that we must ask ourselves:

- How can we **U**se strength?
- How can we **S**top each weakness?
- How can we **E**xploit each opportunity?
- How can we **D**efend against each threat?

➔ Those questions are known as **USED** strategy.

7.3 Risks Identification

- **Tools and Techniques to identify the risks of Project : SWOT analysis**

Example : http://pmdesire.com/swot-analysis-for-risk-identification/

7.3 Risks Identification

- **Identify Risks outcome : Risk Register**
  - Once the risks are identified, the Project Manager starts to create and fill **a Risks Register**

  - **Example : http://images.brighthub.com/media/7D6129_risk-log-template2.xls**

1. BASIC RISK INFORMATION					2. RISK ASSESSMENT INFORMATION					3. RISK RESPONSE INFORMATION		
Risk Number	**Risk Description / Risk Event Statement**	**Responsible**	**Date Reported** day-month-year	**Last Update** day-month-year	**Impact** H / M / L	**Impact Description**	**Probability** H / M / L	**Timeline** N/M/F	**Status of Response** N / P / PE / EE	**Completed Actions**	**Planned Future Actions**	**Risk Status** Open / Closed / Moved to Issue
Provide a unique identifier for risk	A risk event statement states (i) what might happen in the future and (ii) its possible impact on the project. "Weather" is not a risk event statement. "Bad weather may delay the project" is a risk event statement.	Name or title of team member responsible for risk	Enter the date the risk was first reported	Enter the date the risk (not the entire log) was updated	Enter here H (High); M (Medium); or L (Low) according to impact definitions	List the specific impact the risk could have on the project schedule, budget, scope, and quality. Other impacts can also be listed	Enter here H (High) M (Medium) or L (Low) according to probability definitions	Enter here N (Near-term); M (Medium-term); or F (Far-term) according to timeline definitions	Enter here N (No Plan); P (Plan but not enacted); PE (Plan enacted but effectiveness not yet known); EE (Plan enacted and effective)	List, by date, all actions taken to respond to the risk. This does not include assessing the risk	List, by date, what will be done in the future to respond to the risk	State if the risk is open (still might happen and still has to be managed); closed (has passed or has been successfully mitigated); moved to issue (risk has happened)
Example R 1	Concrete prices may increase, causing the project to go over budget	Materials Acquisitions Manager	1-Dec-2005	12-Jan-2006	M	The cost of the concrete could be as much as 50% more expensive than budgeted for, resulting in an overall cost overrun of 15% on the project	H	M	PE	10-Jan-2006: Asked concrete supplier to guarantee a price; request denied	12-Jan-2006: Investigating cost of purchasing materials now and storing them until needed	Open
Example R 2	Key supplier may lose a pending lawsuit and go out of business, creating the need to find a new supplier, which will cause schedule delays	Project Manager	15-Dec-2006	12-Jan-2006	H	Finding a new supplier, negotiating contract, and getting re-started is estimated to cause a 6-month delay	N/A	N/A	N/A	12-Jan-2006: Met with supplier to discuss options 15-Jan-2006: Spoke with other suppliers regarding availability 20-Jan-2006: Prepared contingency plan and RFP in case supplier goes bankrupt 25-March-2006: Moved risk to issue process -- supplier lost lawsuit and declared bankruptcy	N/A	Moved to issue
R 1												
R 2												

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7.4 Qualitative Risks Analysis

- The Qualitative Risks Analysis allows to rank the identify risks based on :
  - **Their probability to occur (likelihood)**
  - **Their impact on the project / organization** ..

  - We calculate the **Risk Event Rating** or **Exposure** (=P*I) of the identified risks in order to ensure that we will work on the risks with the highest probability of occurring and the most severe impact if they occur.
  - Ratings can be given a descriptive term (ex : high / medium, low) or a numetric value

- **Probability to occur (likelihood) rating** :
  - Here's an example Likelihood Scale definition :

Rating	Likelihood	Description
1	Very Low	Highly unlikely to occur. May occur in exceptional situations.
2	Low	Most likely will not occur. Infrequent occurrence in past projects.
3	Moderate	Possible to occur.
4	High	Likely to occur. Has occurred in past projects.
5	Very High	Highly likely to occur. Has occurred in past projects and conditions exist for it to occur on this project.

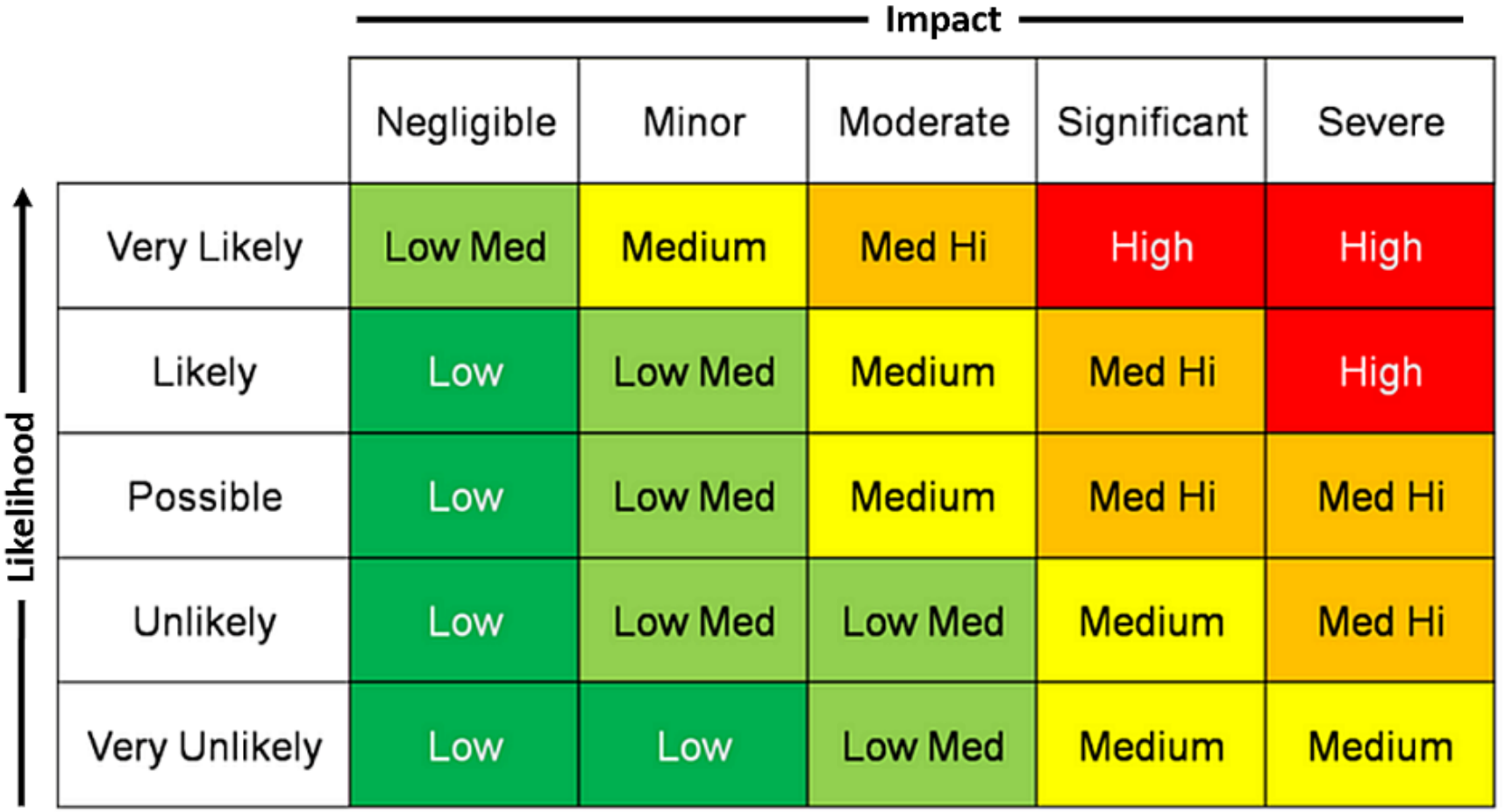
7.4 Qualitative Risks Analysis

- **Impact rating** :
  - Here's an example Impact Scale definition

Rating	Impact	Cost	Schedule
1	Very Low	No increase in budget	No change to schedule
2	Low	< 5% increase in budget	< 1 week delay to schedule
3	Moderate	5-10% increase in budget	1 - 2 weeks delay to schedule
4	High	10-20% increase in budget	2 - 4 weeks delay to schedule
5	Very High	> 20% increase in budget	> 4 weeks delay to schedule

7.4 Qualitative Risks Analysis

- With the rating scales prepared, a ***Risk Assessment Matrix*** can be created to help the Project Manager categorize the Risk Level for each risk event
- The **Risk register has to be updated with the Probability and Impact defined for each risk.** Ranking of the Risks is done to allow to highlight risks that need to be carefully monitor



	Negligible	Minor	Moderate	Significant	Severe
Very Likely	Low Med	Medium	Med Hi	High	High
Likely	Low	Low Med	Medium	Med Hi	High
Possible	Low	Low Med	Medium	Med Hi	Med Hi
Unlikely	Low	Low Med	Low Med	Medium	Med Hi
Very Unlikely	Low	Low	Low Med	Medium	Medium

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7.5 Quantitative Risks Analysis

For Information only (not part of exam)

- **Quantitative risk analysis** assigns a **projected** value(usually this value is stated in terms of cost or time) to the risks that have already being ranked by the previous process ‘perform qualitative risk analysis’.

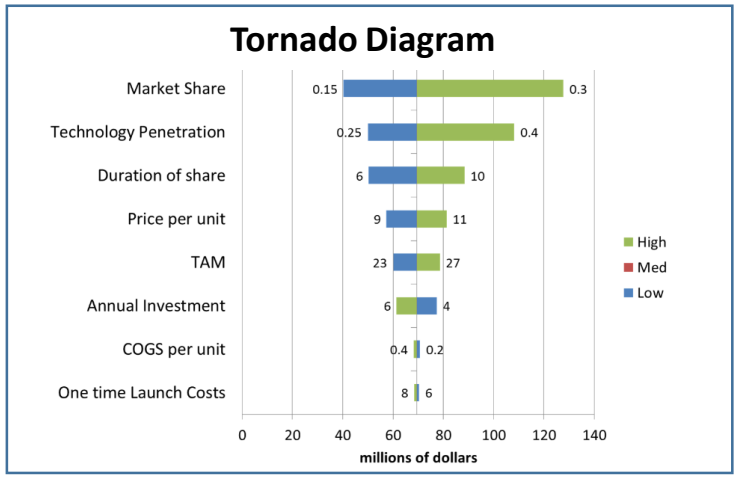
- It is not required for all products.

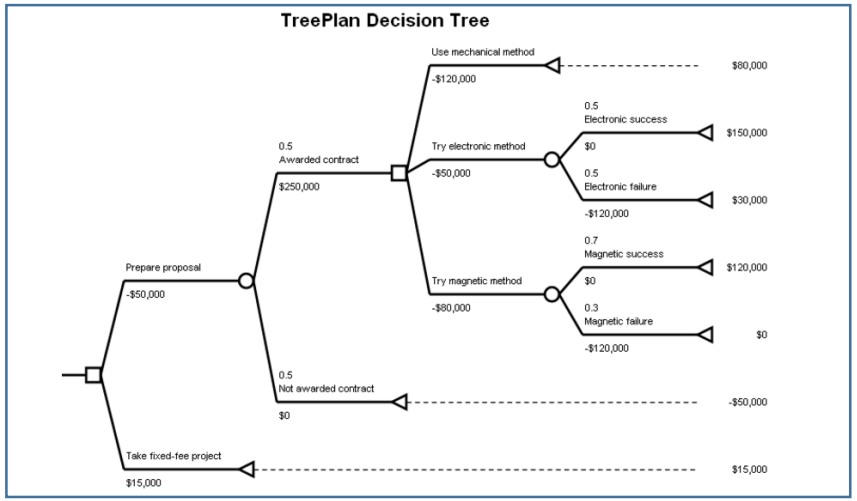
7.5 Quantitative Risks Analysis

For Information only (not part of exam)

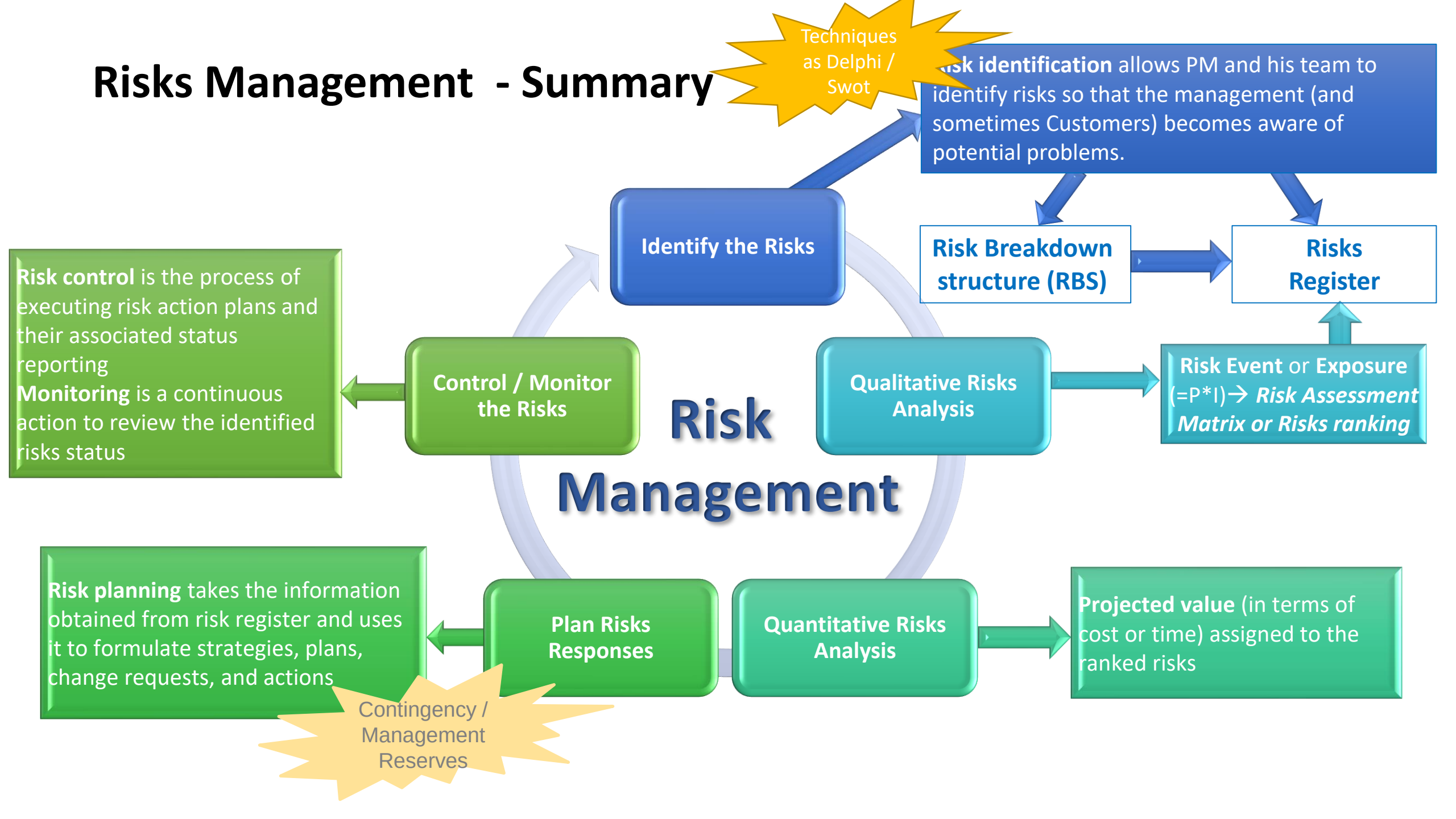
- **Tools and Techniques**

Tools and Techniques	Approach
Data Gathering and Representation techniques	• Interviews • Probability distributions (normal, Beta, Uniform or Triangular distributions)
Quantitative Risks Analysis and Modeling techniques	• Sensitivity analysis (Tornado Diagram) (to allow to determine which risk has the most potential impact on the project) • Expected Monetary Analysis (Decision tree) (visual structure to help the project team display options and after explore the possible outcomes of choosing those options) • Modeling and simulations (Monte Carlo)





Risks Management - Summary



CONCLUSION


PROJECT
MANAGEMENT
TIME
COST
PROCESS
ACTIVITIES
METHODOLOGY
CONTROLLING
ENGINEERING
PROCESSES
TASKS
CHANGE
EVENTS
APPROACH
SOFTWARE
PROGRAM
FRAMEWORK
CONSTRAINT
OBJECTIVES
DESIGN
METHOD
OFTEN
EDIT
PLAN
WORK
EVENT
RESOURCES
SYSTEMS
CRITICAL
STRUCTURE
MAY
RESOURCE
QUALITY
COSTS
NEEDED
ALSO
CHAINS
CHANGES
CONSTRUCTION
TECHNIQUES
CONSTRAINTS
GOALS
PRODUCT
MONITORING
CHAIN
SCOPE
STANDARDS
PERFORMED
CONTRACT
STAGE

WHAT DO WE MEAN BY PROJECT MANAGEMENT ?

Managing a project typically includes but it is not limited to :

- Identifying project requirements
- Addressing the various needs, concerns and expectations of the stakeholders
- Establishing and maintaining active communication with stakeholders
- Managing resources
- Balancing the competing project constraints which include but are not limited to :
  - Scope
  - Schedule
  - Cost
  - Quality
  - Resources
  - Risks

WHAT DOES EFFECTIVE PROJECT MANAGEMENT BRING ?

- Meet business Objectives
- Increase chances of success
- Satisfy Customers expectations
- Deliver the right products at the right time
- Allow to be more predictable
- Resolve problems and issues
- Respond to risks in a timely manner
- Optimize the use of organizational resources
- Manage constraints in terms of scope / costs / recources / quality
- Manage change in a better manner

- Dates / deadlines not respected
- Budget costs not respected
- Product with unsatisfied quality level
- Failure in achieving the product ‘s objectives
- Rework required
- Loss of reputation of the organization or company
- Unsatisfied stakeholders

WHAT DOES POOR AND INEFFECTIVE PROJECT MANAGEMENT BRING ?


Marketing
Quality
HR
Operations
Customers
IT
Technical Teams
Suppliers
Process
Finance
Logistics
Management


PM