



## Risk Management analysis in : PMBOK,PRINCE2,ISO21500

### International Project Management Conference

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## Introduction

 **Project Management Institute** is the **world's leading** not-for-profit professional membership association for the project, program and portfolio management profession. Founded **in 1969**, PMI delivers value for more than **2.9 million** professionals working in nearly every country in the world through **global advocacy**, collaboration, **education** and **research**.

 **Office of Governance Commerce** is to support the **procurement** and acquisition process of **public sector organizations** in the **UK** through policy and process guidance as well as **program & project management** . It introduced **PRINCE 2** in **1989**.

 **International Organization for Standardization** composed of representatives from various **national standard organization**. Founded on **23 February 1947**, the organization promotes worldwide proprietary, industrial and commercial standards. It is headquartered in Geneva , Switzerland ,it is made up **166 member countries** who are the national standards bodies around the world. **ISIRI** joined ISO in **1960** and is active in most ISO **technical committees** and subcommittees.

## Risk Management In PMI's Standards

- The Risk Management is in the **highest level** of Organizational Project Management Maturity Model (**OPM3**) for performing assessment.
- **There are three levels in Risk Management in PMI standards.**
  - **Portfolio (The Standard For Portfolio Management / 2 process )**

Definition Process	Aligning Process
Risk Planning	Manage Risks
  - **Program (The Standard For Program Management/ 5 process )**

Definition Process	Benefit Delivery Process
Risk Planning	Identify Risk- Analyze Risks- Risk Response Plan- Monitor & Control Risks
  - **Project (PMBOK/ 6 process)**
- **Furthermore ,There is a Practice Standard For Risk Management .**

## Risk Management In PMBOK

- Risks are **uncertainties or conditions** which could **affect** ( negative or positive ) on project objectives( Scope , time , cost , customer satisfaction ...) in **future**. Project risk has its origins in **lack of knowledge about an event that reduces confidence in conclusion drawn from the data.**
- **The Risk Management Before Project Initiation (Business Case / Feasibility Study):**
  - In the "**Economical & Financial Phase** ", the Risk management uses for estimating "**Contingency ( Known Unknowns ) & Management Reserve ( Unknown Unknowns )**".
  - There is the "**Risk Premium**" (a margin to compensate for the investment risk) which it considers in **Discount Rate** .

$$PV = \frac{FV}{(1 + D)^n}$$

- **The Risk Management After Project Initiation (Formal Authorization )**

Planning Process	Monitoring & Controlling Process
Plan Risk -Identify Risk- Qualitative & Quantitative Risk Analyze - Risk Response Plan	Monitor & Control Risks

- The risk management process is very **iterative**.

## Risk Management In PMBOK

➤ **Plan Risk Management** :Deciding how to approach , plan and execute the risk management activities for a project.(How to perform other 5 risk management processes?) .

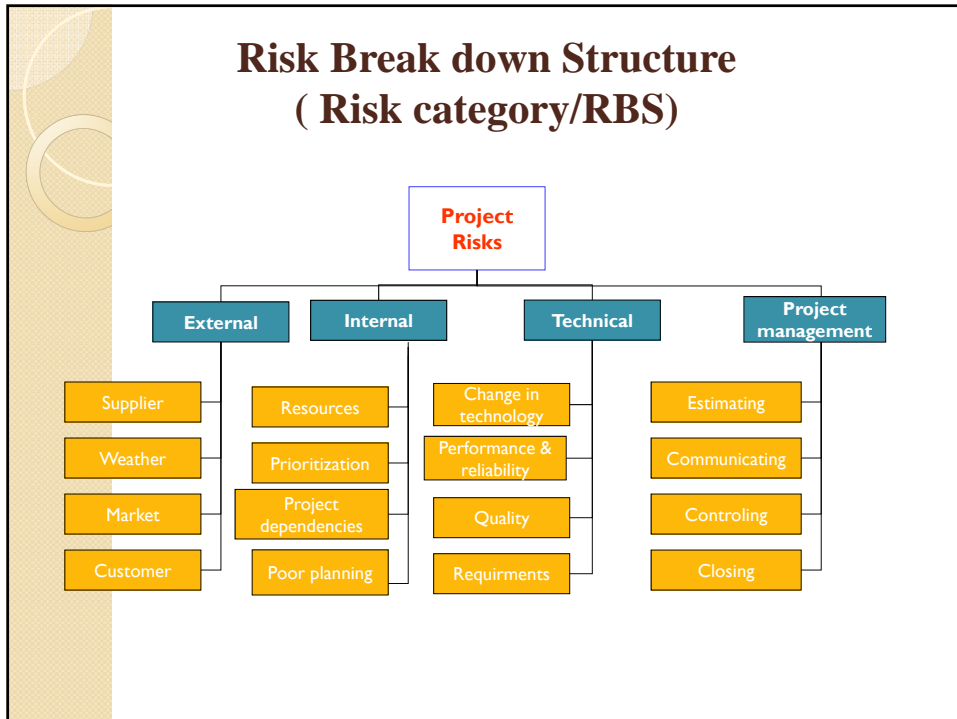
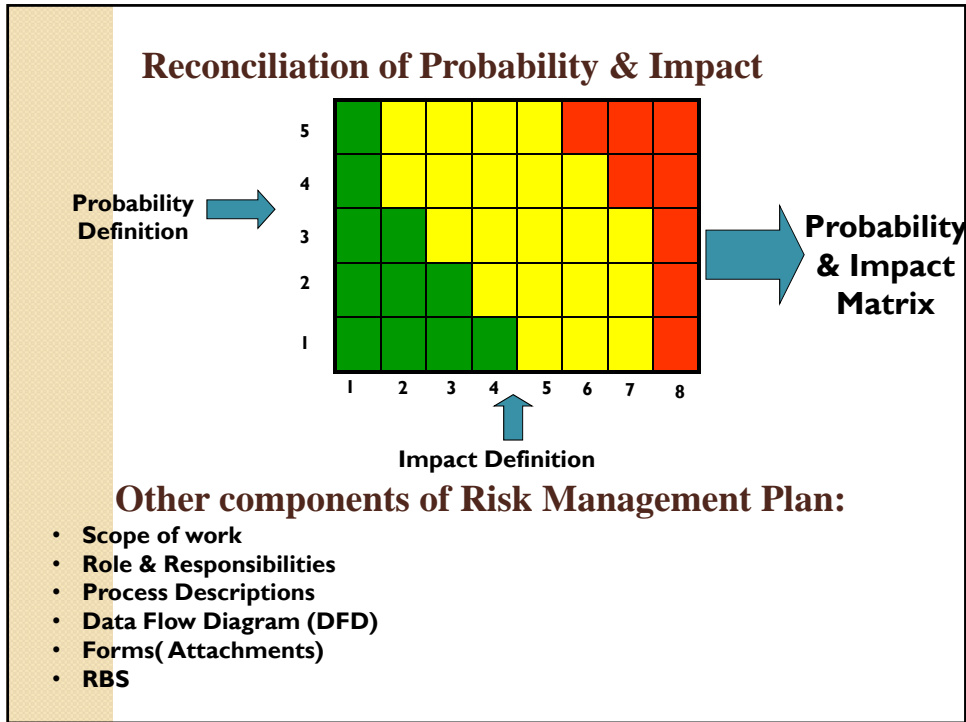
▪ **Key Output** : **Risk Management Plan** is (risk work instruction include : procedures, guideline and authorized forms.). It includes :

Probability of Occurrences		
Qualitative definition	Meaning	Value
<b>Frequent</b>	<ul style="list-style-type: none"> <li>• Likely to occur many times (occurred frequently)</li> <li>• Will be continuously experienced unless action is taken to change events</li> </ul>	<b>5</b>
<b>Likely</b>	<ul style="list-style-type: none"> <li>• Likely to occur some times (occurred infrequently)</li> <li>• The activity or event expected to occur 50-99% of the time.</li> <li>• Will occur often if events follow normal patterns of process or procedure. The event is repeatable and less sporadic</li> <li>• Auditor / Regulator likely to identify issue with minimal audit activity</li> <li>• Process performance failures evident to trained auditors or regulators</li> </ul>	<b>4</b>
<b>Occasional</b>	<ul style="list-style-type: none"> <li>• Unlikely, but possible to occur (occurred rarely)</li> <li>• An activity or event occurs infrequently, or irregularly, or 25-50% of the time</li> <li>• Potential for infrequent occurrence. Events are sporadic in nature</li> <li>• Auditor / Regulator have potential of issue discovery during focused or specialized review.</li> <li>• Process has higher degree of latent system errors discovered with adequate controls</li> </ul>	<b>3</b>
<b>Seldom</b>	<ul style="list-style-type: none"> <li>• Very unlikely to occur (not known it has occurred )</li> <li>• An activity or event that occurs intermittently, or 1-25% of time</li> <li>• Not likely to happen (but could)</li> <li>• Regulator / Auditor have low likelihood of issue identification during any general or focused review</li> </ul>	<b>2</b>
<b>Improbable</b>	<ul style="list-style-type: none"> <li>• A remote likelihood, being almost inconceivable that event will occur</li> </ul>	<b>1</b>

## Defined conditions for impact scales

➤ This is a guide line for evaluating negative impact .

Project object	Low ( 2)	Moderate ( 4)	High ( 8)
Scope	Minor area affected	Major area affected	Project products are effectively useless.
Time	Insignificant time increase	>10 % time increase	> 25 % time increase
Cost	Insignificant cost increase	>15 % cost increase	>40 % cost increase
Quality	Only very demanding applications are affected	Quality reduction requires sponsor approval	Project products are effectively useless.



## Risk Management In PMBOK

- **Identify Risks** : **Identifying** and **documenting** characteristics of risks that may affect the project .It is documentation of existing risk of project and provides to the project team anticipate events.
  - **Key Output** : **Risk register** (Initial )

➤ A cause may be a fact / requirement/ constraint or assumption that create the possibility of negative / positive outcomes.



- **Cause**: Require an environmental permit to do changes .
- **Risk**: Permitting agency may take longer than planned to issue a permit.
- **Impact**: If these uncertain events occurs, there may be an impact on the project cost and schedule.

## Risk Management In PMBOK

- **Qualitative Risks Analysis** : **Prioritizing** risks and **assessing** and combining their probability of occurrence and impact. **Subjective in nature (Low, medium, high)**

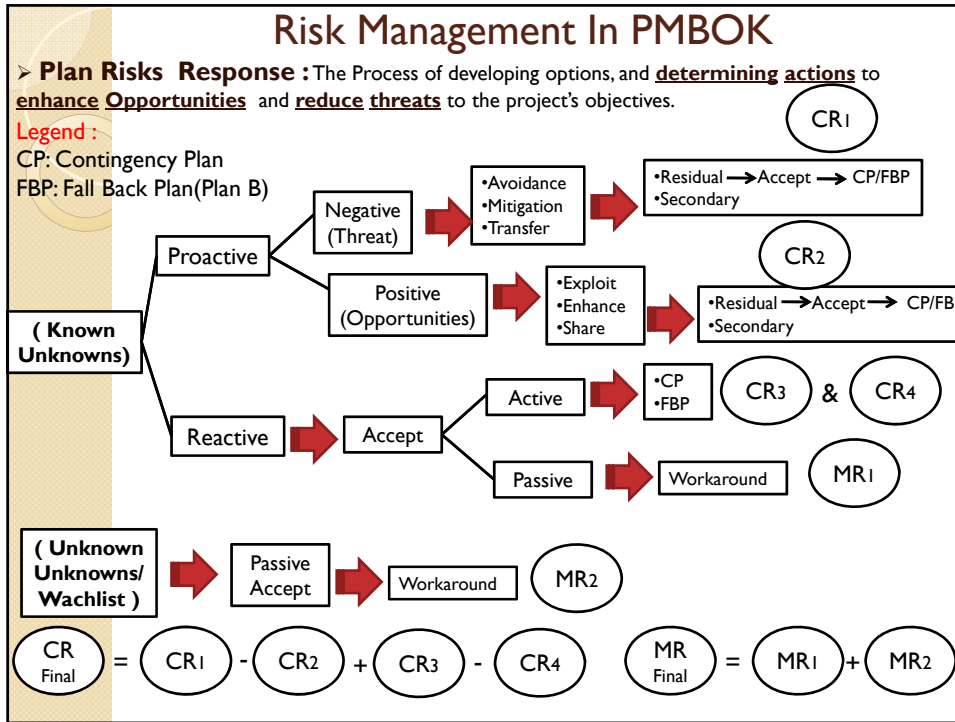
- **Key Tool** : **P&I**
- **Key Output** : **See Risk register** (Updated)

		Impact		
		Low	Medium	High
Probability	High	Medium	High	High
	Medium	Low	Medium	High
	Low	Low	Low	Medium

- **Quantitative Risks Analysis (Optional)** : the process of numerically analyzing the effect of identified risks on overall project objectives and degree of project risk. **Objective in nature (0.1,0.2,0.3,...)**

- **Key Tool** : **P&I , Modeling**
- **Key Output** : **Risk register** (Updated)

		Impact				
		Very Low 1	Low 2	Medium 4	High 8	Very High 16
Probability	Very High 5	5	10	20	40	80
	High 4	4	8	16	32	64
	Medium 3	3	6	12	24	48
	Low 2	2	4	8	16	32
	Very Low 1	1	2	4	8	16



### Risk Management In PMBOK

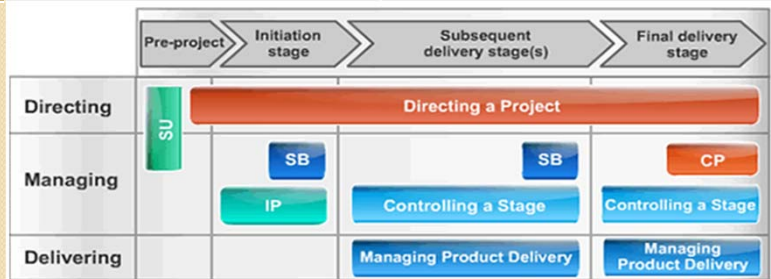
➤ **Control Risks** : A process of **Implementing risk response plans**, tracking identified risks, monitoring residual risks, identifying **new risks** and evaluating risk process **effectiveness** throughout the project.

Tools & Techniques	Description
Risk <b>audits</b>	<b>Look Backward</b>
Risk <b>review meeting</b>	<b>Look Forward</b>
Reassessment	New Risks
Reserve Analysis	Common tools among Time, Cost, Risk management
Variance Analysis	Gap Analysis ,Corrective Action

## PRINCE 2 methodology

**Projects IN Controlled Environments : PMBOK & PRINCE2 are compliment. First issue** was in **1996** by OGC which was based on **Prompt2**. PRINCE 2 is a **gate way**( sequential ) methodology & **cover program** management .It implies the **portfolio** management **very negligible**. It emphasizes to **Business Justification**. This information based on **last version(2009)**.

Specifications	Description
4 levels of management within project management structure	Corporate or program management Project Board Project Manager Team Manager



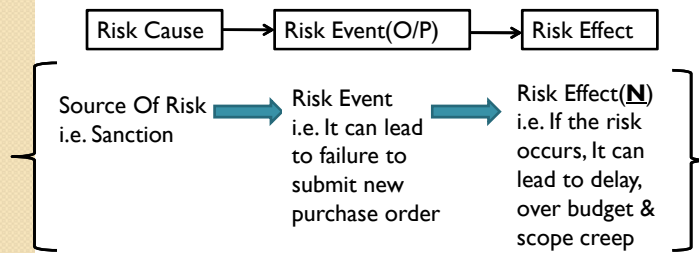
**Key**  
 SU = Starting up a Project  
 IP = Initiating a Project  
 SB = Managing a Stage Boundary  
 CP = Closing a Project

Based on OGC PRINCE2® material. Reproduced under licence from OGC.

Characteristics	Description
7 Process group . There are five main process which The CS & DP implement throughout the project life cycle. Totally, PRINCE 2 has 40 sub process.	(SU) پایه ریزی یک پروژه (DP) هدایت یک پروژه (IP) آغاز نمودن یک پروژه (SB) مدیریت محدوده های مراحل (CS) کنترل یک مرحله (MP) مدیریت تحویل محصول (CP) ختم یک پروژه
7 Them ( components)	Business Case (مدل تجاری) Organization (سازماندهی) Quality (کیفیت) Plans (برنامه ها) Risk (ریسک) Change (تغییر) Progress (پیشرفت)

## Risk in PRINCE 2

- Risks are uncertain event will have an effect( Negative / Positive ) on objectives ( Time, Cost, Quality, Scope, Benefits and Risks).
- **Risk Management** : The proactive systematic Them to identify, assess, plan & implement response and control risk. It can be common across the strategic, operational, program & project perspective ( Organizational-Oriented ) but it should be tailored to each one. This them is very iterative.



Note :The red Underline show the difference between PRINCE2 & PMBOK in the context / shape.

## Risk Management Terms in PRINCE 2

- **Risk Management Strategy**: How risk management will be performed in project management activates. The key contains to be recorded is Risk tolerances which it uses in "Exception Report".
- **Risk Register** : it is to capture & maintain all of the identified threats & opportunities . It includes as following :
  - Risk Identifier
  - Risk description
  - Probability & Impact
  - **Proximity** (when will the risk occur. Near far / So far )
  - **RBS**
  - **Risk owner** : A responsible for managing all aspects of particular risk assigned to them & selected responses.
  - **Risk auctioneer** : an individual assigned to carry out a risk response action to particular risk . They take direction from the risk owner.
- **Risk Budget** : set aside the budget which is part of the project budget that PM can spend. It includes the known risks & Unknown risks



### Risk Management Terms in PRINCE 2

■ **Risk Management Procedure:** It is same as risk management sub-process. All of process is based on "Risk Management Strategy " .

Sub Process	Tools & Techniques	Out put
Identify	Review document- Risk checklist- <b>Risk prompt list</b> - Brainstorming – RBS	Risk Register
<b>Assess</b>	Probability tress, EMV, <b>Pareto Analysis</b> , P&I, Risk Modeling (Mont Carlo)	Risk Register(Update)
Plan	Threat : <ul style="list-style-type: none"> <li>• <u>Avoid</u></li> <li>• <u>Reduce( Proactive )</u></li> <li>• <u>Transfer( Reduce financial impact)</u></li> <li>• <u>Share</u></li> <li>• <u>Fallback (Reactive <u>reduce_ only impact</u>)</u></li> <li>• <u>Accept( Passive )</u></li> </ul> Opportunities : <ul style="list-style-type: none"> <li>• <u>Exploit</u></li> <li>• <u>Enhance(Proactive )</u></li> <li>• <u>Share</u></li> <li>• <u>Reject</u></li> </ul>	Risk Register(Update) i.e. Secondary Risk, Residual Risk

### Risk Management Terms in PRINCE 2

Sub Process	Tools & Techniques	Out put
<b>Implement</b>	Through Risk owner , Risk Actionee	Risk Register(Update) i.e. <b>New risks</b> , Risk Owner, Risk Actionee
Communicate	It carried out Continually. Using Communication Method such as : dashboard, briefing, discussion,	Reports

## Guidance on Project Management : ISO 21500

It is developed by British Standard Institute (BSI) which it comes from 1901 when Engineering Standards Committee took place.

In 1946 saw the first ever Commonwealth Standards Conference, held in London and organized by BSI, which led to the establishment of the International Organization for Standardization (ISO) in Geneva.

BSI sent a request for developing a Project Management Standard to ISO in 2006. It led to developed the ISO 21500 with more than 36 countries participants.

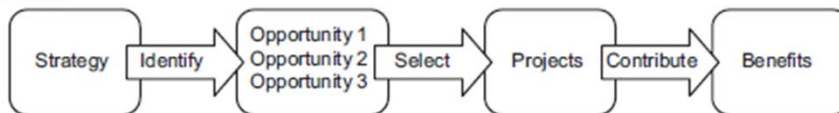
ANSI plays an important role in this process.

Motto :...  
Making a  
excellence a  
habit

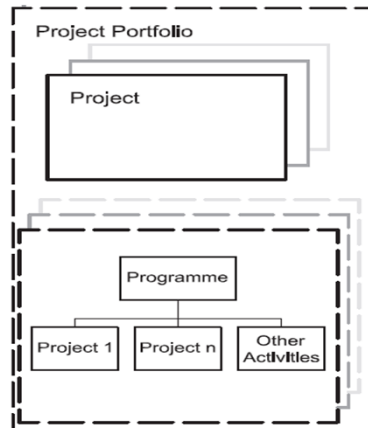
Specifications	Description
Process Groups	5
Knowledge Areas	10
Sub- Process	39

**Note: The ISO 21500 structure is very similar to PMBOK 5<sup>th</sup> Edition**

## How Do Projects Take Shapes



## Portfolio, Program, Project(P3)



## Risk Management in ISO21500

Process Groups	Initiation	Planning	Implementing	Controlling	Closing
<b>Risk Knowledge area</b>					
<b>Process</b>	NA	1) Identify Risks 2) Assess Risks	3) Treat Risks(O&P)	4)Control Risks	NA
<b>Primary Out put</b>	NA	1) Risk register 2) Prioritized Risks	3) Risk response Includes insert resources into budget & time AND develop <b>CR</b>	Determining whether the risk responses are executed and whether they have the desired effect	NA

## Conclusion

Standards / Methodologies	PMBOK-5 <sup>th</sup> Edition ( 2012)	PRINCE2 -2009	ISO21500(2012)
<b>Characteristics</b>			
First Issue	<b>1986 as a white paper</b>	2009	2012
Process Group	5	<b>7</b>	5
Knowledge Areas/ Components	<b>10</b>	7	<b>10</b>
Sub- Process	<b>47</b>	40	39
Risk Management Process	<b>6</b>	5	4
Risk Management Planning Process ( being proactive)	<b>5</b>	3	2
Common Terms	Identify Risk, Risk register, Risk Plan (O/T) , Control Risk		

## Conclusion

Standards / Methodologies	PMBOK-5 <sup>th</sup> Edition ( 2012)	PRINCE2-2009	ISO21500 (2012)
<b>Characteristics</b>			
<b>Different Terms</b>	A) Qualitative & Quantitative Analysis B) Response Plan C) Negative Strategies (Av,Mi,Tr) D) Positive Strategies ( Ex,En,Sh) E) Executing Plans in Control Risk Process F) Workaround	<b>A') Assess</b> <b>B') Plan</b> <b>C') (Av,Re,Tr,Sh,Fa)</b> <b>D') (Ex,En, Sh, Rej)</b> <b>E') Executing Plans in Implement Risk Process</b> <b>F') NA</b>	<b>A'') Assess</b> <b>B'') Treat</b> <b>C'') NA</b> <b>D'') NA</b> <b>E'') Executing Plans in Treat Risk Process</b> <b>F'') NA</b>

**Legend :**

NA: Not Applicable	Sh: Share
Av: Avoidance	Fa: Fallback
Mi: Mitigation	Ex: Exploit
Tr: Transfer	En: Enhance
Re: Reduce	Rej: Reject

# Questions and Answers

## Appreciate your attention

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