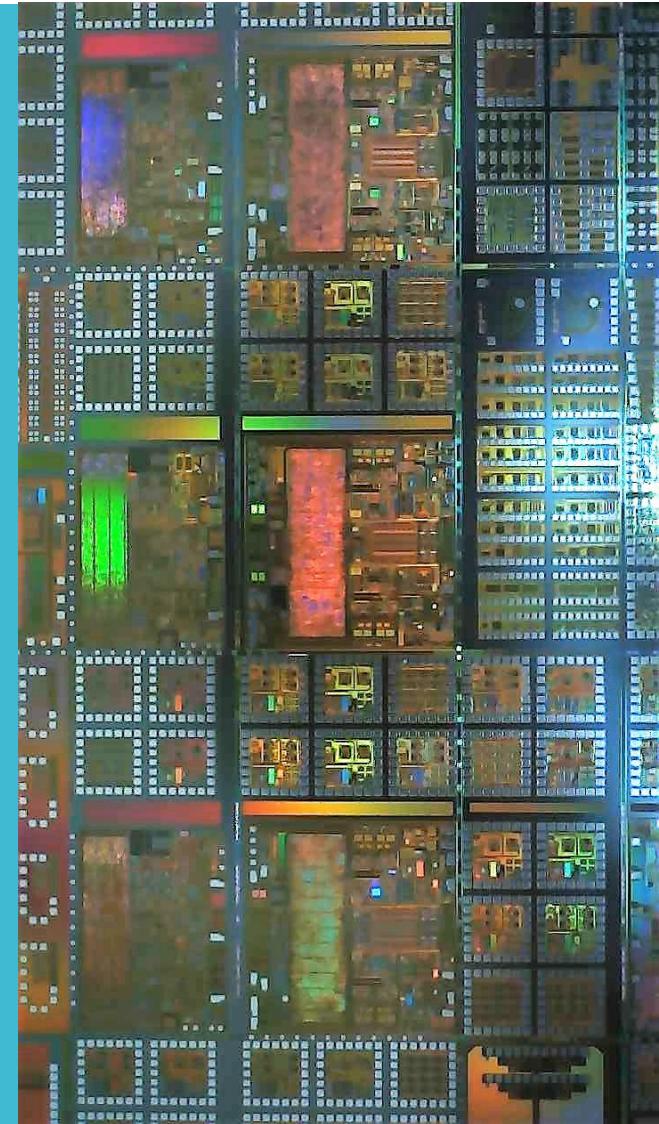


# Class 3: Risk Management

## Agenda:

- Assignment
- Risk Definition
- Risk Management: Why, Who, How.
- Risk Management Framework
- Wrap-up.



# Course Overview

(15 minutes)

Class 1

Introduction &  
Foundations

Class 2

Project Life cycle

Class 3

Risk Management

Class 4

Quality Management

Class 5

Scheduling Part I

Class 6

Scheduling Part II

Class 7

Special Assignment

Class 8

Open discussion  
with Industry expert

# Process Group and Knowledge Area Mapping

Knowledge Areas	Project Management Process Groups © WWW.PM2.BIZ				
	Initiating	Planning	Executing	Monitoring and Controlling	Closing
<b>4. Project Integration Management</b>	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Work 4.4 Manage Project Knowledge	4.5 Monitor and Control Project Work 4.6 Perform Integrated Change Control	4.7 Close Project or Phase
<b>5. Project Scope Management</b>		5.1 Plan Scope Management 5.2 Collect Requirements 5.3 Define Scope 5.4 Create WBS		5.5 Validate Scope 5.6 Control Scope	
<b>6. Project Schedule Management</b>		6.1 Plan Schedule Management 6.2 Define Activities 6.3 Sequence Activities 6.4 Estimate Activity Durations 6.5 Develop Schedule		6.6 Control Schedule	
<b>7. Project Cost Management</b>		7.1 Plan Cost Management 7.2 Estimate Costs 7.3 Determine Budget		7.4 Control Costs	
<b>8. Project Quality Management</b>		8.1 Plan Quality Management	8.2 Manage Quality	8.3 Control Quality	
<b>9. Project Resource Management</b>		9.1 Plan Resource Management 9.2 Estimate Activity Resources	9.3 Acquire Resources 9.4 Develop Team 9.5 Manage Team	9.6 Control Resources	
<b>10. Project Communications Management</b>		10.1 Plan Communications Management	10.2 Manage Communications	10.3 Monitor Communications	
<b>11. Project Risk Management</b> © WWW.PM2.BIZ		11.1 Plan Risk Management 11.2 Identify Risks 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses	11.6 Implement Risk Responses	11.7 Monitor Risks	
<b>12. Project Procurement Management</b>		12.1 Plan Procurement Management	12.2 Conduct Procurements	12.3 Control Procurements	
<b>13. Project Stakeholder Management</b>	13.1 Identify Stakeholders	13.2 Plan Stakeholder Engagement	13.3 Manage Stakeholder Engagement	13.4 Monitor Stakeholder Engagement	



# Assignment 1: Whiteboard Session

(15 minutes) [Clase 3 - actividad 1 - Miro](#)

Each Student must complete a virtual post-it, explaining their understanding of Risk, Issue and the difference between each.

Why do we take risks?

- 1 Define Risk
- 2 Define Issue
- 3 Explain difference between them
- 4 Explain why we take risks





# Risk Definition

Risk in project management refers to **any event or condition that could potentially affect the project's objectives**. These events could have **positive** or **negative impacts**, known as opportunities and threats respectively.

## Threats

Potential events that could negatively impact project goals, such as delays, budget overruns, or quality issues.

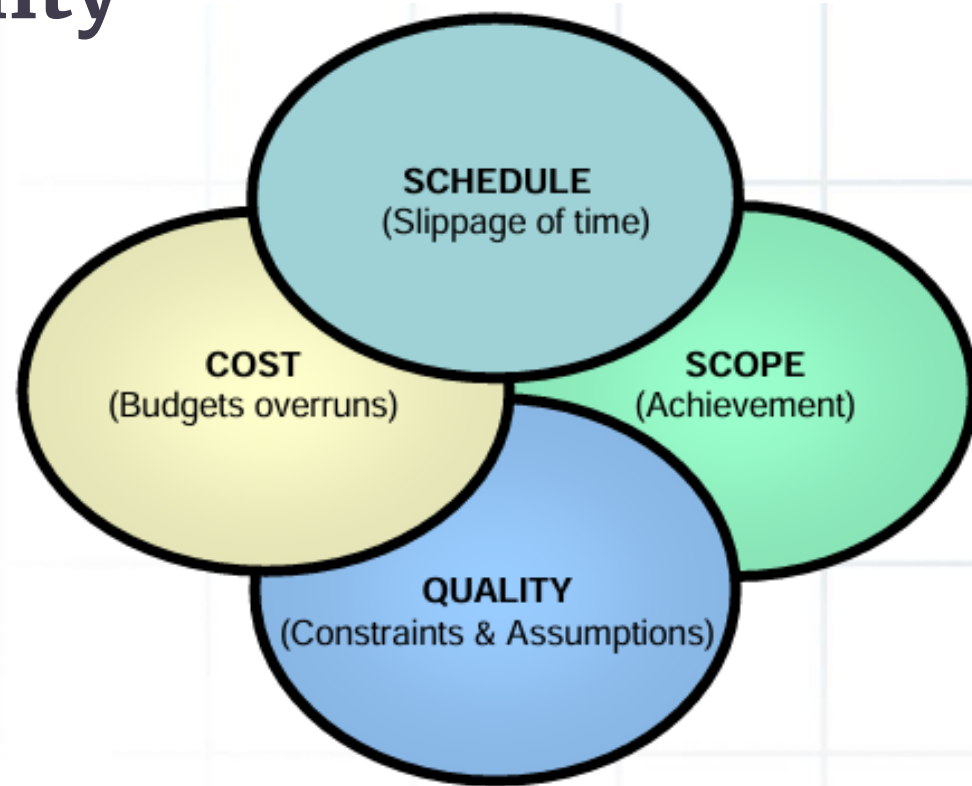
## Opportunities

Potential events that could positively impact project goals, such as cost savings, improved performance, or new market opportunities.

**All projects  
are RISKY!!**

Ignoring risk  
doesn't make the  
risk go away

## Risk is Inseparable from Opportunity



# Risk Management

- Risk Management is a logical and **systematic method of identifying, analyzing, treating and monitoring the risks** involved in any activity or process.
- It includes maximizing the results of positive risks and **minimizing the consequences of negative** events



Risk will find you if you don't find it first!

# Risk Management

## Why?

- Undertaking any project entails risk.
- Increase Project Success Rate
- Protection of Reputation & Resources

## Who?

- PM is ultimately responsible for the project's success.
- Each identified Risk will be assigned an owner, who will define a risk plan and monitor risk.

## How?

- Systematic process of managing risk
  - Maximize Project Success by proactively minimize risk's negative impact.
  - Achieve Objectives Responsibly: Navigate risk to meet goals while upholding public interest, safety, environmental standards, and legal compliance.

Doesn't mean eliminating risk but reducing operational surprises/losses



# Risk Management

## Key Success Factors

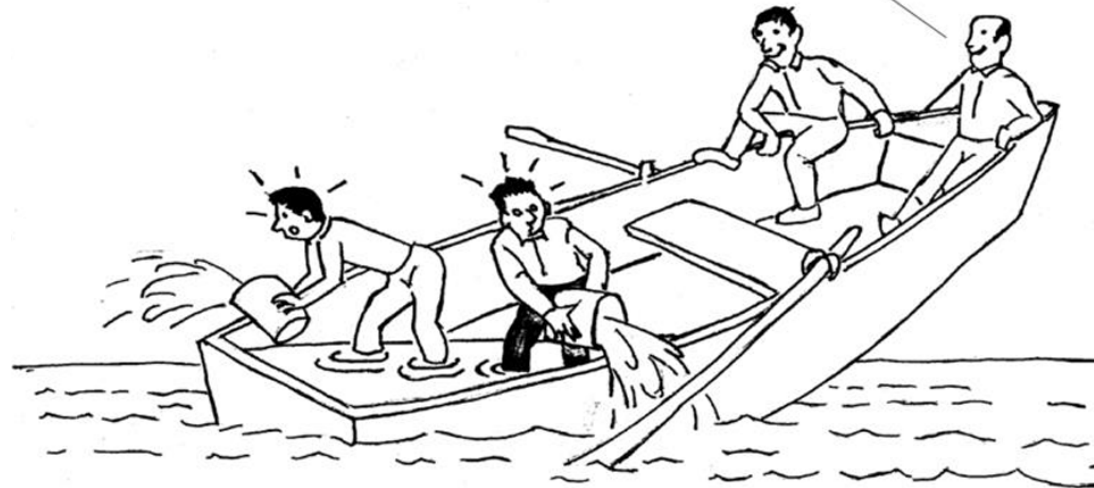
Start early.  
The sooner, the  
better

Involve all  
relevant  
stakeholders

Manage Risks  
End to End

Proactive, not  
Reactive

Sure glad the hole isn't at our end.



# Risk Management Framework

According to the PMBOK, risk management involves the processes of conducting risk management **planning, identification, analysis, response planning, response implementation, and monitoring risk** on a project.

- 1 Risk Management Planning
- 2 Risk Identification
- 3 Qualitative Risk Analysis
- 4 Quantitative Risk Analysis
- 5 Risk Response Planning
- 6 Risk Monitoring and Control



# 1. Plan Risk Management

Plan Risk Management is the process of defining how to conduct risk management activities for a project

## Key Outputs of Plan Risk Management:

- 1. Risk Management Plan:** A formal document outlining the approach, tools, roles, responsibilities, and timelines for managing risk throughout the project.
- 2. Risk Breakdown Structure (RBS):** A hierarchical representation of potential risks, organized by category, to ensure comprehensive risk identification. (Consider adding a simple RBS visual as an example)
- 3. Risk Register (Initial Structure):** A central repository for documenting identified risks, their potential impact, probability, triggers, and response plans. (Consider adding a snapshot of a simple risk register template).

# 1. Plan Risk Management

## Risk breakdown structure

(Ref. PMBOK Guide 6th Edition)

RBS LEVEL 0	RBS LEVEL 1	RBS LEVEL 2
0. ALL SOURCES OF PROJECT RISK	1. TECHNICAL RISK	1.1 Scope definition
		1.2 Requirements definition
		1.3 Estimates, assumptions, and constraints
		1.4 Technical processes
		1.5 Technology
		1.6 Technical interfaces
		Etc.
	2. MANAGEMENT RISK	2.1 Project management
		2.2 Program/portfolio management
		2.3 Operations management
		2.4 Organization
		2.5 Resourcing
		2.6 Communication
		Etc.
	3. COMMERCIAL RISK	3.1 Contractual terms and conditions
		3.2 Internal procurement
		3.3 Suppliers and vendors
		3.4 Subcontracts
		3.5 Client/customer stability
		3.6 Partnerships and joint ventures
		Etc.
	4. EXTERNAL RISK	4.1 Legislation
		4.2 Exchange rates
		4.3 Site/facilities
		4.4 Environmental/weather
		4.5 Competition
		4.6 Regulatory
		Etc.

# 1. Plan Risk Management

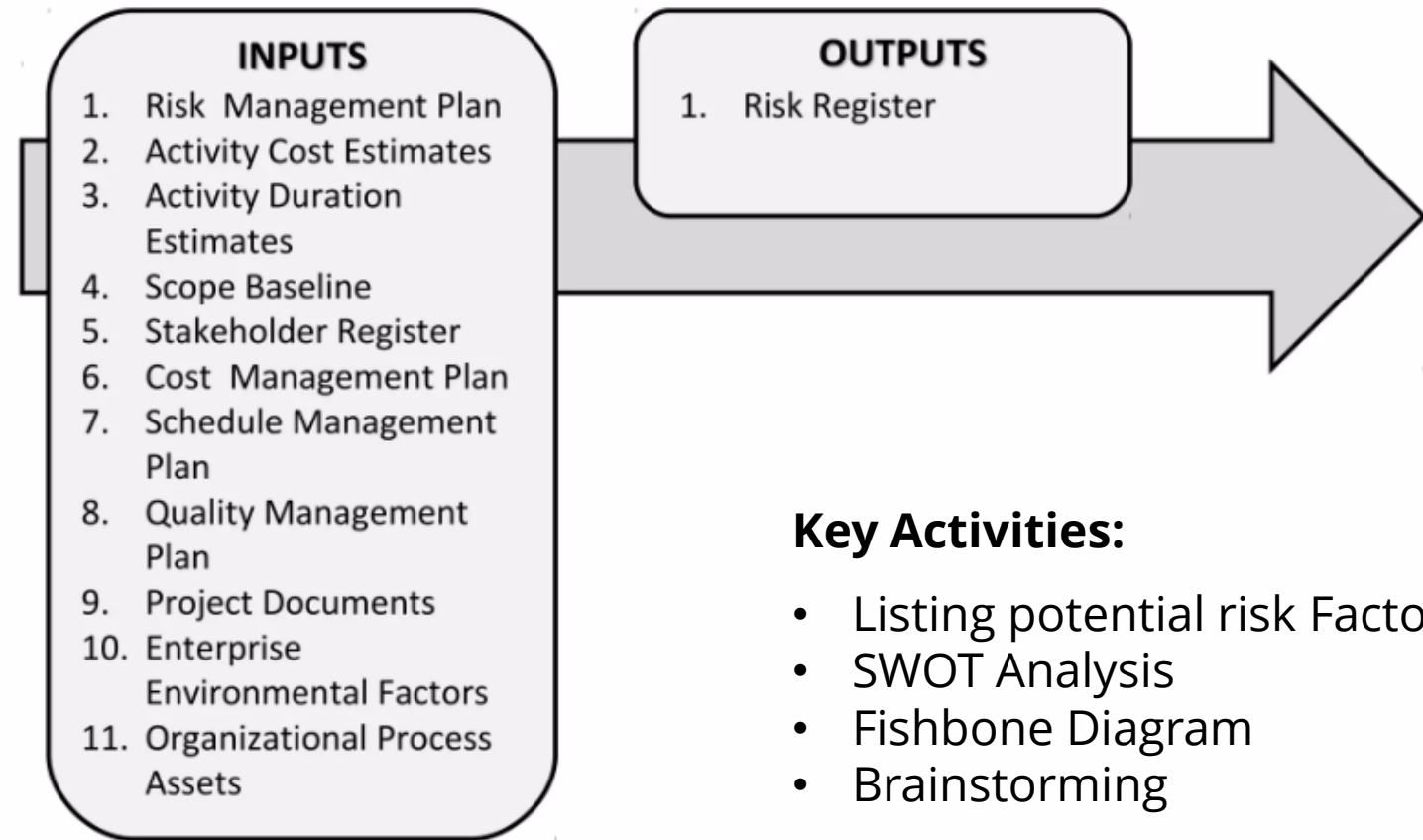
## Risk Register

Information Security Risk Assessment for <COMPANY>, Version 0.1, 23rd Mar 2022, Confidential										
Do not put anything into a coloured cell										
There are 7 risks in total. There are 2 red ones, 2 amber ones, and 3 green ones. There are 2 risks that are being treated to try to improve their score.										
DO NOT TYPE ANYTHING INTO THESE COLUMNS										
"ID"	"Risk Description"	"Risk Owner"	"Existing Necessary Controls"	"Current Likelihood"	"Current Impact"	"Current Risk Score"	"Current Risk Rating"	Should you be happy with the "Current Risk Score"?		"Risk Treatment Decision"
	What is the bad thing that might or might not happen to the confidentiality, availability or integrity of the information?	Who has the authority and budget to make decisions about how to manage this?	What do you currently have in place that you think are necessary to manage this risk on an ongoing basis?	What is the current likelihood of this bad thing happening?  1 is very unlikely, 5 is very likely	What would be the impact on the business if this risk happened? (Confidentiality, Availability, Integrity)  1 is very low impact, 5 is catastrophic	Current Likelihood multiplied by Current Impact. i.e. the "Level of risk".  (Automatically calculated)	(Red/Amber/Green)  i.e. is this "Current Risk Score" within your "risk appetite"?  (Automatically populated)	(Automatically populated)		Are you going to try to improve the "Current Risk Score" of this risk - i.e. "Treat the risk", or are you going to leave the "Current Risk Score" as it is - i.e. "Accept the risk"?
										What (if anything) are you going to do to reduce the "Current Risk Score" of the risk?  Each activity needs an owner and a target date for completion.
1	There is a risk that XYZ happens because of YYY leading to ABCDEFG impact on the business.	Paula Cache	<ul style="list-style-type: none"> <li>Customer PII data is not used in any test environments.</li> <li>Employees access to all the systems is revoked within 2 days of them leaving.</li> <li>A review of all privilege access to all systems is undertaken every 3 months.</li> <li>A review of all privilege access to the client health database is undertaken every 3 months.</li> <li>A security guard walks around the outside of the building every hour.</li> </ul>	3	2	6	GREEN	Yes because this risk is Green - i.e. the current risk score of 6 is less than or equal to the risk appetite which is 13.  No risk improvement activities are needed (i.e. "Accept").		Accept
2	XYZ happens because of YYY leading to CDFG impact on the business.	Mike Catsl	<ul style="list-style-type: none"> <li>A Business Continuity Plan is in place and tested annually.</li> <li>An IT Disaster Recovery Plan is in place and tested annually.</li> <li>Daily backups are kept offsite and a restore test is conducted every 6 months.</li> <li>Hot failure switchover between 2 Azure regions.</li> </ul>	4	4	16	AMBER	No because this risk is Amber - i.e. the current risk score of 16 is higher than the risk appetite value of 13 and is less than or equal to the risk appetite high value of 19.  This risk needs improvement activities to reduce the current risk score (i.e. "Treat") or the risk owner can decide to leave the current risk score as it is and that no improvement activities are needed (i.e. "Accept").		Treat
3	XYZ happens	Susan Cache	<ul style="list-style-type: none"> <li>A Web Application Firewall is in place at all web application endpoints for public access.</li> <li>Clear desk and clear screen policy.</li> <li>An IT change register updated weekly is owned by the CIO and is used to help manage change requests and decide the priorities for change requests.</li> <li>A documented classification policy is in place.</li> </ul>	3	5	15	AMBER	No because this risk is Amber - i.e. the current risk score of 15 is higher than the risk appetite value of 13 and is less than or equal to the risk appetite high value of 19.  This risk needs improvement activities to reduce the current risk score (i.e. "Treat") or the risk owner can decide to leave the current risk score as it is and that no improvement activities are needed (i.e. "Accept").		Accept
4	XYZ (a bad thing!) could happen because of YYY (the reason it happened) leading to a loss of confidentiality and/or integrity and/or availability of ABC (the information affected) which would cause NNNV impact on the business.	Fred Payne	<ul style="list-style-type: none"> <li>A documented classification policy is in place.</li> <li>A documented policy for XYZ is in place.</li> <li>A documented malware management process is in place, owned by the IT security manager. This excludes Macs and is monitored through the vendor console with reports on performance sent weekly to the CIO.</li> <li>An IT change register updated weekly is owned by the CIO and is used to help manage change requests and decide the priorities for change requests.</li> <li>98% of all staff undertaking active work for the organisation complete annual information security training within one month of it being asked to complete it.</li> <li>Employees access to all the systems is revoked within 2 days of them leaving.</li> </ul>	4	5	20	RED	No because this risk is Red - i.e. the current risk score of 20 is significantly higher than the risk appetite high value of 19.  This risk needs improvement activities (i.e. "Treat") to reduce the current risk score or needs higher level agreement to leave the current risk score as it is (i.e. "Accept") and therefore not have any improvement activities.		Treat
5	NNNNV happens because of YYY leading to XDFCCV	Clair Links	<ul style="list-style-type: none"> <li>A Business Continuity Plan is in place.</li> <li>An IT Disaster Recover Plan is in place.</li> <li>A Major Incident plan is in place.</li> </ul>	4	5	20	RED	No because this risk is Red - i.e. the current risk score of 20 is significantly higher than the risk appetite high value of 19.  This risk needs improvement activities (i.e. "Treat") to reduce the current risk score or needs higher level agreement to leave the current risk score as it is (i.e. "Accept") and therefore not have any improvement activities.		Accept
6	XYZ happens because of YYY leading to XDFCCV	Fred Payne	<ul style="list-style-type: none"> <li>A documented malware management process is in place, owned by the IT security manager. This excludes Macs and is monitored through the vendor console with reports on performance sent weekly to the CIO.</li> <li>Software tool ANVD is in place.</li> </ul>	3	4	12	GREEN	Yes because this risk is Green - i.e. the current risk score of 12 is less than or equal to the risk appetite which is 13.		Accept



## 2. Identify Risk

Identify Risks is the process of identifying individual project risks as well as sources of overall project risk, and documenting their characteristics



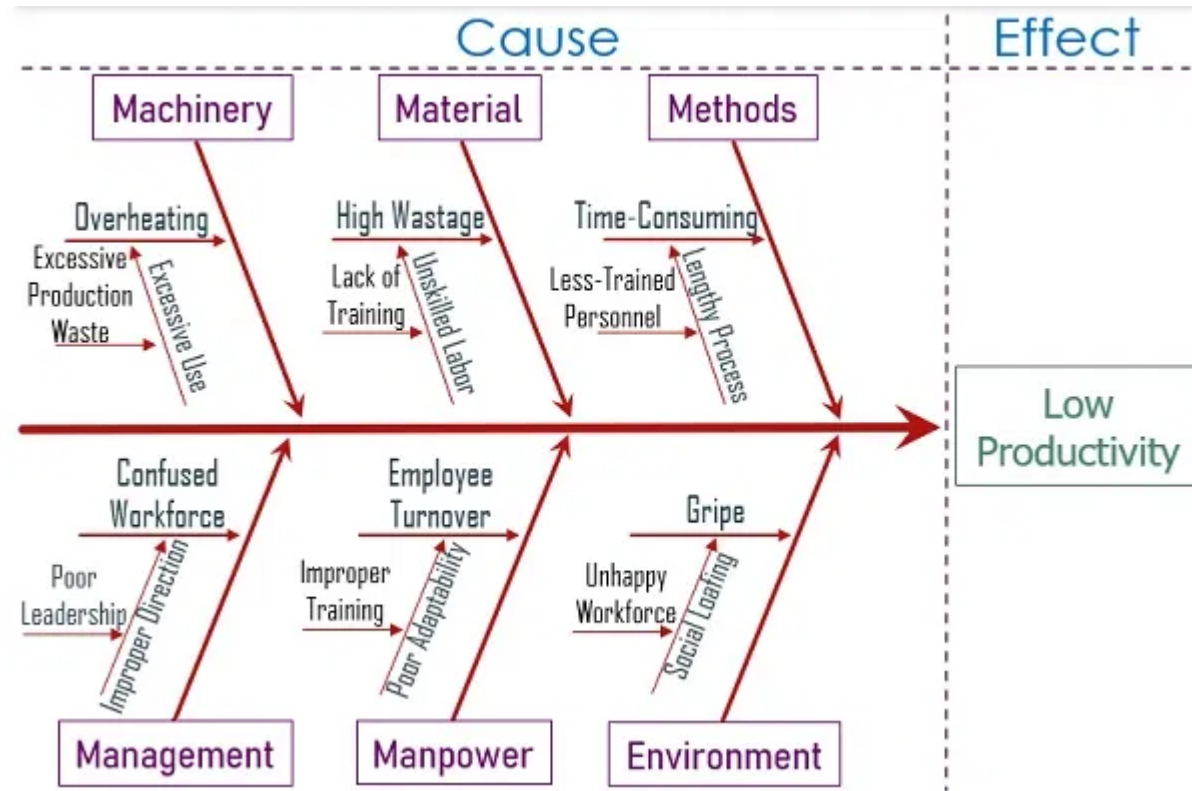
## 2. Identify Risk

### Swot Analysis

<b>Strengths</b>  Natural priorities that are obvious <ul style="list-style-type: none"><li>• What are your points of advantage?</li><li>• What do you do well?</li><li>• What are the resources you can count on?</li></ul>	<b>Weaknesses</b>  Options potentially interesting <ul style="list-style-type: none"><li>• What could you improve?</li><li>• What do you do badly?</li><li>• What should you avoid?</li></ul>
<b>Opportunities</b>  Problems easy to defend and counter <ul style="list-style-type: none"><li>• What good deals are you facing?</li><li>• What are the interesting trends you are familiar with?</li><li>• Good deals can result from such things as: or small scale</li></ul>	<b>Threats</b>  Potentially high-risk situations <ul style="list-style-type: none"><li>• What obstacles did you face?</li><li>• What are your competitors doing?</li><li>• The requirements and specifications of your business, products or services changing? Changes in technology threaten your position?</li></ul>

## 2. Identify Risk

### Fishbone Diagrams

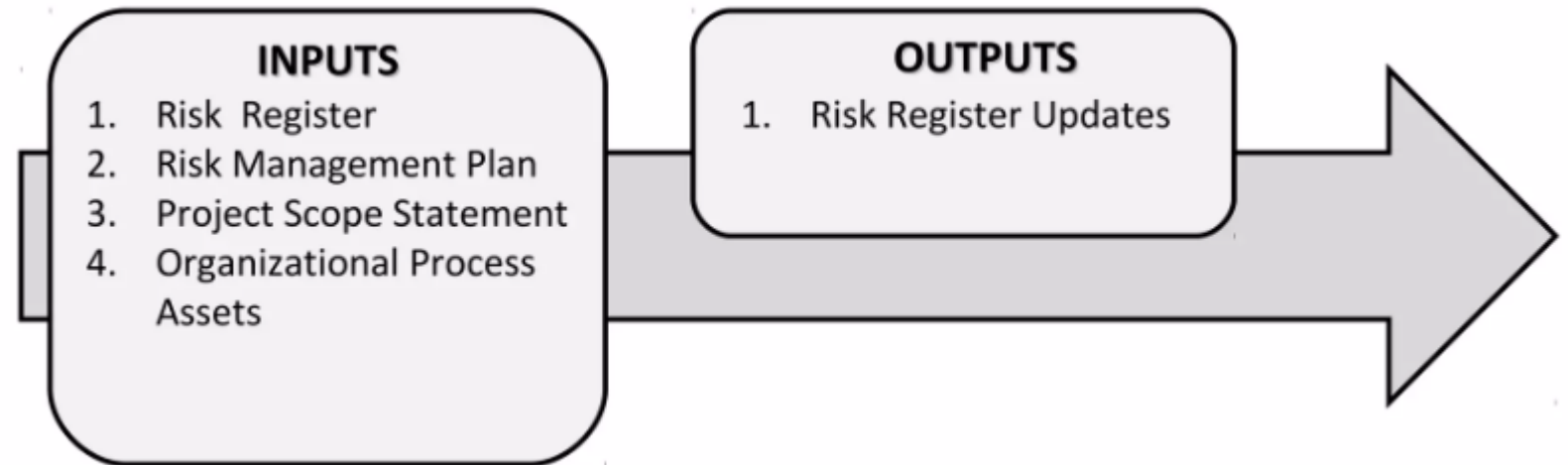


- **Visual Clarity:** Seeing potential causes organized visually helps us grasp the big picture and identify patterns or relationships we might have missed otherwise.
- **Structured Brainstorming:** The chart provides a framework for focused brainstorming, encouraging participation and preventing us from getting sidetracked.
- **Common Understanding:** Creating a Fishbone Diagram collaboratively ensures everyone understands the problem and the potential contributing factors.
- **Basis for Prioritization:** Once we've identified potential causes, we can prioritize them based on their likelihood and potential impact, guiding further investigation and action.

# 3. Qualitative Risk Analysis

Understanding  
the Nature of  
Uncertainty

- Qualitative Risk Analysis delves into the characteristics of risks to understand their potential impact on project objectives.
- It helps us gain a deeper understanding of the nature of uncertainty and its potential consequences.
- Provides a foundation for prioritizing risks and developing effective response strategies, especially when quantitative data is limited.



## 3. Qualitative Risk Analysis

Understanding  
the Nature of  
Uncertainty

# Key Elements of Qualitative Risk Analysis

- **Risk Identification:** Systematically uncovering potential risks through brainstorming, interviews, checklists, and reviews.
- **Risk Description:** Clearly articulating each risk's nature, potential causes, potential consequences, and possible triggers.
- **Risk Ranking:** Prioritizing risks based on their perceived likelihood and impact using techniques like expert judgment, Delphi technique, or risk rating scales.
- **Risk Categorization:** Grouping risks into categories (technical, external, organizational, etc.) to facilitate analysis and response development.
- **Risk Assessment:** Evaluating the potential impact of each risk on project objectives (cost, schedule, quality, scope, resources, reputation).

**High risk:** Substantial impact on cost, technical performance, or schedule. Substantial action required to alleviate issue. High-priority management attention is required.

**Medium risk:** Some impact on cost, technical performance, or schedule. Special action may be required to alleviate issue. Additional management attention may be needed.

**Low risk:** Minimal impact on cost, technical performance, or schedule. Normal management oversight is sufficient.

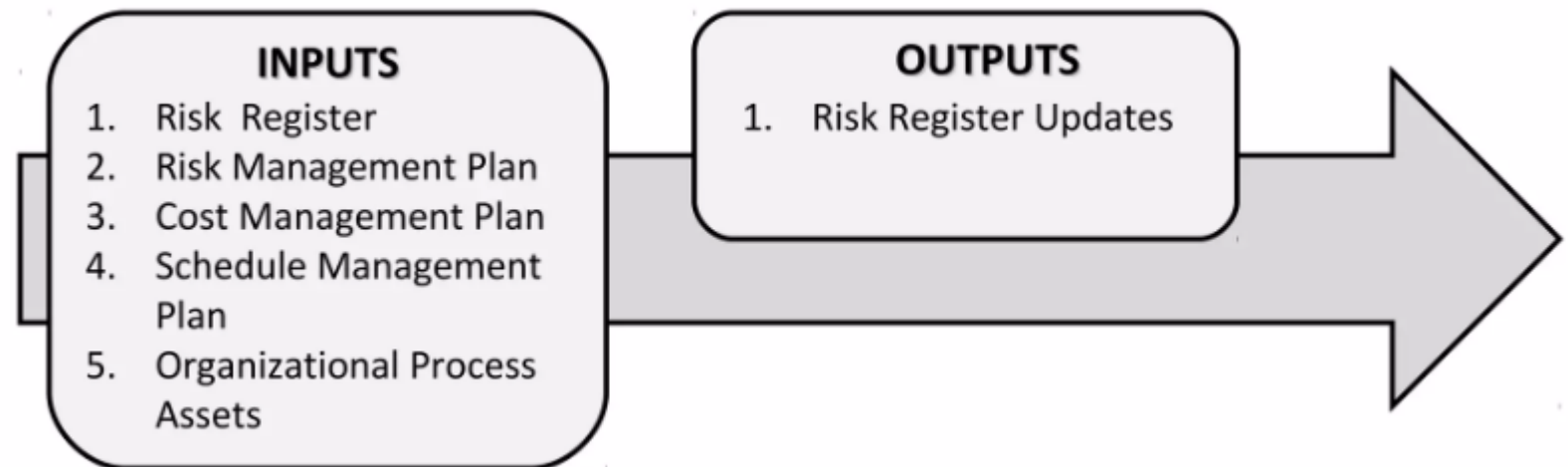


## 4. Quantitative Risk Analysis

Putting numbers  
to uncertainty

Perform Quantitative Risk Analysis is the process of numerically analyzing the combined effect of identified individual project risks and other sources of uncertainty on overall project objectives. **The key benefit of this process is that it quantifies overall project risk exposure**, and it can also provide additional quantitative risk information to support risk response planning.

- Moving beyond qualitative assessments to assign numerical values to risk probability and impact.
- Enables data-driven decision making, prioritization, and resource allocation.



# 4. Quantitative Risk Analysis

Probability and impact scales

(Ref. PMBOK Guide 6th Edition)

## Probability & Impact Matrix

**What it is:** A tool for visually assessing and prioritizing risks based on their likelihood and potential impact.

**How it works:**

- Define a scale for probability (e.g., High (0.7-1.0), Medium (0.3-0.7), Low (0-0.3)).
- Define a scale for impact (e.g., High, Medium, Low) based on project objectives (cost, time, quality).
- Plot each risk on the matrix based on its assessed probability and impact.

SCALE	PROBABILITY	+/- IMPACT ON PROJECT OBJECTIVES		
		TIME	COST	QUALITY
Very High	>70%	>6 months	>\$5M	Very significant impact on overall functionality
High	51-70%	3-6 months	\$1M-\$5M	Significant impact on overall functionality
Medium	31-50%	1-3 months	\$501K-\$1M	Some impact in key functional areas
Low	11-30%	1-4 weeks	\$100K-\$500K	Minor impact on overall functionality
Very Low	1-10%	1 week	<\$100K	Minor impact on secondary functions
Nil	<1%	No change	No change	No change in functionality

## 4. Quantitative Risk Analysis

# Probability and impact matrix

		Threats					Opportunities						
Probability	Very High 0.90	0.05	0.09	0.18	0.36	0.72	0.72	0.36	0.18	0.09	0.05	Very High 0.90	Probability
	High 0.70	0.04	0.07	0.14	0.28	0.56	0.56	0.28	0.14	0.07	0.04	High 0.70	
	Medium 0.50	0.03	0.05	0.10	0.20	0.40	0.40	0.20	0.10	0.05	0.03	Medium 0.50	
	Low 0.30	0.02	0.03	0.06	0.12	0.24	0.24	0.12	0.06	0.03	0.02	Low 0.30	
	Very Low 0.10	0.01	0.01	0.02	0.04	0.08	0.08	0.04	0.02	0.01	0.01	Very Low 0.10	
		Very Low 0.05	Low 0.10	Moderate 0.20	High 0.40	Very High 0.80	Very High 0.80	High 0.40	Moderate 0.20	Low 0.10	Very Low 0.05		
Negative Impact						Positive Impact							

## 4. Quantitative Risk Analysis

# Probability and impact matrix

RISK ASSESSMENT MATRIX				
	Severity			
Likelihood	Catastrophic	Critical	Marginal	Negligible
Frequent	1	3	6	10
Probable	2	5	9	14
Occasional	4	8	13	18
Remote	7	12	16	19
Improbable	11	15	17	20

When selecting the severity level, you must always consider the worst that can happen... regardless of the likelihood.

## 4. Quantitative Risk Analysis

# Sensitivity Analysis

**What it is:** A technique for determining the sensitivity of project outcomes to changes in uncertain variables (risks).

**Goal:** Identify the inputs whose variation have the most impact on your key outputs

**How it works:**

- Identify key variables that impact project objectives (e.g., material costs, labor rates, market demand).
- Systematically change the values of these variables (within a realistic range).
- Observe and analyze the resulting changes in project outcomes.



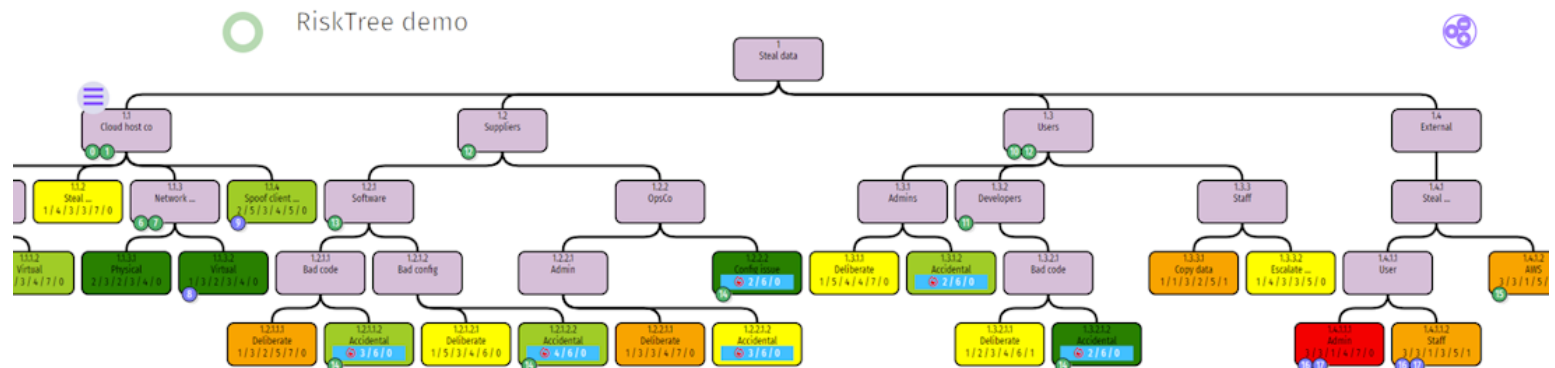
## 4. Quantitative Risk Analysis

# Decision Tree Analysis

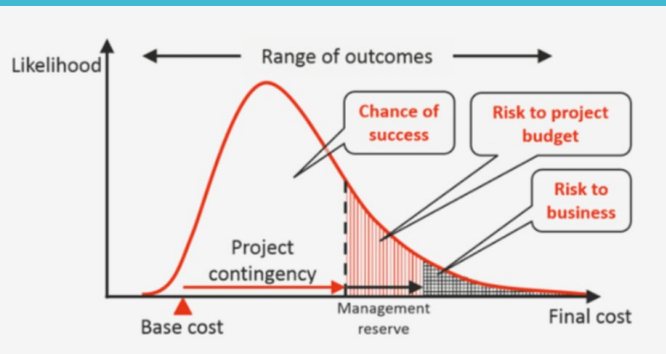
**What it is:** A visual tool for evaluating different decision options in situations involving risk and uncertainty.

**How it works:**

- Define the decision to be made.
- Identify possible actions and their potential outcomes.
- Estimate the probability of each outcome.
- Assign a value or cost to each outcome.
- Calculate the expected value of each action.



## 4. Quantitative Risk Analysis



# Montecarlo Analysis

**What it is:** A powerful technique for simulating a wide range of possible project outcomes by repeatedly sampling values from probability distributions assigned to uncertain variables.

**How it works:**

- Identify uncertain variables that impact project outcomes.
- Assign probability distributions to these variables based on historical data, expert judgment, or industry benchmarks.
- Run many simulations, each using a different set of randomly sampled values for the uncertain variables.
- Analyze the distribution of project outcomes to assess risk exposure and confidence levels.

**More info:**

- 1) [What is the Monte Carlo Simulation? — Helping Companies Deliver More Value Through Better Process Management | Bob Stanke](#)
- 2) [Simulating the Project Schedule - Monte Carlo simulation \(youtube.com\)](#)

## Risk Analysis

Risk analysis  
wrapping up

# Integrating Qualitative and Quantitative Methods

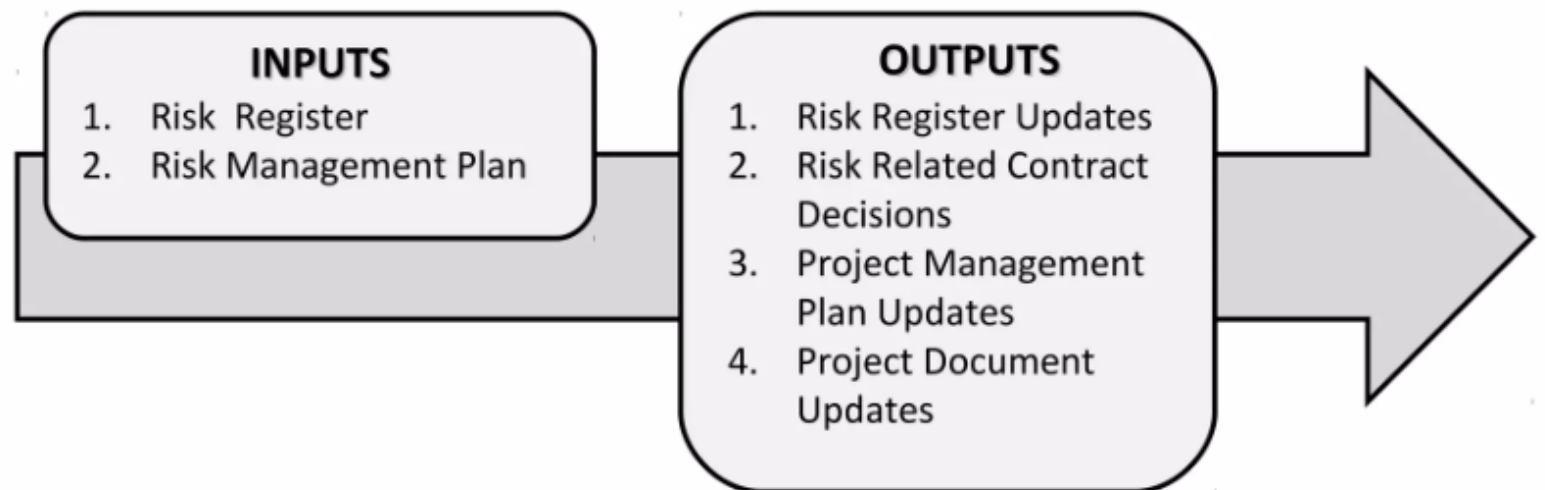
- Qualitative and quantitative risk analysis **methods are complementary**, not mutually exclusive.
- **Qualitative analysis** provides a foundation for **understanding the nature of risks**, while **quantitative analysis** helps **quantify their potential impact**.
- A blended approach provides a more comprehensive understanding of risk, enabling better-informed decision-making throughout the project lifecycle.

## 5. Plan Risk Response

**Plan Risk Responses** is the process of developing options, selecting strategies, and agreeing on actions to address overall project risk exposure, as well as to treat individual project risks.

- Contingency plans are predefined actions that the project team will take if an identified risk event occurs
- Contingency reserves are provisions held by the project sponsor for possible changes in project scope or quality that can be used to mitigate cost and/or schedule risk

**Implement Risk Responses** is the process of implementing agreed-upon risk response plans



## 5. Plan Risk Response

You've assessed the risk!  
Congratulations!!

Now what?

There are only four things you can do with risk:

1. Transfer
2. Eliminate
3. Accept
4. Mitigate

<u>TRANSFER</u> Share risk with another party	<u>AVOID</u> Eliminate or withdraw from risky activities	<u>REDUCE</u> Establish controls to mitigate arising risk	<u>ACCEPT</u> Accept and budget for the occurrence
---	--	---	--

**Residual Risk** is the remaining risk after we do risk management.  
It consist of the **acceptable risk** and the **unidentified risks**.



## 5. Plan Risk Response

# Risk Response Strategies

Once risks are identified and analyzed, appropriate response strategies need to be developed and implemented. These strategies aim to either mitigate or exploit risks, depending on their nature.



### Avoid

Taking actions to completely eliminate the risk, such as choosing an alternative approach or avoiding a particular activity.



### Mitigate

Reducing the likelihood or impact of the risk by implementing preventive measures or contingency plans.



### Transfer

Shifting the responsibility for the risk to another party, such as through insurance or outsourcing.



### Accept

Choosing to acknowledge the risk and its potential consequences, accepting that no further action will be taken.

## 6. Monitor and Control Risk

*Think of this stage as the "**active**" phase of risk management. It's not enough to simply identify and plan for risks—we need to continuously track them, evaluate their impact, and adjust our approach as needed.*

### Key Processes:

**1.Risk Reassessment:** Regularly revisit the initial risk assessment. Are the identified risks still relevant? Have new risks emerged? Has the probability or impact of existing risks changed?

**2.Track Risk Triggers:** Establish early warning signs or "triggers" that indicate a risk is about to occur or is escalating. For example, if a key supplier is experiencing financial difficulties, a trigger might be a delay in their delivery schedule or a change in their communication patterns.

**3.Implement Risk Response Plans:** As triggers occur, act swiftly to implement the predetermined response plans. This could involve engaging backup suppliers, adjusting timelines, or allocating additional resources.

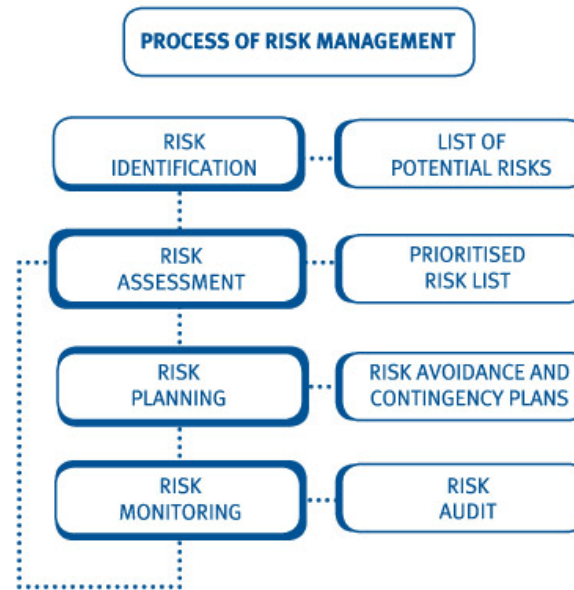
**4.Evaluate Response Effectiveness:** Regularly assess whether the implemented responses are effectively mitigating the risks. If a response isn't working as intended, be prepared to adapt and try a different approach.

**5.Communicate and Document:** Maintain open communication channels to keep stakeholders informed about risk status, trigger events, and response actions. Document all decisions and actions taken to ensure transparency and facilitate future learning.

### Tools and Techniques:

**Regular Risk Reviews:** Conduct periodic meetings or workshops to discuss risk status, review trigger events, and evaluate the effectiveness of response plans.

# Wrap-up:

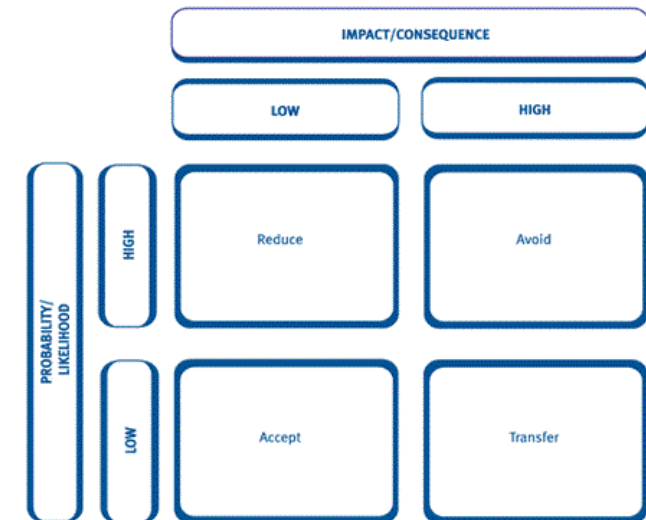


Element	Explanation
<b>Risk identification</b>	Risks are identified by key stakeholders. Risks must obviously be identified before they can be managed.
<b>Risk assessment</b>	Risks are evaluated according to the likelihood of occurrence and impact on the organisation. This assessment provides a prioritised risk list identifying those risks that need the most urgent attention.
<b>Risk planning</b>	Planning involves establishing appropriate risk management policies. Policies include ceasing risky activities through to obtaining insurance against unfavourable events. Contingency planning involves establishing procedures to recover from adverse events, should they occur.
<b>Risk monitoring</b>	Risks are monitored on an ongoing basis. Where risks change or new risks are identified then those risks are added to the risk assessment for appropriate categorisation and action.

## Risk Strategies



## Risk Mapping





## Assignment 2: Whiteboard Session

(30 minutes)

The class will work together collaboratively on developing a Risk Register from scratch for a Position Sensor. Assumptions will be agreed by the class.

1

**Work on a Risk  
Register collaboratively**

## Case Study:

# Desarrollo de un Sensor de Corriente

La empresa **Sensodine ATR** líder en la industria de sensores de corriente, decide lanzar un nuevo sensor al mercado para posicionarse en el creciente mercado de vehículos eléctricos.

### Estudio de Mercado:

Se ha realizado un estudio de mercado preliminar que indica que:

- El mercado global de vehículos eléctricos se está expandiendo rápidamente, creando una gran demanda de componentes como inversores y sus sensores asociados.
- Los fabricantes de vehículos eléctricos buscan constantemente formas de mejorar la eficiencia del inversor para extender la autonomía de conducción. Una detección de corriente más precisa se traduce directamente en una mayor eficiencia.
- Los sensores de corriente actuales tienen limitaciones en términos de precisión, ancho de banda y tamaño.

# Case Study:

## Desarrollo de un Sensor de Corriente

### Nueva Tecnología:

**Sensodine ATR** acaba de incorporar una nueva tecnología que en etapas de pruebas a demostrado:

- **Mayor Precisión:** Mucho más sensible a los campos magnéticos lo que permite una medición de corriente más precisa.
- **Mayor Ancho de Banda:** Tiempos de respuesta más rápidos, cruciales para las operaciones de conmutación de alta frecuencia en los inversores de vehículos eléctricos modernos.
- **Menor Tamaño:** la nueva tecnología permite transductores más pequeños que las soluciones existentes, lo que permite diseños de inversores más compactos.

No obstante, aún no se han desarrollado sensores comerciales con dicha tecnología, y la misma ha sido utilizada únicamente en entorno de I&D.



# Case Study:

## Desarrollo de un Sensor de Corriente

### **Empaquetado:**

Se sensor se ofrecerá en un nuevo **paquete sin plomo** para cumplir con los estrictos requisitos de tamaño y confiabilidad de las aplicaciones automotrices. Este tipo de paquete es nuevo para **SENSODINE ATR**, lo que requiere nuevos procesos, una estricta homologación del nuevo paquete y equipos nuevos de fabricación.

### **Requerimientos:**

Dentro del conjunto de requerimientos hay un requerimiento que el equipo comercial sostiene que es mandatorio para abastecer al principal cliente potencial. No obstante, el equipo de diseño sostiene que las probabilidades de poder cumplir con dicho requerimiento son muy bajas y aumentan de forma considerable el riesgo del proyecto.

### **Objetivo Agresivo:**

- 18 meses desde el inicio del proyecto hasta las primeras muestras para clientes.
- Se presupuesta 2 spins para este proyecto.

## Case Study:

# Desarrollo de un Sensor de Corriente

### Equipo del Proyecto – Core Team:

- Un gerente de proyecto dedicado que se unió recientemente a **SENSODINE ATR** y no tiene experiencia previa en la industria.
- Un equipo de experimentados diseñadores de circuitos integrados analógicos y digitales familiarizados con los procesos existentes, pero sin experiencia en la nueva tecnología del transductor.
- Un ingeniero de empaquetado con experiencia en los paquetes existentes de Allegro, pero con experiencia limitada el empaquetado a utilizar en este proyecto.
- Un equipo de pruebas recientemente conformado en **Burkina Faso** que posee menor experiencia que el equipo original con base en la casa matriz.

## Case Study:

# Desarrollo de un Sensor de Corriente

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# Q&A and Discussion

This section is dedicated to addressing your questions, sharing real-world examples, and discussing case studies related to risk management in project environments.