



FUNDAMENTALS OF



PROJECT RISK MANAGEMENT



IN SHIPYARDS






-
- ❑ **WHAT IS RISK**
 - ❑ **DEFINITION**
 - ❑ **KEY CRITICAL FACTORS**
 - ❑ **RISK AND SHIP PROJECT PHASES**
 - ❑ **PROJECT RISK MANAGEMENT**
 - ❑ **PLAN RISK MANAGEMENT**
 - ❑ **IDENTIFY RISKS**
 - ❑ **RISK ASSESSMENT QUALITATIVE**
 - ❑ **RISK ASSESSMENT QUANTITATIVE**
 - ❑ **RISK RESPONSE**
 - ❑ **FOLLOW UP AND CONTROL**
 - ❑ **BIBLIOGRAPHY**



Adaptado de 1993 The Paper House Group

MAURICE 
**THE LITTLE
LEMMING
RECOGNIZES THE
DANGER AND
VERIFIES THAT IS
DIFFERENT FROM
THE OTHER
COMPANIONS**



WHAT IS RISK?



PERHAPS

INCREASE KNOWLEDGE OF THE
UNKNOWN IN ORDER TO DECREASE THE
CHANCES OF UNFORESEEN EVENTS
HAPPEN





WHAT IS RISK?

THERE IS NO EXACT DEFINITION OF RISK

RISK MEANS DIFFERENT THINGS TO DIFFERENT PEOPLE, PROJECTS OR INDUSTRIES

THE PROBABILITY OF AN OCCURRENCE

There are 99% chance the lion hurt the coach



THE EVENT OF ANY THING

There is a risk of the branch breaks and the couple fall down



THE COMBINATION OF THE PROBABILITY OF OCCURRENCE HAPPENED AND THE CHANCE TO HAPPEN

In five plays of dice there are a chance to win once.



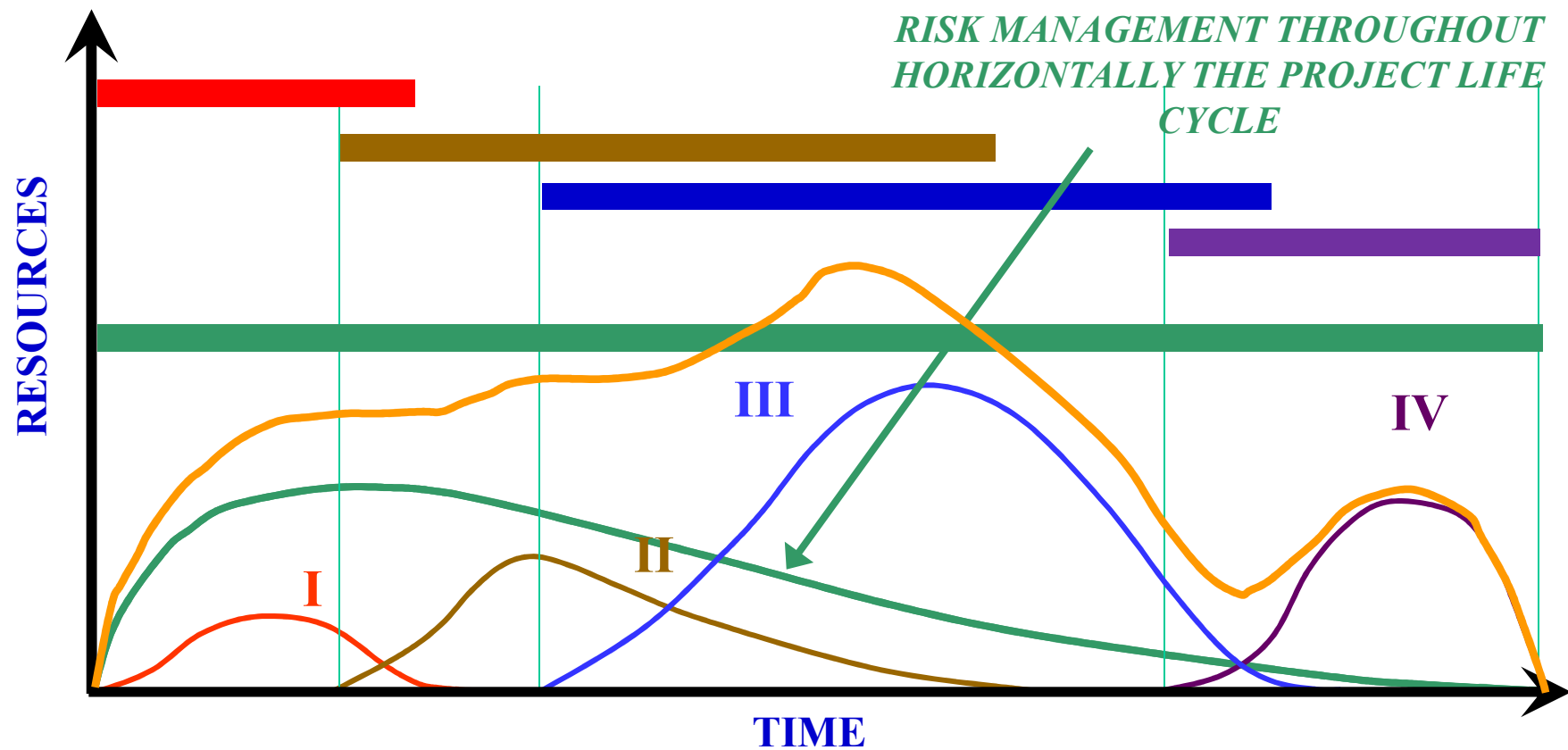


PHASE I – SHIP CONCEPTION

PHASE II – SHIP PREPARATION

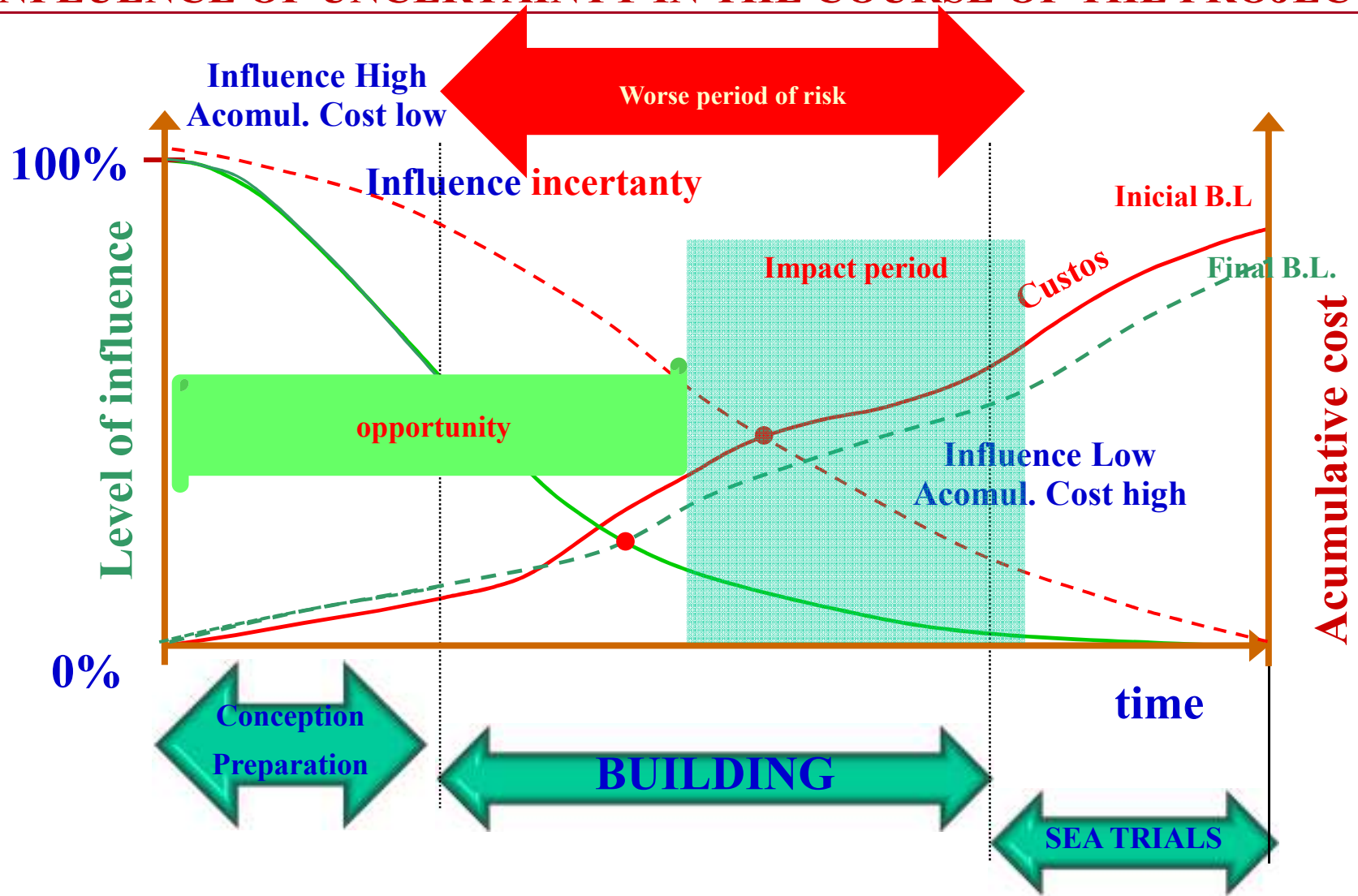
PHASE III – BUILDING

PHASE IV – SEA TRIALS)





INFLUENCE OF UNCERTAINTY IN THE COURSE OF THE PROJECT



TYPE OF RISKS

OPPORTUNITIES (POSITIVE OUTPUTS)

THREATS (NEGATIVE OUTPUTS)



GAINS



BUSINESS



LOSSES



LOSSES

INSURANCE



IS INTENDED TO BE A FAMILY OF STANDARDS RELATING TO RISK MANAGEMENT CODIFIED BY THE INTERNATIONAL ORGANIZATION FOR STANDARDIZATION.

The purpose of ISO 31000:2009 is to provide principles and generic guidelines on risk management.

Currently, the ISO 31000 family is expected to include:

- ✓ ISO 31000:2009 - Principles and Guidelines on Implementation^[1]**
- ✓ ISO/IEC 31010:2009 - Risk Management - Risk Assessment Techniques**
- ✓ ISO Guide 73:2009 - Risk Management - Vocabulary**



RISK = effect of uncertainty on objectives

- ✓ **An effect may be positive, negative, or a deviation from the expected.**
- ✓ **An objective may be financial, related to health and safety, or defined in other terms.**
- ✓ **Risk is often described by an event, a change in circumstances, a consequence, or a combination of these and how they may affect the achievement of objectives.**
- ✓ **Risk can be expressed in terms of a combination of the consequences of an event or a change in circumstances, and their likelihood.**
- ✓ **Uncertainty is the state, even partial, of deficiency of information related to, understanding or knowledge of, an event, its consequence, or likelihood.**



RISK MANAGEMENT IN PROJECTS

“IS THE SYSTEMATIC PROCESS OF PLANNING IDENTIFY, ANALYZE, RESPOND AND CONTROL THE RISK OF PROJECTS, WITH THE AIM OF INCREASING THE LIKELIHOOD AND THE IMPACT OF POSITIVE EVENTS AND DECREASE THE LIKELIHOOD AND THE IMPACT OF ADVERSE EVENTS TO THE PROJECT”.

“PMI PMBOK GUIDE 4th Edition”



KEY FACTORS INFLUENCING THE RESULTS

FAILURE



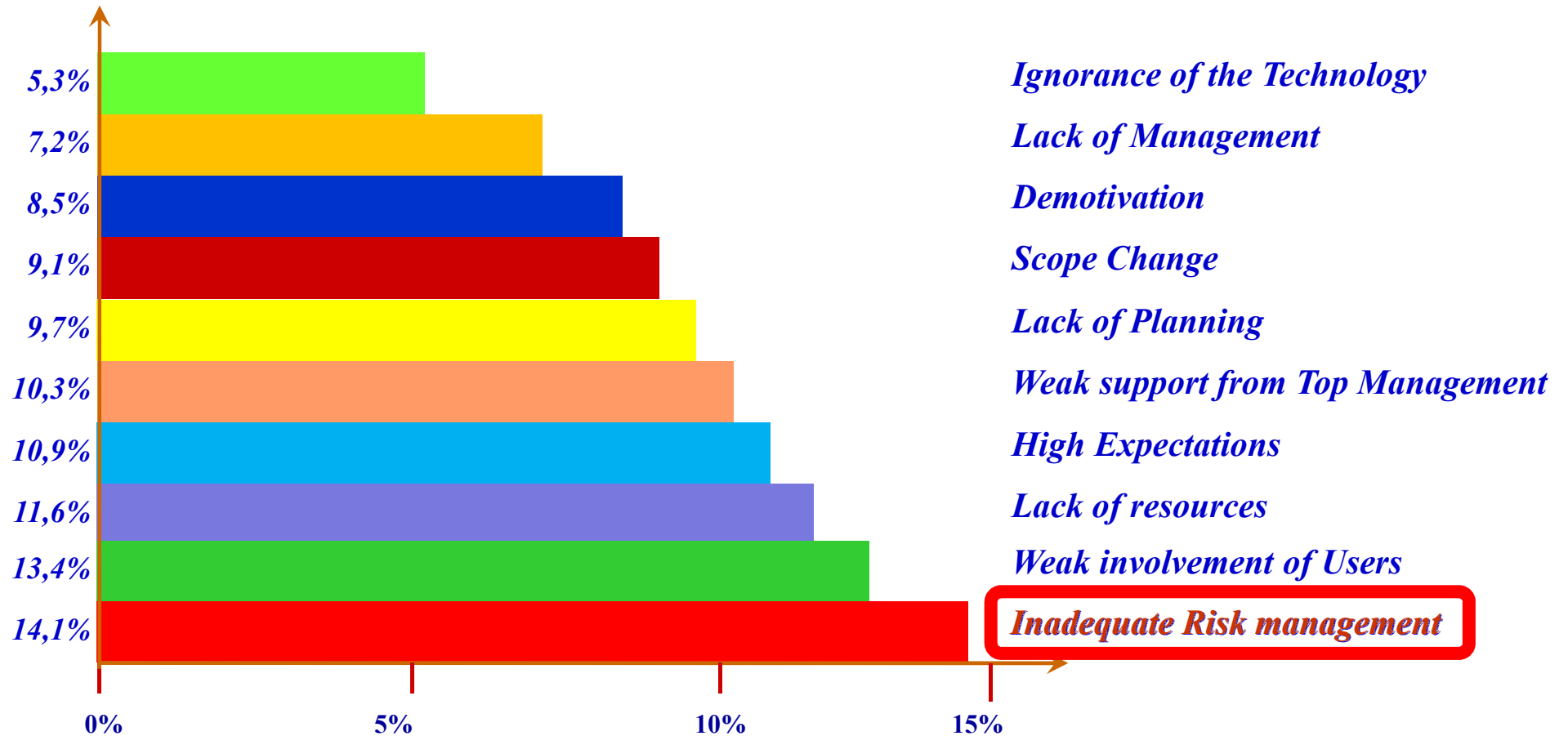
SUCCESS





FAILURE OF THE PROJECTS

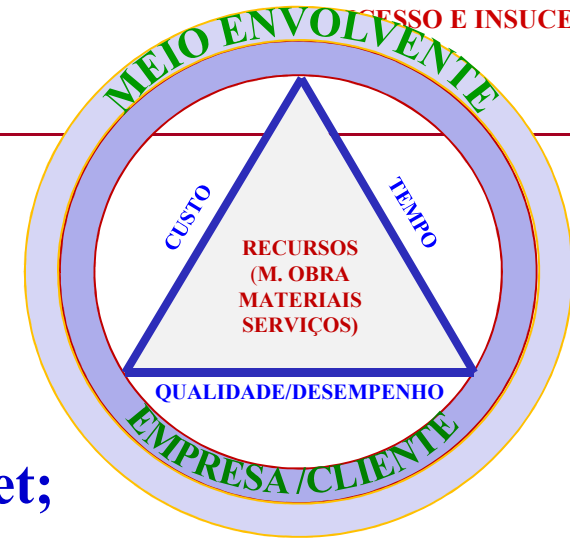
% SOME FACTORS THAT INFLUENCE THE RESULT



Adaptado de Gartner Risk Management 2005

A PROJECT IS SUCCESSFUL 😊 WHEN:

- 😊 **Concluded according to its scope;**
- 😊 **Concluded within the set period of time;**
- 😊 **The costs do not exceed the value of the budget;**
- 😊 **The result is in accordance with the requirements:**
 - ✓ **Customer and Enterprise satisfaction;**
 - ✓ **Aligned with the business strategy of the company;**
 - ✓ **According to the customer's Business requirements.**



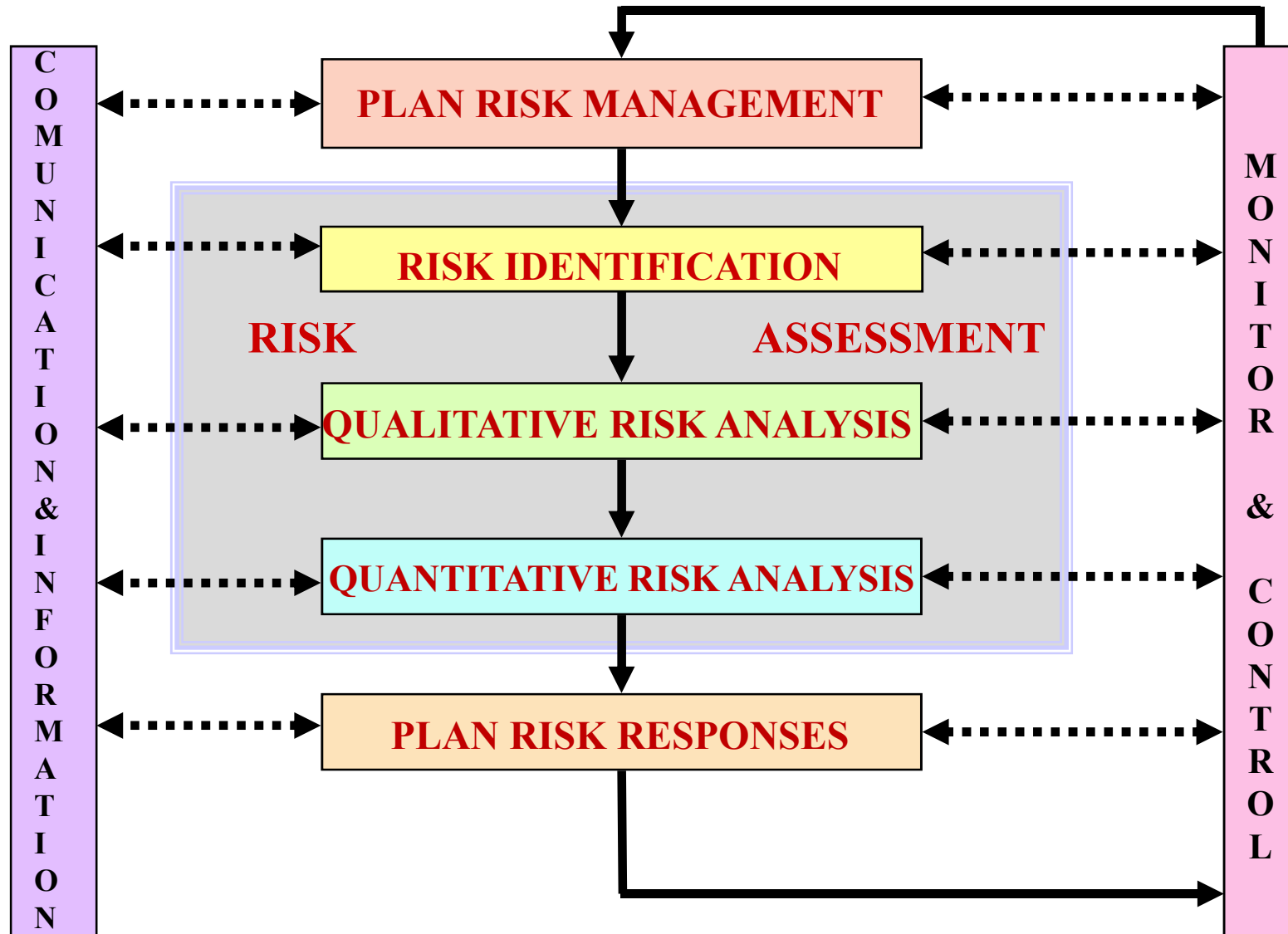
Although there are varying degrees of failure, a project can only succeed when all the criteria described above are satisfied

**BE “SMART “ 😊 WITH
THE OBJECTIVES**



- 😊 ***S*** PECIAL
- 😊 ***M*** EASURABLE
- 😊 ***A*** CHIEVABLE
- 😊 ***R*** REALISTIC
- 😊 ***T*** IMPLY

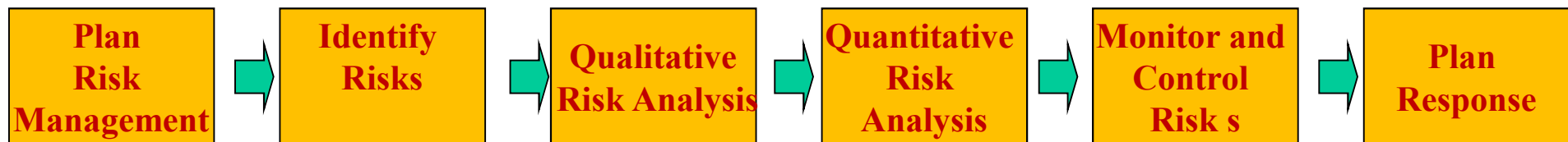






How Do We Manage Risk?

- **USE THE SIX RISK MANAGEMENT PROCESSES**
 - **PLAN RISK MANAGEMENT**
 - **IDENTIFY RISKS**
 - **PERFORM QUALITATIVE RISK ANALYSIS**
 - **PERFORM QUANTITATIVE RISK ANALYSIS**
 - **PLAN RISK RESPONSES**
 - **MONITOR AND CONTROL RISKS**





Plan Risk Management

Project Scope Statement

Cost Management Plan

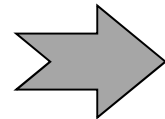
Schedule Management Plan

Enterprise Environmental Factors

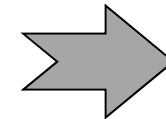
Organizational Process Assets

TOOLS & TECHNIQUES

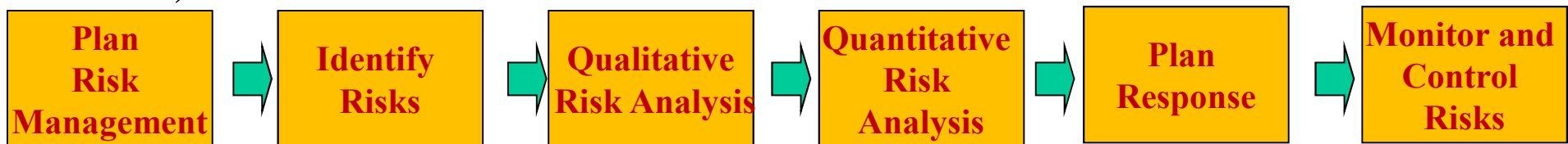
INPUTS



OUTPUTS



Risk Management Plan





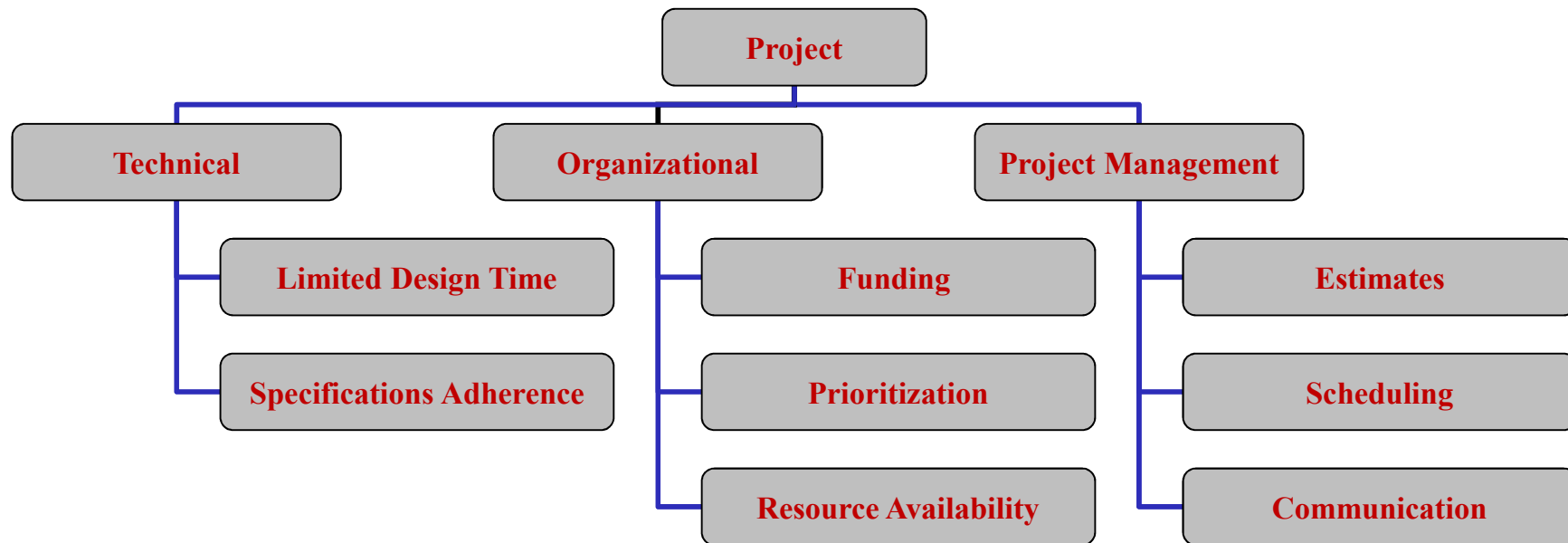
What is a Risk Management Plan?

- **Methodology – Approach, tools, & data**
- **Roles & Responsibilities**
- **Budgeting – Resources to be put into risk management**
- **Timing – When and how often**
- **Risk Categories – Risk Breakdown Structure (RBS)**
- **Definitions – Risk probabilities and impact**
- **Probability and Impact Matrix**
- **Stakeholder tolerances**
- **Reporting formats**
- **Tracking**



Risk Breakdown Structure

- Lists categories and subcategories where risks may arise





Identify Risks

TOOLS & TECHNIQUES

Risk Management Plan

Activity Cost Estimates

Activity Duration Estimates

Scope Baseline

Stakeholder Register

Cost Management Plan

Schedule Management Plan

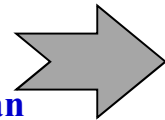
Quality Management Plan

Project Documents

Enterprise Environmental Factors

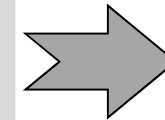
Organizational Process Assets

INPUTS

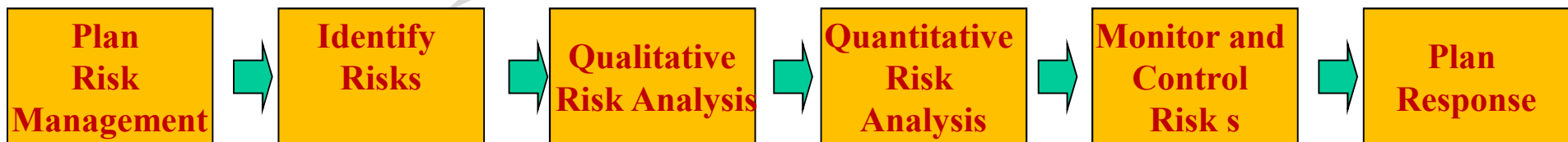


- Documentation Reviews
- Information Gathering Techniques
- Checklist Analysis
- Assumption Analysis
- Diagramming Techniques
- SWOT Analysis
- Expert Judgment

OUTPUTS



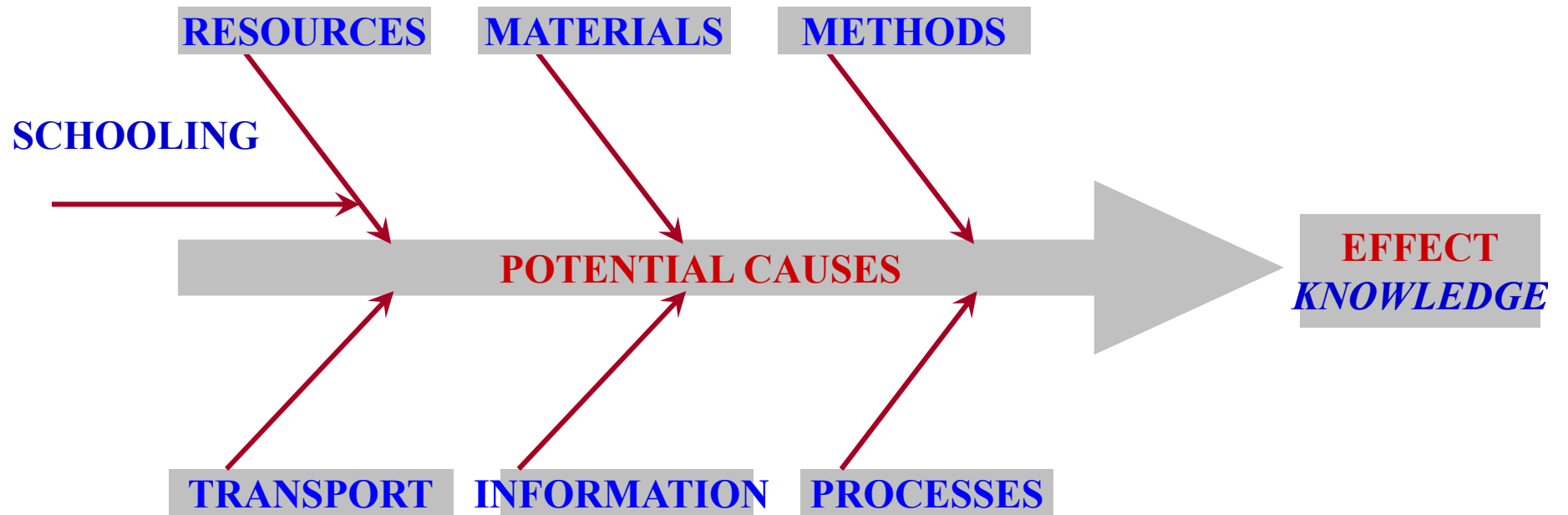
Risk Register
 List of Identified risks.
 Potential responses
 Root causes.
 Updated risk categories (if required)

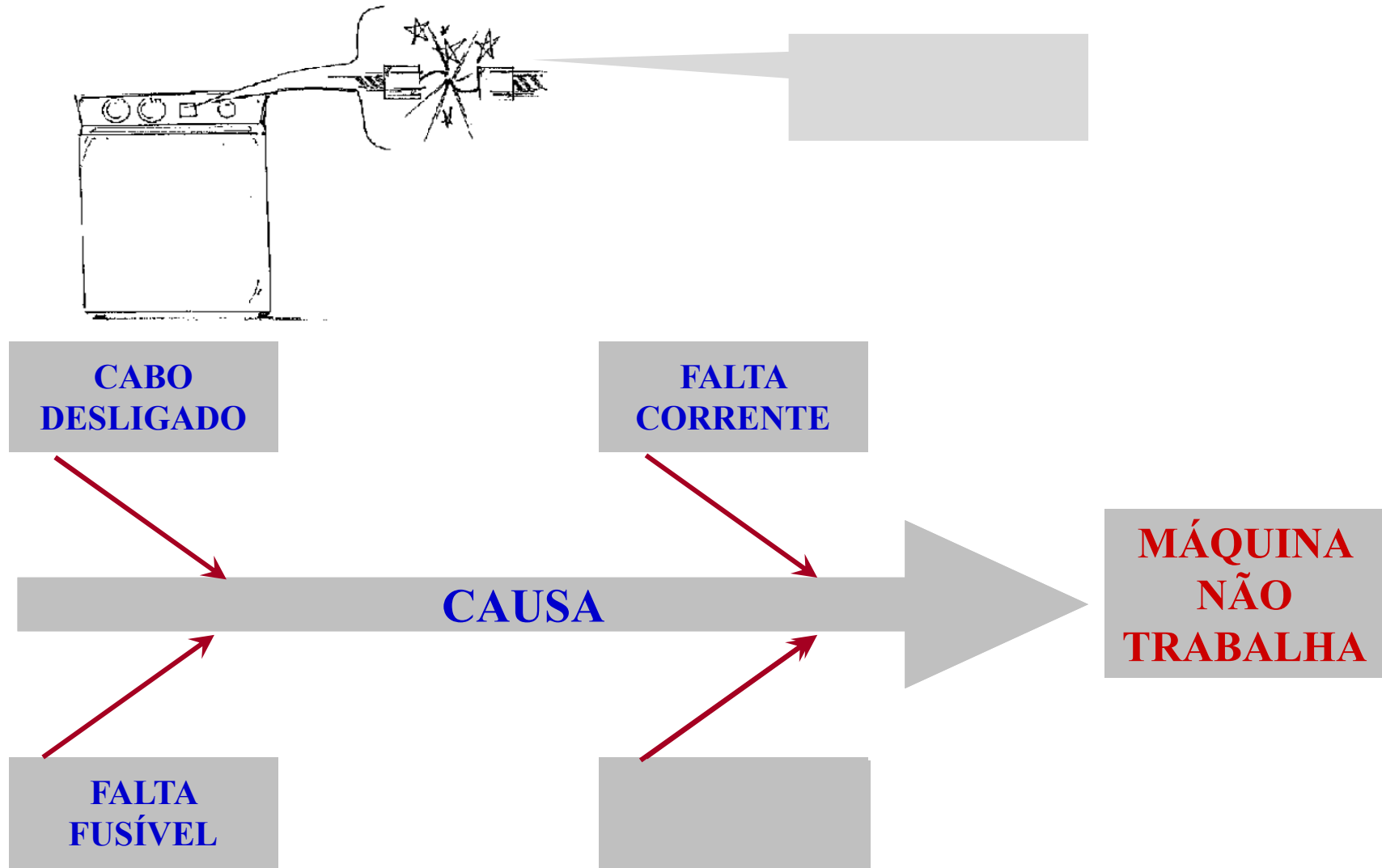


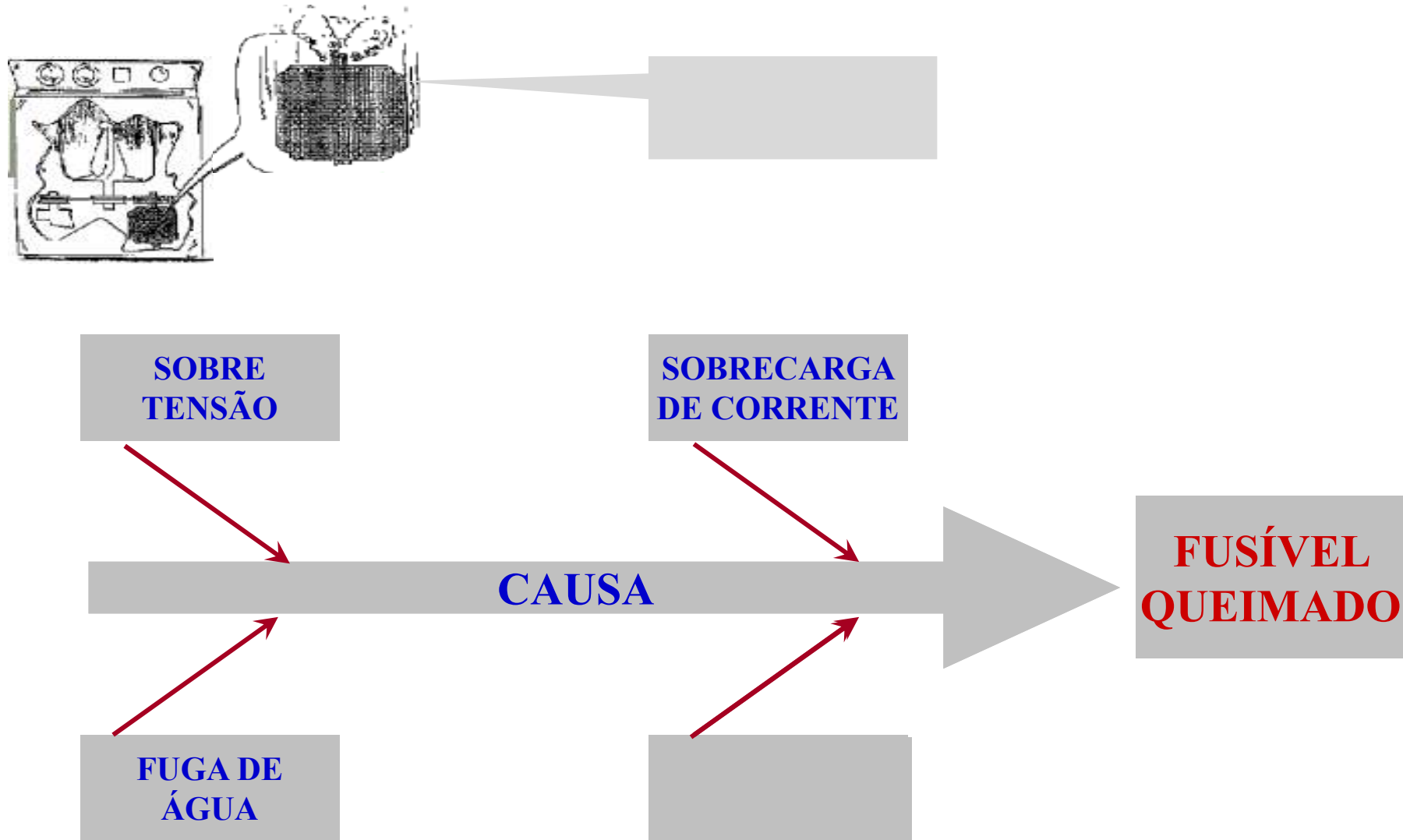


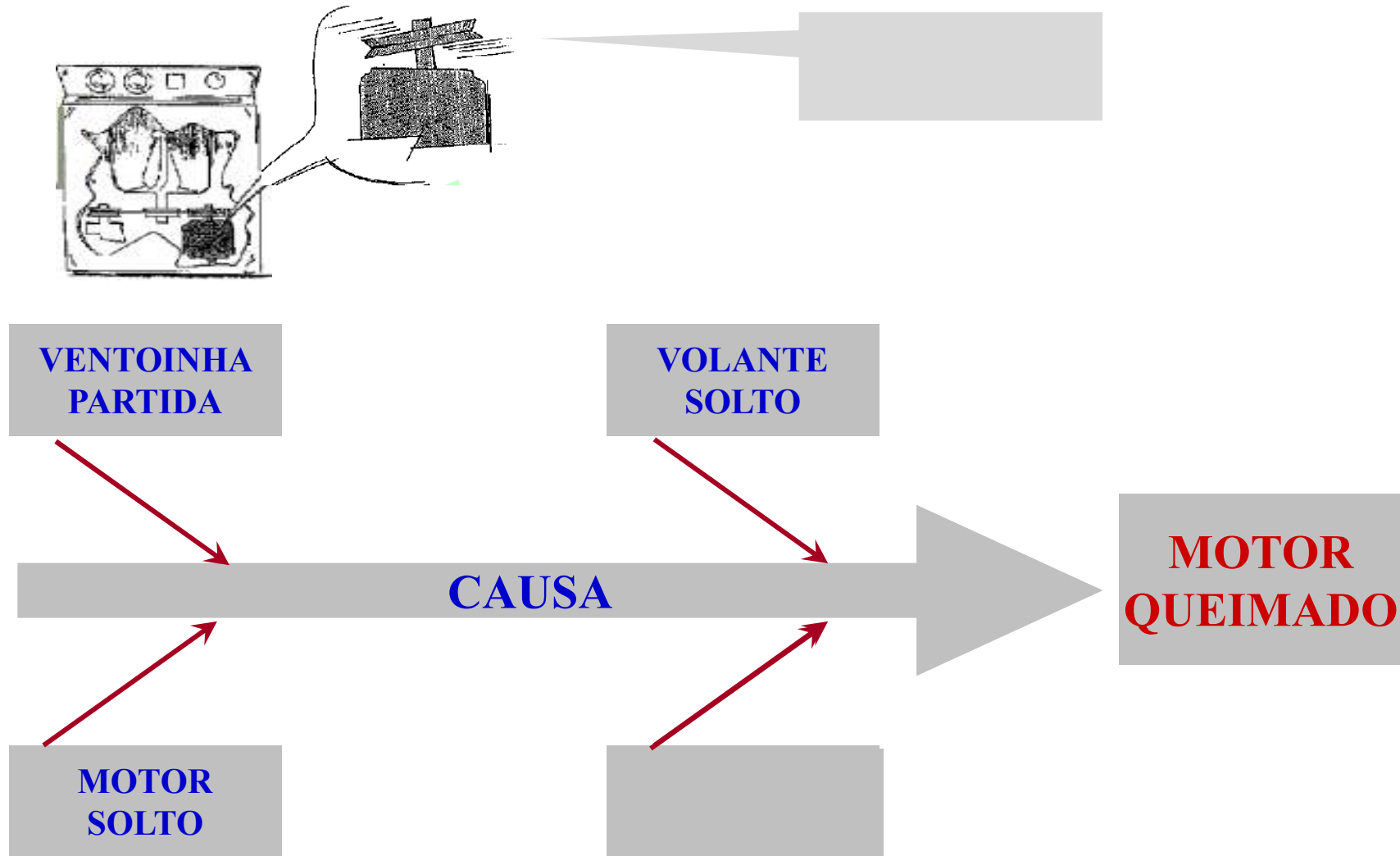
- **BRAINSTORMING**
- **DELPHI TECHNIQUE**
 - **SUCCESSIVE ANONYMOUS QUESTIONNAIRES ON PROJECT RISKS WITH RESPONSES SUMMARIZED FOR FURTHER ANALYSIS**
- **INTERVIEWING**
- **ROOT CAUSE IDENTIFICATION**
- **STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS (SWOT) ANALYSIS**
- **ASSUMPTIONS**

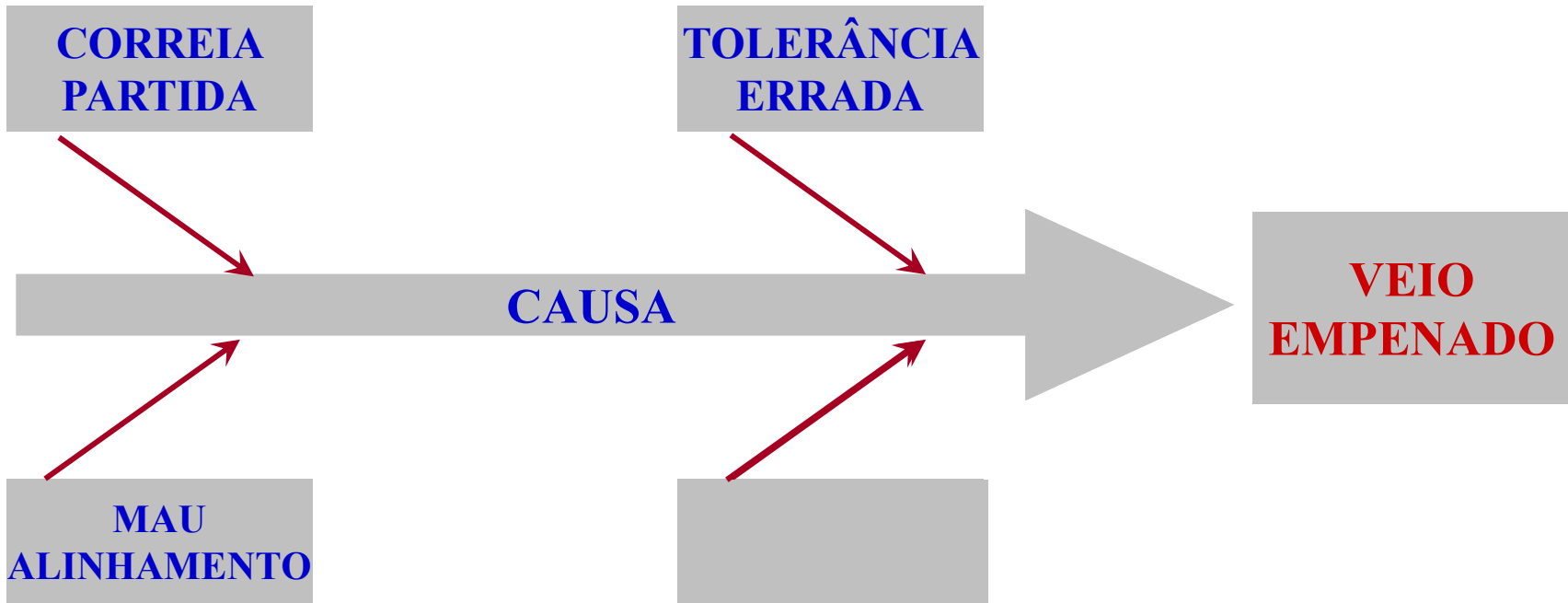
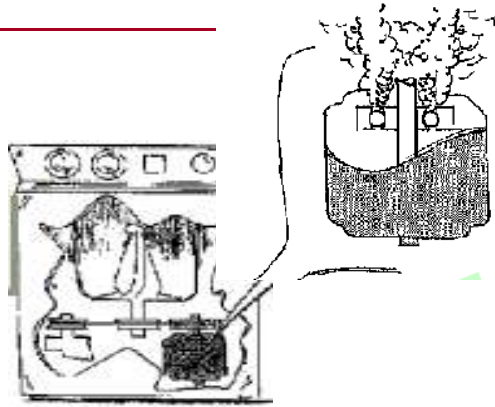
**CAUSE AND EFFECT DIAGRAMS
ALSO KNOWN AS ISHIKAWA OR FISHBONE**

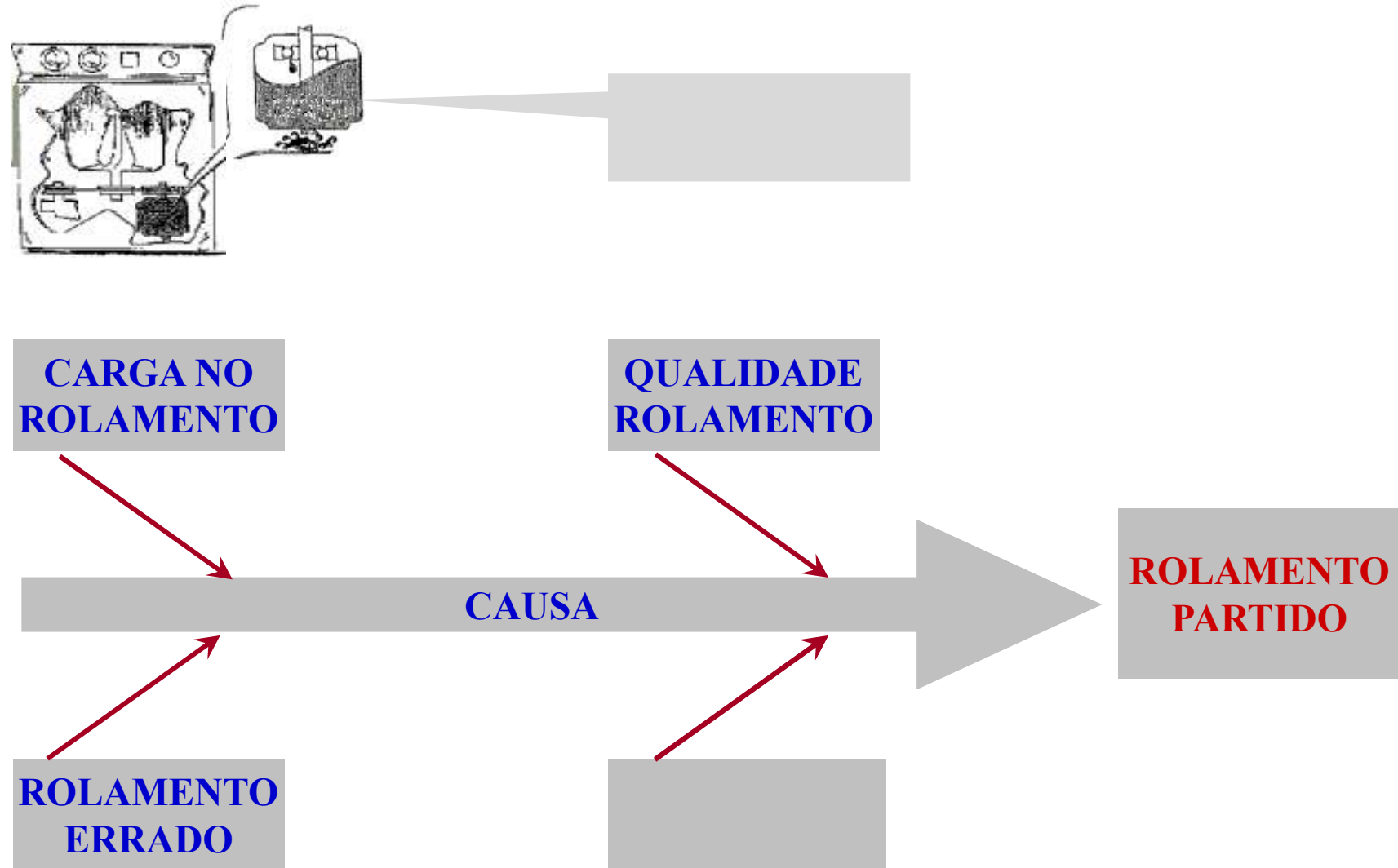










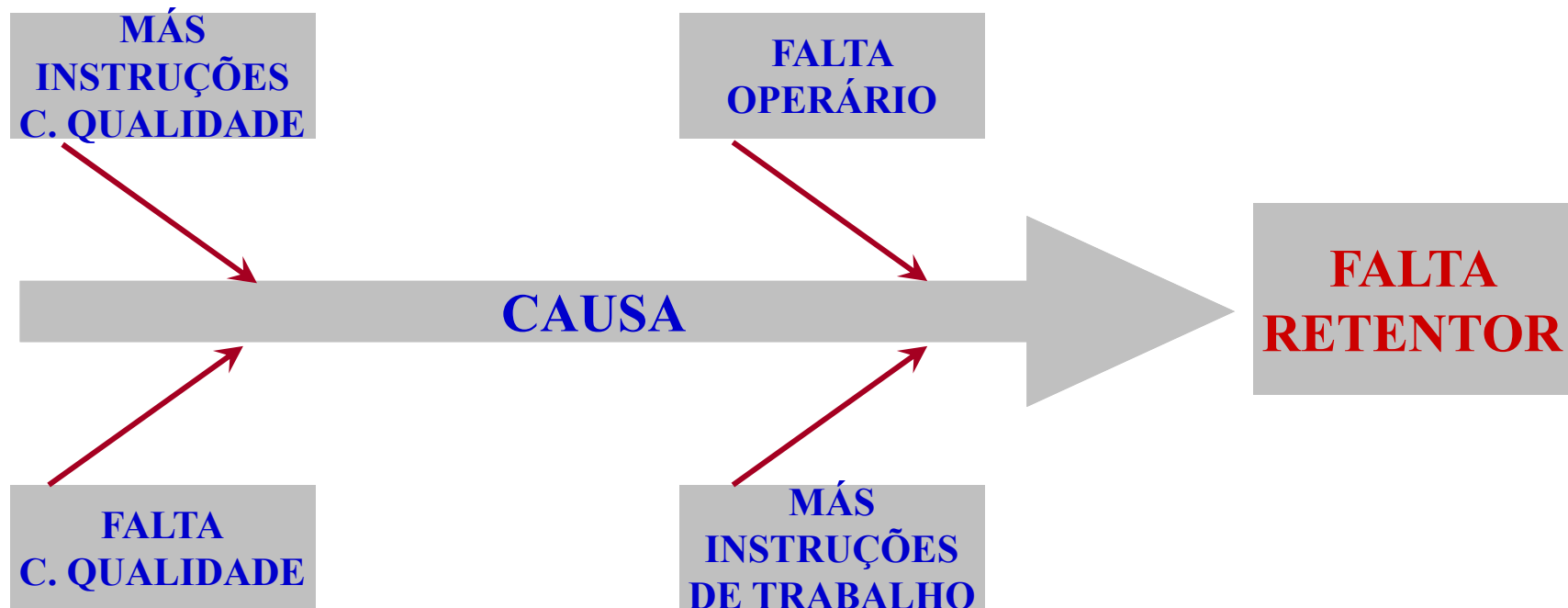


**ACÇÕES CORRECTIVAS
PARA A MÁQUINA EM
CAUSA**

?

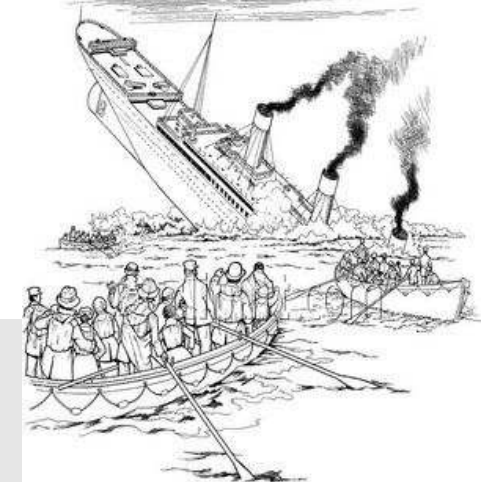
SUBSTITUIR MOTOR

**ACÇÕES CORRECTIVAS
PARA O PROCESSO**





ASSUMPTIONS



FAMOUS ASSUMPTIONS

TITANIC NEVER SUNK;

FERRY "ESTONIA" BOW RESISTANT ANY TYPE OF SEA WEATHER DE ABATER

SISTEMA DE BAGAGENS SENSORS PREVENT CONGESTIONDAS MALAS.



RISK REGISTER

THE LIST OF LIKELY RISKS OR RISK FACTORS IDENTIFIED SHOULD HAVE A DETAILED DESCRIPTION. FIRSTLY BY SORT THEM, GIVING THEM A CERTAIN WEIGHT BY SETTING THE POSSIBLE ORIGINS AND CONSEQUENCES, THUS FACILITATING THEIR FUTURE EVALUATION.

EXAMPLE OF A TABLE FOR REGISTER OF RISKS

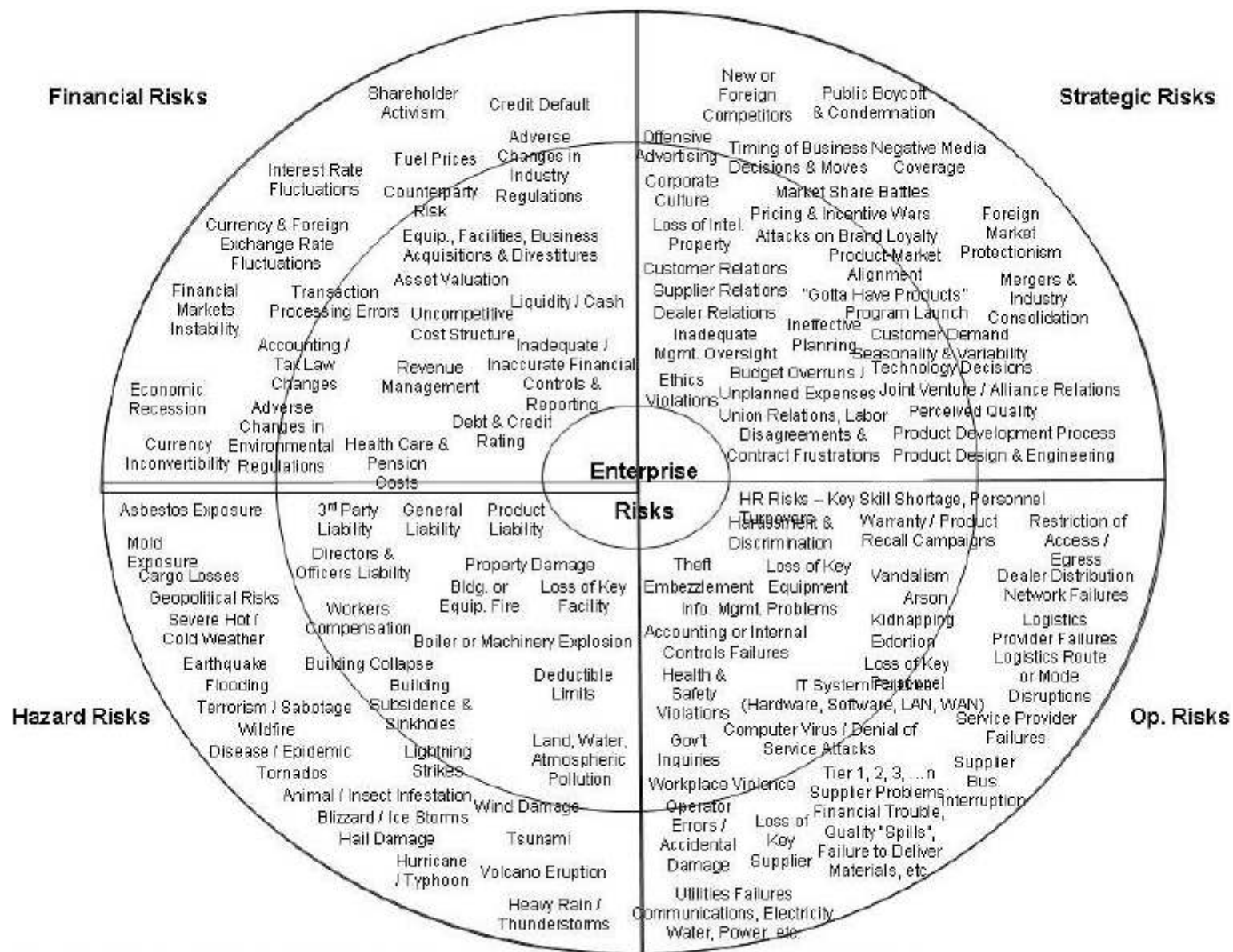
<i>PROJECT</i>		<i>MANAGER</i>	<i>REFERENCES</i>	
1	ID	<i>SUMMARY DESCRIPTION</i>	<i>R.B.S</i>	<i>W.B.S.</i>
2	SOW	<i>DETAILE DESCRIPTION</i>		
3	ASSUMPTIONS			
4	STAKEHOLDERS			
5	CATEGORY			
6	SOURCES OF INFORMATION			
7	OBS:			

RISK TYPES





EXHIBIT 2. INDUSTRY PORTFOLIO OF RISKS



Source: Debra Elkins, "Managing Enterprise Risks in Global Automatic Manufacturing Operations," presentation at the University of Virginia, January 23, 2006. Permission granted for use.



Perform Qualitative Risk Analysis

TOOLS & TECHNIQUES

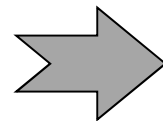
Risk Register

Risk Management Plan

Project Scope Statement

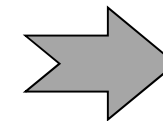
Organizational Process Assets

INPUTS

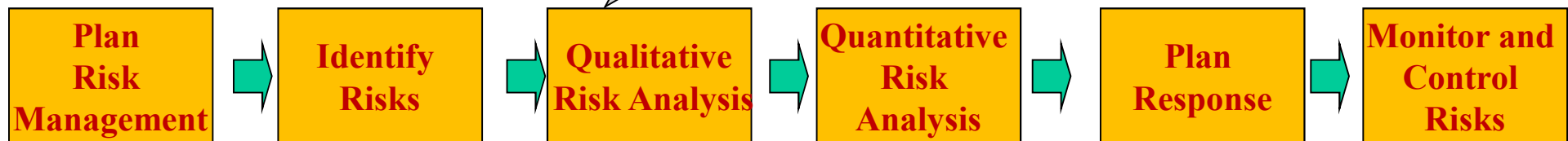


- Risk probability and impact statement
- Probability and impact matrix
- Risk data quality assessment
- Risk categorization
- Risk urgency assessment
- Expert Judgement

OUTPUTS



Risk Register Updates





USING APPROPRIATE METHODS AND TOOLS OF ANALYSIS CAN EVALUATE THE PROBABILITY AND CONSEQUENCES OF CHANGES IN THE RISK;

THE TREND OF INDICATORS OBTAINED IN QUALITATIVE ANALYSIS GUIDE US IN NEED OF GREATER OR LESSER ACTION ON RISK MANAGEMENT.

PROBABILITY AND IMPACT ASSESSMENT

PROBABILITY OF OCCURRENCE OF THE RISK

"NUMERIC EXPRESSION of the POSSIBILITY of an OCCURRENCE with VALUES BETWEEN 0 and 1" (AS/NZS 4360:2004)

0 - THERE IS NO LIKELIHOOD **1** - YES THERE IS PROBABILITY (SURE)

"IS THE GREATER OR LESSER POSSIBILITY OF OCCURRENCE OF AN EVENT "

(ISO/IEC Guide 73:2002)

CONSEQUENCE or RISK IMPACT

IS THE RESULT IN THE OBJECTIVES OF THE PROJECT CAUSED BY THE EFFECTS OF THE RISK; (AS/NZS 4360:2004);

RISK PERCEPTION

Believe rationally or irrationally the probability of occurrence of a hazard





ESCALAS DA PROBABILIDADE E CONSEQUÊNCIA/IMPACTO

EM TERMOS QUALITATIVOS

PROBABILIDADE DA OCORRÊNCIA (P)



ZERO  M. BAIXA BAIXA MODERADA ALTA M. ALTA

CONSEQUÊNCIA /IMPACTO (I)



ZERO INSIGNIFICANTE BAIXO MODERADO ALTO  CATASTRÓFICO



IMPACTO/CONSEQUÊNCIA	
NEGLIGIBLE	INSIGNIFICANT
	LOW
MARGINAL	MODERADA
CRITICAL	HIGH
CATASTROPHIC	CATASTROPHIC

RESULTADO		
VERY LOW	NEGLIGÍVEL	
LOW	LOW	
SIGNIFICANT	TOLERABLE	
HIGH	HIGH	
TOO HIGH	EXTREME	



MATRIZ DE AVALIAÇÃO DO IMPACTO *EM RELAÇÃO À SUSTENTABILIDADE DO PROJECTO*

AVALIAÇÃO DO IMPACTO DO RISCO					
<i>Objectivos</i>	<i>M. BAIXO</i> <i>0,05</i>	<i>BAIXO</i> <i>0,1</i>	<i>MODERADO</i> <i>0,2</i>	<i>ALTO</i> <i>0,4</i>	<i>M. ALTO</i> <i>0,8</i>
<i>Custo</i>	Aumento <1%	Aumento <5%	Aumento 5- 10%	Aumento 10-20%	Aumento >20%
<i>Duração</i>	Escorrega <1%	Escorrega <5%	Escorrega 5-10%	Escorrega 10-20%	Escorrega >20%
<i>Âmbito</i>	M. Pouco afectado	Pouco afectado	Algumas áreas afectadas	Redução inaceitável para o cliente	Projecto cancelado
<i>Qualidade</i>	Afectada sem significado	Afectada uma pequena parcela	Redução requer aprovação cliente	Redução inaceitável para o cliente	Projecto cancelado



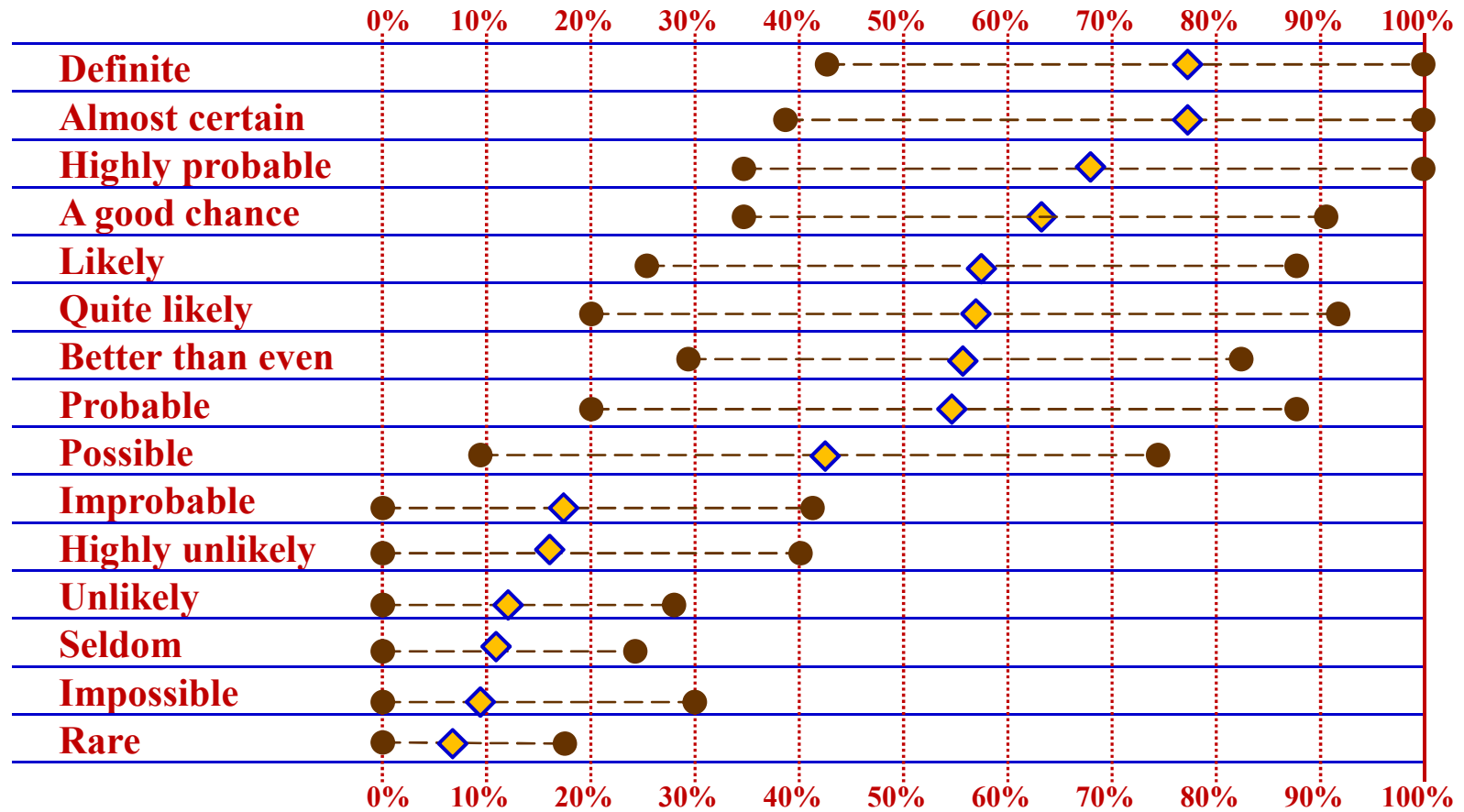
OGEN RISK MATRIX

PROBABILITY	IMPACT)				
	INSIGNIFICANT	LOW	MODERATE	HIGH	CATASTROPHIC
FREQUENT	Yellow	Orange	Red	Dark Red	Dark Red
POSSIBLE	Yellow	Light Yellow	Orange	Red	Dark Red
LIKELY	Green	Yellow	Light Yellow	Orange	Red
RARE	Green	Yellow	Light Yellow	Light Yellow	Orange
REMOTE	Light Green	Green	Green	Yellow	Light Yellow

Dark Red	Extreme	Unacceptable Risk. Immediate control, improvement actions
Red	Too high	
Orange	High	Acceptable risk. Tight control, costs already have a considerable value
Yellow	Tolerable	
Light Yellow	Low	
Green	Very low	Acceptable risk. Requires regular meetings, low control costs
Light Green	Negligible	



PROBABILITY








VALOR MÉDIO
● — ◆ — ●

Resultados adaptados de Hillson 2004

QUALITATIVE ANALYSIS

DATA IDENTIFICATION REGISTRATION UPDATE

THE DATA RECORD BEGINS IN THE INITIAL PHASE OF THE PROCESS OF RISK AND NEEDS TO BE UPDATED WITH THE DATA OBTAINED WITH THIS KIND OF ASSESSMENT, ORDERING THE RISKS AND ITS FACTORS WITH THE PRE-ESTABLISHED DEGREES

-  **PRIORITY ORDERING OF RISKS;**
-  **GROUP RISK CATEGORIES;**
-  **RISKS REQUIRING IMMEDIATE ACTION;**
-  **RISKS THAT REQUIRE MORE DETAILED ANALYSIS;**
-  **RISKS WITH LOW PRIORITY.**

ACTION

**CONTINGENCY
PLAN**

**MAINTAIN
SURVEILLANCE**



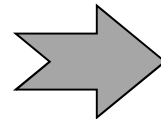
OGEN

Perform Quantitative Risk Analysis

TOOLS & TECHNIQUES

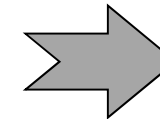
Risk Register
Risk Management Plan
Cost Management Plan
Schedule Management Plan
Organizational Process Assets

INPUTS

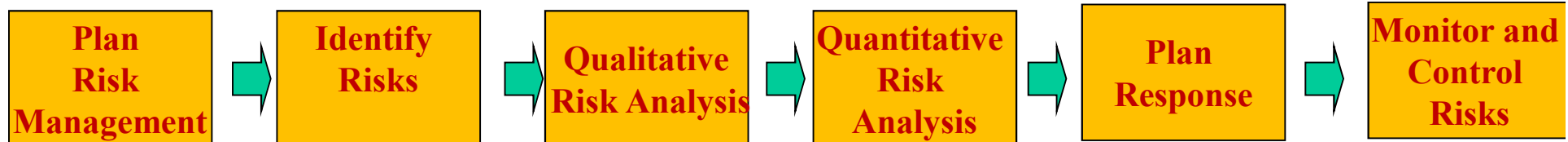


- ❑ Data gathering and representation techniques
- ❑ Quantitative risk analysis and modeling
- ❑ Expert Judgment

OUTPUTS



Risk Register Updates





Quantitative Risk Analysis

- **Assess the likelihood and impact of identified risks to determine their magnitude and priority**
- **Risk quantification tools and techniques include**
 - **Probability/Impact matrixes**
 - **Expected Monetary Value Analysis (EMV)**
 - **Decision Tree analysis**
 - **Method of interview**
 - **Analyze numerically the probability and consequence of each risk**
 - **Monte Carlo analysis**



RISK VALUE

IS THE PRODUCT OF THE RISK THE LIKELIHOOD (P) BY THE IMPACT OF THE RISK EVENT (I)

$$GR = P \times I$$

The result is numeric, in many cases the data used for the calculation of risk are subjective, and the value is obtained through the array.

INPUT

PROBABILITY.

What is the chance that something may occur?

Ex: You win once every ten 1/10; 0,1; 10% ? Heads or tails ½ ; 0,5; 50%? Likely, unlikely ou not likely?.

IMPACT.

Very broad, very subjective, but rapid assessment.

EX: The damage that can result if something were to happen is 10%? Is the damage slight or catastrophic?



QUANTITATIVA RISK MATRIX



<i>0,9</i>	0,05	0,09	0,18	0,36	0,72
<i>0,7</i>	0,04	0,07	0,14	0,28	0,56
<i>0,5</i>	0,03	0,05	0,10	0,20	0,40
<i>0,3</i>	0,02	0,03	0,06	0,12	0,24
<i>0,1</i>	0,005	0,01	0,02	0,04	0,08
PROBABILITY (P)	<i>0,05</i>	<i>0,10</i>	<i>0,20</i>	<i>0,40</i>	<i>0,80</i>
	<i>IMPACT (I) (OVER AN OBJECTIVE Ex: Cost, Time, Scope, Quality)</i>				

The values presented determines the Risk Grade

$$\text{GRAU do RISCO} = (P) \times (I)$$





Expected Monetary Value EVM

IS A QUANTITATIVE DECISION ANALYSIS TECHNIQUE OF RISK MANAGEMENT USED TO QUANTIFY THE RISKS OF A PROJECT, AND TYPICALLY USED TO DETERMINE THE CONTINGENCY RESERVE OF PROJECTS

RISK	PROBABILITY OF OCCURRENCE (P)	IMPACT ON COST (I)	CONTINGENCY RESERVE = P x I
A	10%	80.000 €	8.000 €
B	30%	30.000 €	9.000 €
C	50%	8.000 €	4.000 €
D	10%	40.000 €	4.000 €
E	30%	20.000 €	6.000 €
F	25%	10.000 € (+)	2.500 €
TOTAL		168.000 €	28.500 €



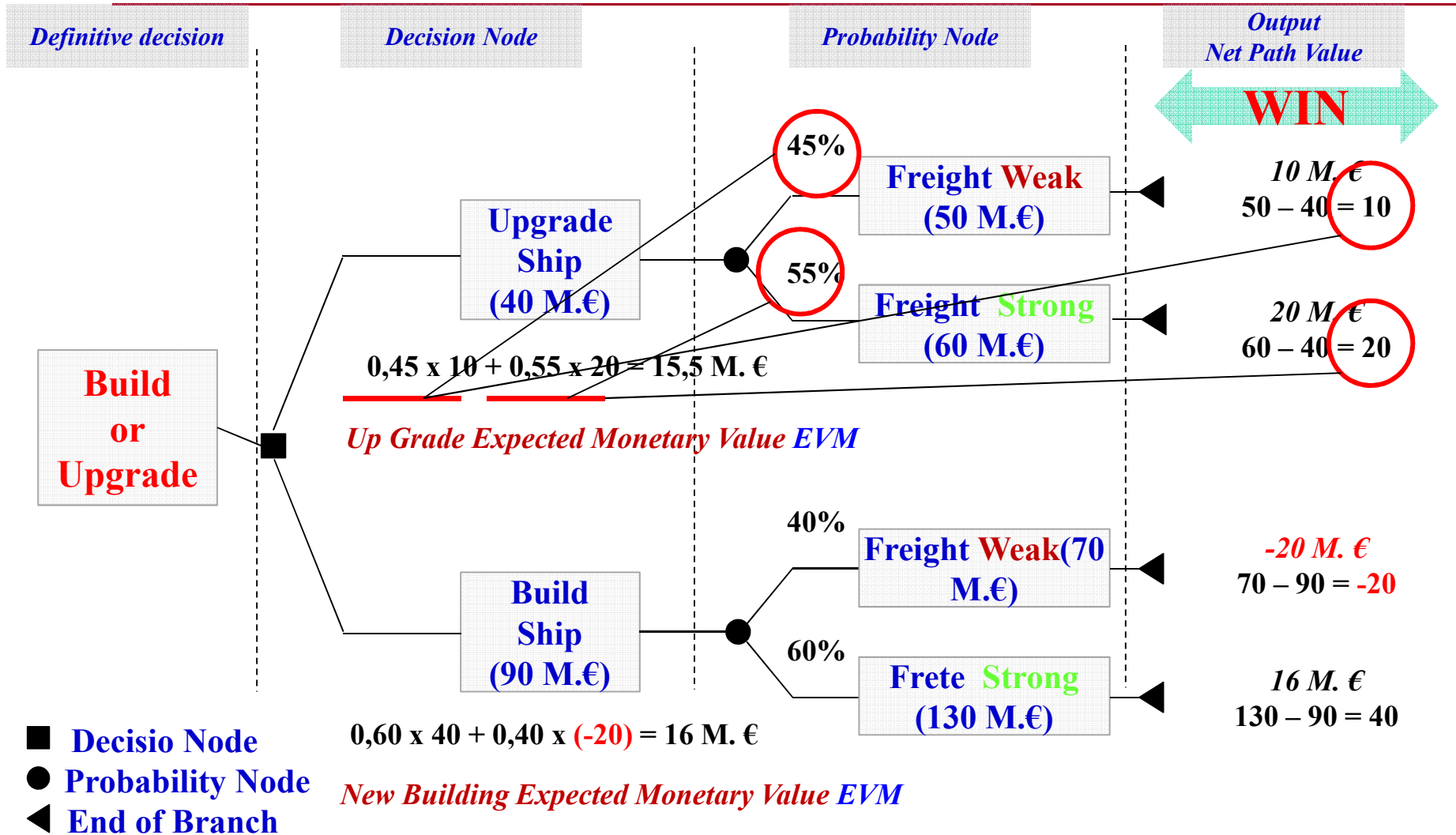
DECISION TREES

DIAGRAMS THAT DESCRIBE THE DECISIONS UNDER CERTAIN CONSIDERATIONS AND IMPLICATIONS IN ORDER TO CHOOSE ONE OF THE ALTERNATIVES AVAILABLE. CONTAIN THE PROBABILITY OF RISK OCCURRENCE AND THE COST OR REWARD OF EACH LOGICAL SET OF EVENTS OF FUTURE DECISIONS.

THE DECISION TREES HELP IN TAKING RESOLUTIONS BETWEEN DIFFERENT CAPITAL INVESTED (REPRESENTED BY DECISION NODES ■) WHEN MARKETS CONTAIN ELEMENTS OF UNCERTAINTY (REPRESENTED BY PROBABILITY NODES ●)



DECISION TREE ANALYSIS





QUANTITATIVE RISK ASSESSMENT



TABLE OBTAINED BY THE METHOD OF INTERVIEW

NUMERICALLY ANALYZE OF THE PROBABILITY AND CONSEQUENCE OF EACH RISK

THE MOST COMPETENT MEMBERS OF MANAGEMENT TEAMS, PARTICIPATING IN THE ANALYSIS OF THE SCOPE OF ACTIVITIES OF THE PROJECT IN RELATION TO THE DURATION AND PROBABILISTIC COSTS BASED ON PERT TECHNIQUE.

THE INFORMATION SHOULD BE ATTACHED AND ORGANIZED BY LEVELS.

- **OPTIMISTIC**
- **PESSIMISTIC**
- **MORE LIKELY**
- **LOW**
- **HIGH**
- **LIKELY**



BASED ON THE TECHNIQUE OF THE PERT METHOD

CALCULATING THE DURATION AND COST OF THE PROJECT IS BASED ON A WEIGHTED AVERAGE (ESTIMATES) OF PROBABILISTIC DURATION OF ACTIVITIES BELONGING TO A SEQUENTIAL LOGIC NETWORK.

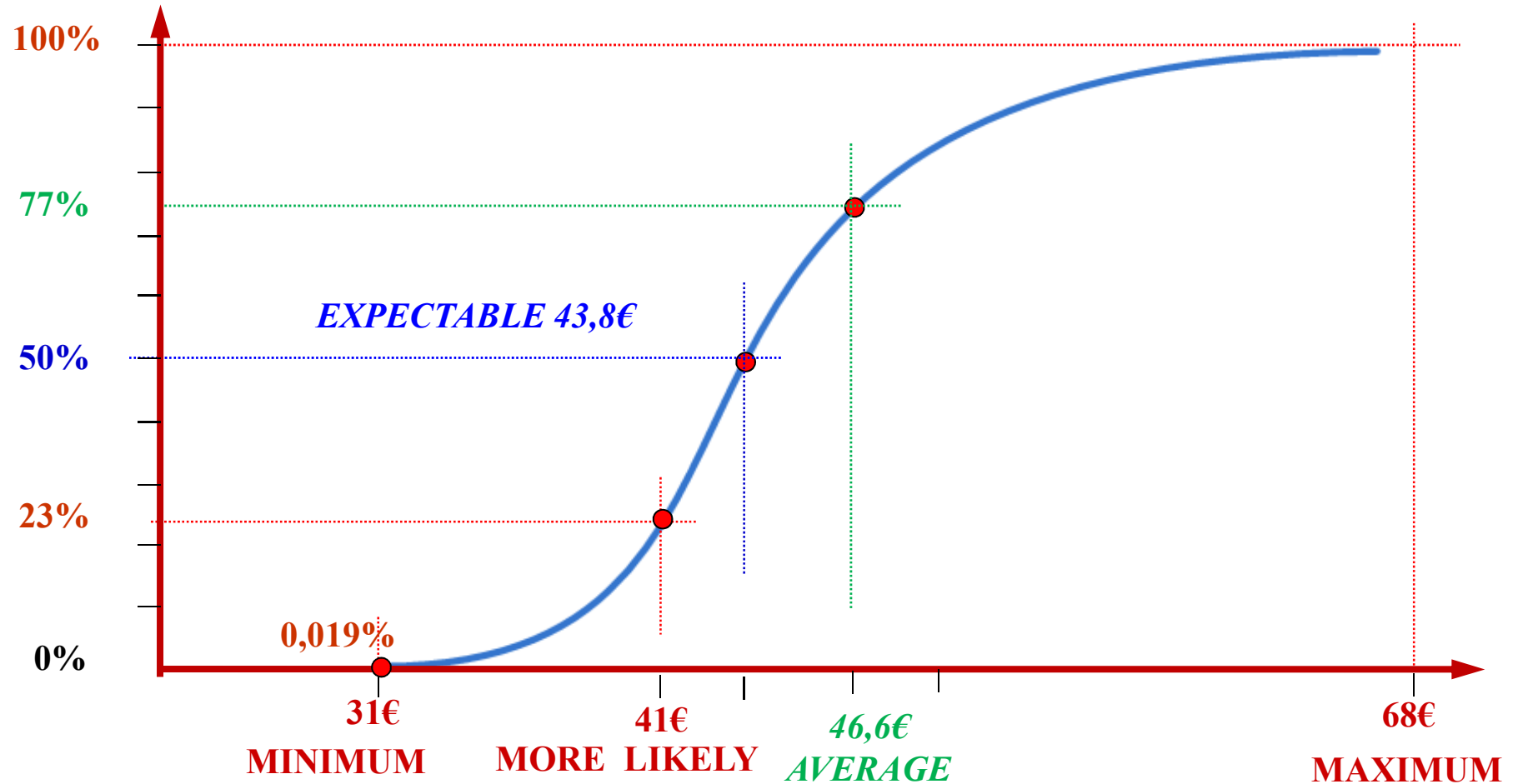
$$\text{EXPECTED} = (\text{LOW} + 4 \times \text{LIKELY} + \text{HIGH}) / 6$$

ESTIMATED COST							
WBS	LOW	LIKELY	HIGH	EXPECTED	AVERAGE	VARIANCE	STANDARD DEVIATION
TASK 1	4	6	10	6,3	6,67	1	1
TASK 2	16	20	35	21,8	23,67	10	3,16
TASK 3	11	15	23	15,6	16,33	4	2
SUMMARY	31	41	68	43,83	46,67	15,03	3,87





Analyze numerically the probability and consequence of each risk (Normal distribution)





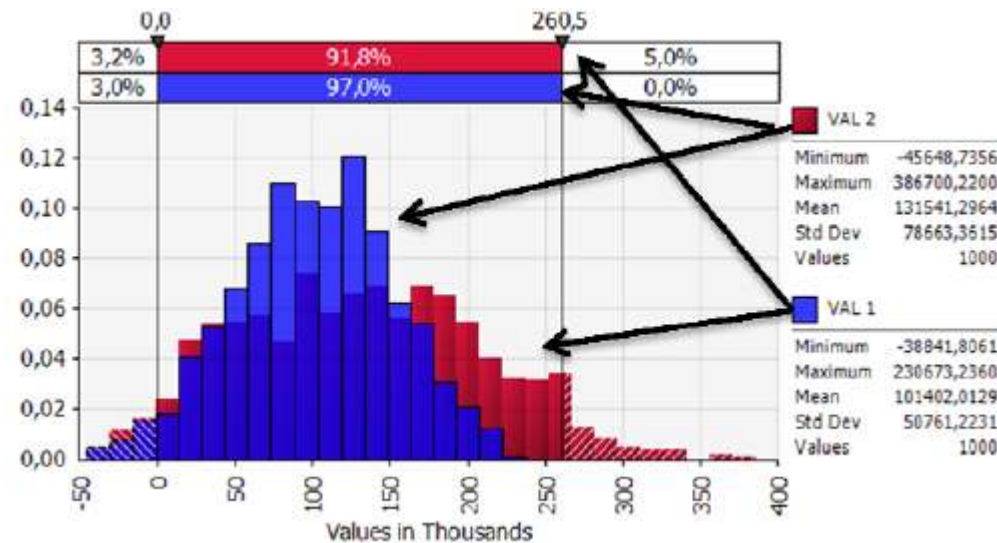
TÉCNICAS DE MODELAÇÃO E SIMULAÇÃO

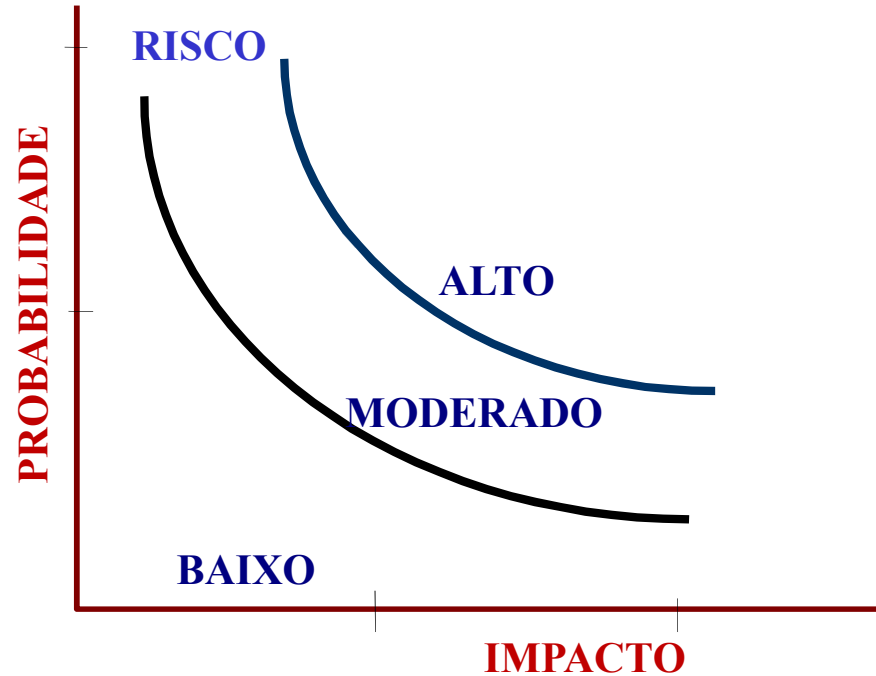
MONTE CARLO ANALYSIS

IS BASED ON A MODEL THAT REFLECTS THE UNCERTAINTY THAT HAS AN ACTIVITY OR A SET OF ACTIVITIES AND IN ITS POTENTIAL IMPACT ON THE OBJECTIVES OF THE WHOLE PROJECT.

MONTE CARLO MÉTHOD

IS USED TO FIND SOLUTIONS TO MATHEMATICAL PROBLEMS (WHICH MAY HAVE MANY VARIABLES) THAT CANNOT EASILY BE SOLVED, (E.G. INTEGRAL CALCULUS, OR OTHER NUMERICAL METHODS)





6	12	18	24	30	36
5	10	15	20	25	30
4	8	12	16	20	24
3	6	9	12	15	18
2	4	6	8	10	12
1	2	3	4	5	6

IMPACTO

- 1 FALTA ELECTRICIDADE CASA
- 2 FALTA ELECTRICID. HOSPITAL
- 3 FOGO CASA
- 4 FOGO HOSPITAL
- 5 GANHAR O TOTOBOLA



PLAN RISK RESPONSES

DESCRIBES HOW RISK MANAGEMENT WILL BE IMPLEMENTED VIA THE RISK MANAGEMENT PLAN

IDENTIFY RISKS ALONG WITH THEIR CAUSES AND RESPONSES AND GOES ON TO SET UP THE RISK REGISTER

THIS PROCESS, PLAN RISK RESPONSE IS, PLANS FOR HOW EACH RISK WILL BE MANAGED, AND WHO WILL BE RESPONSIBLE FOR THEM.

A RISK CAN BE A NEGATIVE IMPACT THREAT OR A POSITIVE IMPACT OPPORTUNITY, AND THEREFORE BOTH OF THESE TYPES OF RISK SHOULD HAVE BEEN CONSIDERED HERE.

.

THE ANSWER MUST:

1. BE APPROPRIATE TO THE TYPE OF RISK YOU FACE;
2. BE APPROPRIATE TO THE COST AND THE DELIVERY TIME;
3. HAVE THE CONSENT OF THE PARTIES INVOLVED;
4. BE MANAGED BY THE MORE EXPERIENCED TEAM MEMBER;
5. HAVE THE MOST EFFECTIVE MANAGEMENT METHOD.

SUSTENABILIDADE

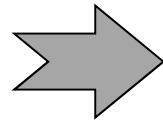


Plan Risk Responses

TOOLS & TECHNIQUES

INPUTS

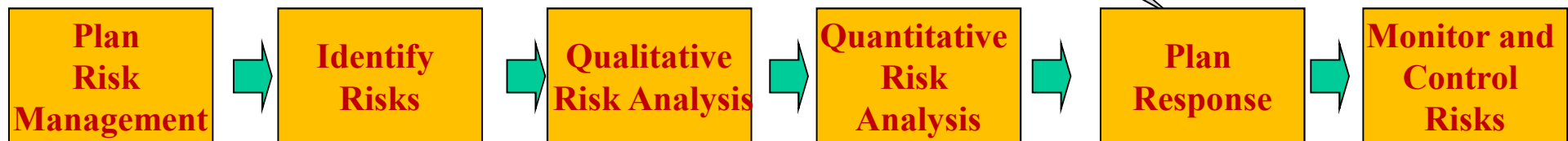
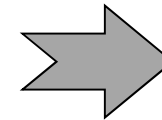
Risk Register
Risk Management Plan



- ❑ Strategies for negative risks or threats
- ❑ Strategies for positive risks or opportunities
- ❑ Contingent response strategy
- ❑ Expert Judgment

OUTPUTS

Risk Register Updates
Risk-related Contract Decisions
Project Management Plan Updates





-
- ↪ **“Avoid”** -- *Eliminating a specific threat or risk, usually by eliminating its causes*
 - ↪ **“Transfer”** -- *Accepting the consequences should a risk occur*
 - ↪ **“Mitigate”** -- *Shifting the consequence of a risk and responsibility for its management to a third party*
 - ↪ **“Accept”** -- *Reducing the impact of a risk event by reducing the probability of its occurrence*

IMPEDIR “Avoid”



TAKES ACTION UPFRONT TO EITHER REDUCE THE PROBABILITY TO ZERO, OR THE IMPACT, OR BOTH. IN ESSENCE, SUCH YOUR RESPONSE ENABLES THE RISK TO BE SIDESTEPED ENTIRELY.

EXEMPLE

- ❁ **IF A CERTAIN RISKY PROCESS IS TO BE USED IN CREATING A PRODUCT, THEN CHOOSING A DIFFERENT AND LOW RISK ALTERNATIVE PROCESS WOULD REMOVE THE RISK ALTOGETHER.**

TRANSFERIR “*Transfer*”



THE RISK IS TRANSFERRED TO A THIRD PARTY SO THAT THEY ARE RESPONSIBLE FOR THE MANAGEMENT AND IMPACT OF A PARTICULAR RISK (S)

TRANSFER RISK OUT OF THE TEAM

EXEMPLE

- ⚙ VIA A CONTRACTUAL AGREEMENT.
- ⚙ TAKE OUT AN INSURANCE POLICY AGAINST THE COST IMPACT OF THE RISK;
- ⚙ INSURE THE FACTORY AGAINST FIRE;

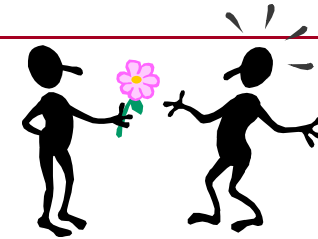
MITIGAR “Mitigate”



IS SEEKING TO DECREASE THE LIKELIHOOD AND THE CONSEQUENCE OR IMPACT CAUSED BY THE RISK TO ACCEPTABLE LEVELS;

EXEMPLO

RISK OF EXCESSIVE REWORK IN DESIGNING A COMPLEX PRODUCT, AND AUGMENTING THE DEVELOPMENT TEAM WITH HIGHLY KNOWLEDGEABLE AND EXPERIENCED STAFF.



ACEITAR “Accept”

IT IS USUALLY CHOSEN EITHER BECAUSE THE RISK IS LOW IN TERMS OF IMPACT OR PROBABILITY, OR THAT THE COST AND EFFORT OF TAKING A DIFFERENT ACTION IS OUT OF PROPORTION TO THE RISK ITSELF.

WHEN ACCEPTANCE IS CHOSEN, IT SHOULD STILL BE DOCUMENTED AND ENTERED IN THE RISK REGISTER, WHERE ONGOING ACTION IS TO OBSERVE THE RISK TO ENSURE THAT ACCEPTANCE IS STILL THE MOST DESIRED RESPONSE

❑ PASSIVE ACCEPTANCE

DO NOT TAKE ANY ACTION JUST REACT IF SOMETHING WERE TO HAPPEN, THE IMPACT IS OF LOW IMPORTANCE

❑ ACTIVE ACCEPTANCE

IF ANYTHING HAPPENS, THE IMPACT HAS BEEN REDUCED, PLANS CALLED CONTINGENCY MUST BE PREVIOUSLY DEVELOPED TO GIVE APPROPRIATE RESPONSE.



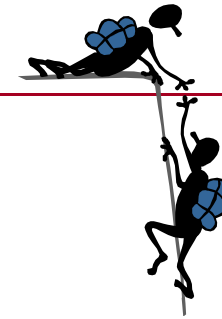
OPPORTUNITY RISKS OR POSITIVE

 **“Exploit”** -- *Eliminating a specific threat or risk, by eliminating its causes*

 **“Share”** -- *Distribute the risk with third parties*

 **“Enhance”** -- *Increase the opportunity*

 **“Accept”** -- *Manage to increase the impact*



EXPLORAR “Exploit”

THIS STRATEGY CAN BE SELECTED FOR RISKS WITH POSITIVE IMPACTS AT THE POINTS WHERE THE ORGANIZATION WANTS TO ENSURE THAT THE OPPORTUNITIES ARE ACHIEVED. THIS STRATEGY TRIES TO ELIMINATE THE UNCERTAINTY ASSOCIATED WITH A PARTICULAR POSITIVE RISK.

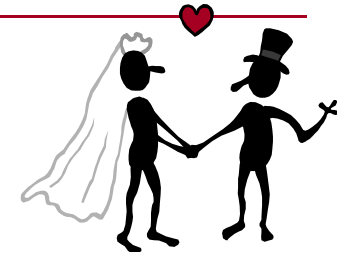
EXPLORE INCLUDES ALLOCATING RESOURCES MORE SUITABLE FOR THE PROJECT IN ORDER TO OBTAIN BETTER QUALITY OF THE FINAL RESULT OR ASSIGN MORE FUNDS SO AS TO HAVE THE CERTAINTY THAT EVERYTHING IS FOR THE BEST.

COMPARTILHAR “Share”



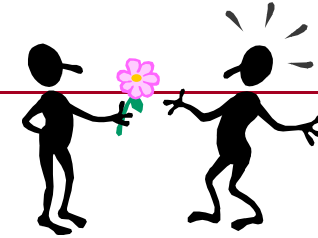
SHARE POSITIVE RISKS WITH THIRD PARTIES IN ORDER TO BETTER CAPTURE THE OPPORTUNITIES FOR THE BENEFIT OF THE PROJECT.

THIS TYPE OF RESPONSE IS OFTEN USED WHEN NEGOTIATING TO WIN A CONTRACT AND PARTNERING MAY IMPROVE THEIR CHANCES OF CONTRACT AWARD “JOINT VENTURES”.

MELHORAR “Enhance”

AIMS TO MODIFY THE "DIMENSION" OF AN OPPORTUNITY BY INCREASING THE LIKELIHOOD AND/OR THE POSITIVE IMPACTS AND THE IDENTIFICATION AND MAXIMIZATION OF MAIN FACTORS OF THESE RISKS THAT CREATE THE POSITIVE IMPACT

SEARCH FACILITATE OR STRENGTHEN THE CAUSES OF OPPORTUNITIES, TARGETING AND PROACTIVE MANNER TO STRENGTHEN THEIR FACTORS, IS A GUARANTEE TO INCREASE THE PROBABILITY OF PROJECT OPPORTUNITY



ACEITAR “Accept”

THE PROJECT TEAM ACCEPTS THE EVENT IF IT OCCURS, RATHER THAN INFLUENCE IN ADVANCE YOUR PROBABILITY OR IMPACT. THIS RESPONSE IS ONLY VALID IF THE EFFECT OF THE RISK IS KNOWN TO BE SUFFICIENTLY CONTAINED WITHIN REASONABLE PARAMETERS

PASSIVE ACCEPTANCE

DO NOT TAKE ANY ACTION JUST REACT IF SOMETHING WERE TO HAPPEN, THE IMPACT IS OF LOW IMPORTANCE

ACTIVE ACCEPTANCE

IF ANYTHING HAPPENS, THE IMPACT HAS BEEN REDUCED, PLANS CALLED CONTINGENCY MUST BE PREVIOUSLY DEVELOPED TO GIVE APPROPRIATE RESPONSE.



CONTINGENCY PLAN

- ☺ THE OVERALL PLANNING FOR UNEXPECTED EVENTS, AND INVOLVES PREPARING FOR, DETECTING, REACTING TO, AND RECOVERING FROM EVENTS THAT THREATEN THE SECURITY OF INFORMATION RESOURCES AND ASSETS

MAIN GOAL

- ☺ THE RESTORATION TO NORMAL MODES OF OPERATION WITH MINIMUM COST AND DISRUPTION TO NORMAL BUSINESS ACTIVITIES AFTER AN UNEXPECTED EVENT
- ☺ WHAT IS USUALLY DONE TO RESPOND TO THE RISK IS TO CREATE "**AVAILABILITIES**" OR RESERVES TO QUICKLY RESPOND TO THE NEEDS AND THESE RESERVES MUST BE IN ACCORDANCE CONFORM TO THE STANDARDS **THAT ENSURE THE SUSTAINABILITY OF THE PROJECT.**



CONTINGENCY PLAN

FOR EACH TASK ESTABLISH

THE PROBABILITY OF THE EVENT (P) AND IMPACT (I) IN THE PROJECT

CONTINGENCY RISK ANALYSIS MATRIX

RBS	WBS	DESCRIÇÃO	P	I	Contingency actions (Only HxH or AxH)
1.R.1	1.1	Planear reunião	H	H	Ask for help due to lack of time
1.R.1.1	1.1.1	Rever as tarefas	A	H	The Director must be present to agree
1.R.1.2	1.1.2	Rever o Modelo produtivo	L	H	
1.R.1.3	1.1.3	Efectuar relatório	L	H	
1.R.2	1.2	Construir			
1.R.2.1	1.2.1	Requisitar Materiais	L	H	
1.R.2.2	1.2.2	Levantar aeroporto	A	H	Car ready
1.R.2.3	1.2.3	Construir	A	H	Availability of the Quality Control
1.R.2.4	1.2.4	Testar	L	H	
1.R.3	1.3	Resultados finais			
1.R.4	1.4	Apuramento Custo			
A_High M_Average; L_Low					



RESIDUAL AND SECONDARY RISKS

AFTER THE IMPLEMENTATION OF THE ACTION PLAN, SOME RISKS MAY REMAIN AND OTHERS MAY APPEAR

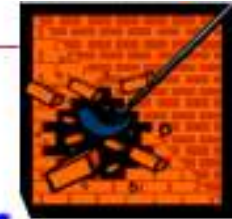
- **RESIDUAL RISKS**

RISKS THAT REMAIN AFTER TAKING STEPS TO AVOID THEM, INCLUDING RISKS CONSIDERED MINORS

- **SECONDARY RISKS**

RISKS THAT APPEAR AS THE DIRECT RESULT OF THE IMPLEMENTATION OF THE ACTION PLAN.

LET US ASSUME THAT WE ARE BEING BOMBED



■ **HIDE TO AVOID THE BULLET;**



■ **ARRANGE ALL MEANS FOR THE BULLET FOLLOW ANOTHER PATH;**



■ **GO TO THE HOSPITAL AND MAKE THE DRESSING OF WOUNDS CAUSED BY THE BULLET OR**

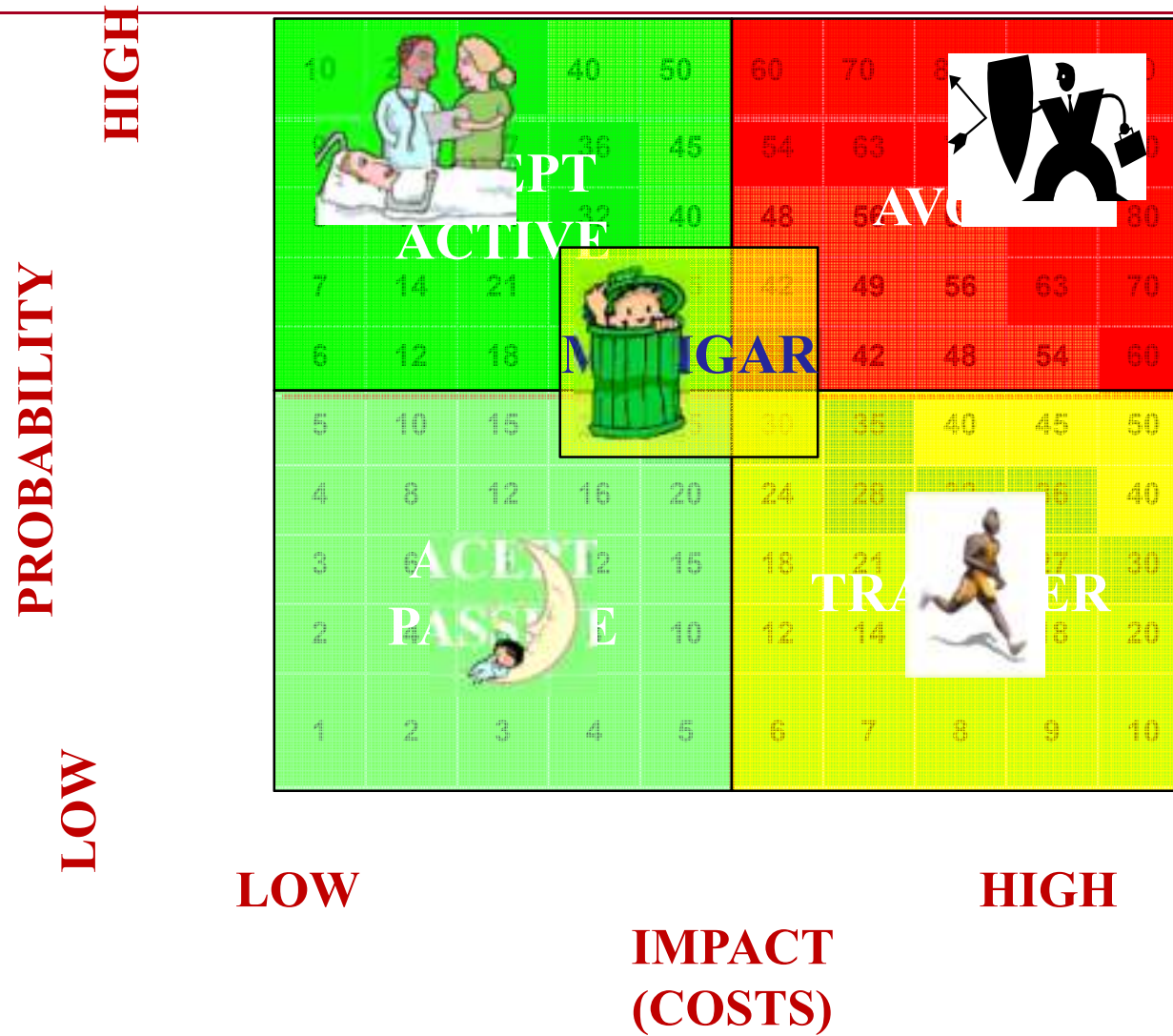


■ **TAKE EVERY PRECAUTION AND RUN AWAY FROM THE BATTLE ZONE**



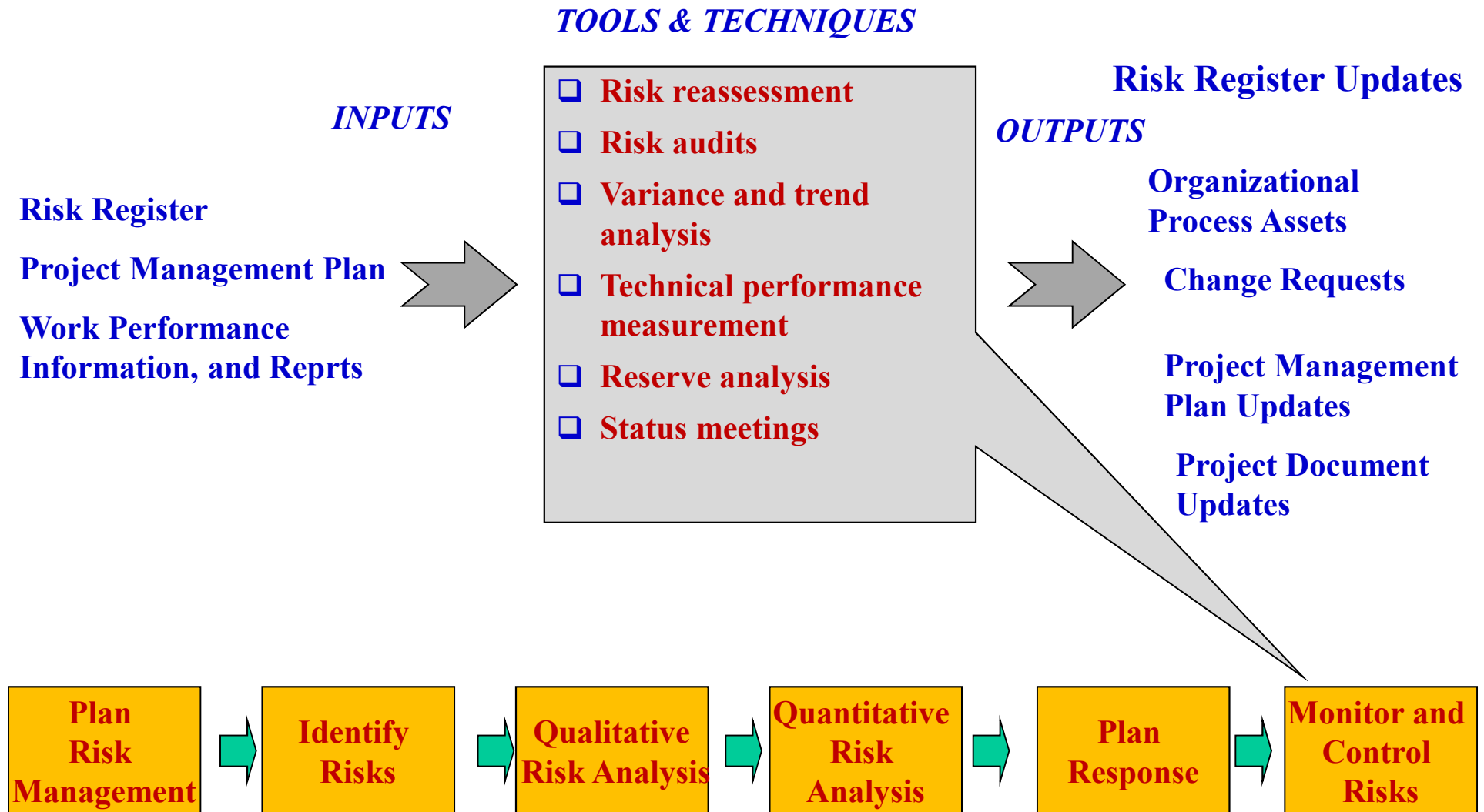


EXEMPLE





Monitor and Control Risks





RISK REASSESSMENT

CONTROL AND FOLLOW THE IDENTIFIED RISKS, IDENTIFY NEW RISKS AND RUN THE RISK RESPONSE PLAN THROUGHOUT THE PROJECT LIFE CYCLE. THE REVIEW OF RISK SHOULD BE REGULARLY CONDUCTED AND THEIR FREQUENCY DEPENDS ON HOW THE PROJECT EVOLVES IN RELATION TO THE OBJECTIVES OF THE PROJECT.

RISK AUDIT

EXAMINES AND DOCUMENTS NOT ONLY THE EFFECTIVENESS OF RESPONSES TO RISKS IN RELATION TO IDENTIFIED RISKS AND ITS CAUSES BUT ALSO THE EFFECTIVENESS OF THE RISK MANAGEMENT PROCESS.

- **CHECK THE DOCUMENTATION BEFORE AND DURING THE PROJECT LIFE CYCLE;**
- **“EARNED VALUE” ANALYSIS;**
- **ANALYSIS OF TECHNICAL PERFORMANCE.**



TENDENCY AND DEVIATION ANALYSIS

TRENDS IN IMPLEMENTATION OF THE PROJECT SHOULD BE REVISED USING THE PREDEFINED METRICS. THE ANALYSIS OF "EARNED VALUE" AND OTHER METHODS OF ANALYSIS OF DEVIATIONS AND TREND CAN BE USED TO EVALUATE THE PERFORMANCE OF THE PROJECT.

THE RESULTS OF THESE ANALYSES MAY PROVIDE POSSIBLE DEVIATIONS OF THE PROJECT IN RELATION TO THE COST AND DURATION. THE DEVIATION IN RELATION TO THE BASELINE CAN INDICATE A POTENTIAL IMPACT OF THREATS OR OPPORTUNITIES.



TECHNICAL PERFORMANCE MEASUREMENT

THE TECHNICAL PERFORMANCE ASSESSMENT COMPARES THE TECHNICAL ACHIEVEMENTS DURING THE PROJECT IMPLEMENTATION WITH THE INITIALLY FORECAST DATA.

RESERVE ANALYSIS

THE RESERVES ANALYSIS COMPARES THE AMOUNT OF CONTINGENCY RESERVES TO VERIFY THAT THE VALUES ARE ADEQUATE ENOUGH TO MEET THE REMAINING RISKS.

TIMEPHASE RESERVATIONS, FINANCIAL RESERVES, BUDGET RESERVATIONS.

STATUS MEETINGS

THE ANALYSIS OF RISK MANAGEMENT SHOULD BE PART OF THE PROJECT MONITORING MEETINGS. THE NUMBER OF MEETINGS AND THEIR DURATION DEPENDS ON THE QUANTITY OF RISKS IDENTIFIED, THE RISK LEVEL AND THE RESPONSE TREATMENT.

FINAL CONCLUSION

- 🧠 **ALL PROJECTS HAVE RISKS;**
- 🧠 **RISK MANAGEMENT SHOULD BE IN LINE WITH THE IMPORTANCE OF THE PROJECT AND IS AN ITERATIVE PROCESS;**
- 🧠 **;RISK MANAGEMENT SHOULD BE IN LINE WITH THE IMPORTANCE OF THE PROJECT AND IS AN ITERATIVE PROCESS;**
- 🧠 **THE RISK MUST BE CONTROLLED EXACTLY AS COSTS AND THE PROGRESS OF THE PROJECT;**
- 🧠 **THE RISK MUST BE MANAGED AS A RESOURCE;**
- 🧠 **THE RISK REASSESSMENT SHOULD BE HELD WHENEVER NEW RISKS ARE IDENTIFIED;**
- 🧠 **THE REVALUATION SHOULD ALWAYS BE DONE WHEN A MAIN MILESTONE IS ACHIEVED.**



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