



Il Risk Management nei progetti chiavi in mano Saipem

Convegno AICQ-CI
La qualità e la sicurezza nelle infrastrutture

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AGENDA

Today's Presentation

- SAIPEM TODAY AND ITS ORGANIZATIONAL RISK MANAGEMENT MODEL
- INDUSTRIAL RISK MANAGEMENT
 - FUNDAMENTAL ELEMENTS
 - STRATEGIC DRIVERS
 - CLIENTS REQUIREMENTS
 - KNOWLEDGE CAPITALIZATION
 - MONITORING, CONTROLLING AND REPORTING

SAIPEM TODAY AND ITS ORGANIZATIONAL RISK MANAGEMENT MODEL

The Company

Saipem is one of the world leaders in drilling services, as well as in the engineering, procurement, construction and installation of pipelines and complex projects, onshore and offshore, in the oil & gas market. The company has distinctive competences in operations in harsh environments, remote areas and deepwater. Saipem provides a full range of services with “EPC” and “EPCI” contracts (on a “turn-key” basis) and has distinctive capabilities and unique assets with a high technological content.

MAIN NUMBERS

€8.9 bln

REVENUES 2017

€7.3 bln

NEW CONTRACTS 2017

€262 mln

INVESTMENTS 2017

32,000

EMPLOYEES

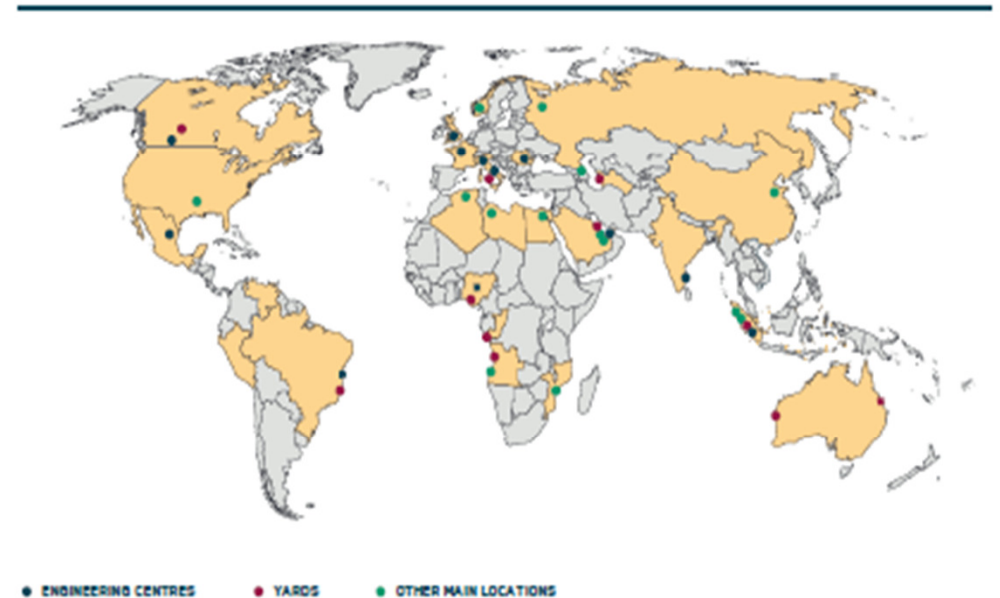
60

COUNTRIES IN WHICH WE OPERATE

9

FABRICATION YARDS

WORLDWIDE PERMANENT PRESENCE



SAIPEM TODAY AND ITS ORGANIZATIONAL RISK MANAGEMENT MODEL

Why Risk Management is so important

To Help DERISKING the BUSINESS MODEL

- The market scenario is increasingly challenging (few projects to focus on, with a competition that is now up to highest standards)
- Projects are remunerated for the underlying risk profile
- Risk management, both in the commercial and in the execution phase, is of FUNDAMENTAL importance in the market in which Saipem operates:
 - to take the projects at best - Commercial phase
 - to protect the margin during the whole Execution Phase

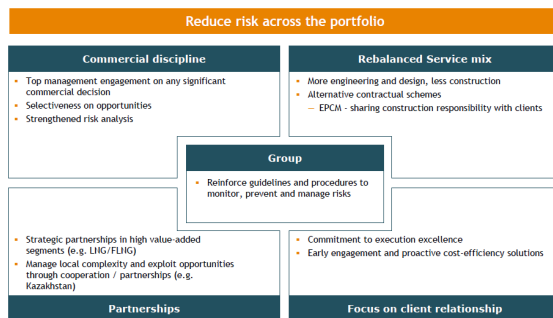
To COMPLETE the Project Framework

- Projects are presented with their economic and financial elements (revenues, costs, contingencies, k, cash flow)
- To complete the PICTURE, risks and opportunities are needed to define:
 - the GROSS MARGIN CONFIDENCE LEVEL which represents the probability to meet the margin forecast
 - The VALUE at RISK

Saipem. Engineering Energy

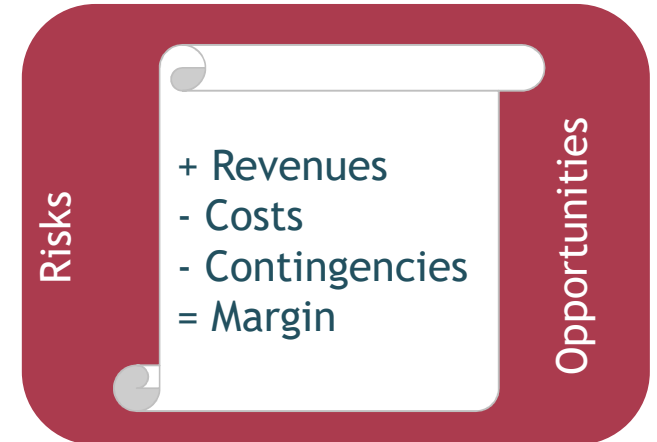
DE-RISKING THE BUSINESS MODEL

2



Our SOLUTION

- Implement a company-wide, standardized, systematic, quantitative tool to manage R&O at Business and Corporate level as part of overall Enterprise Risk Management (ERM).

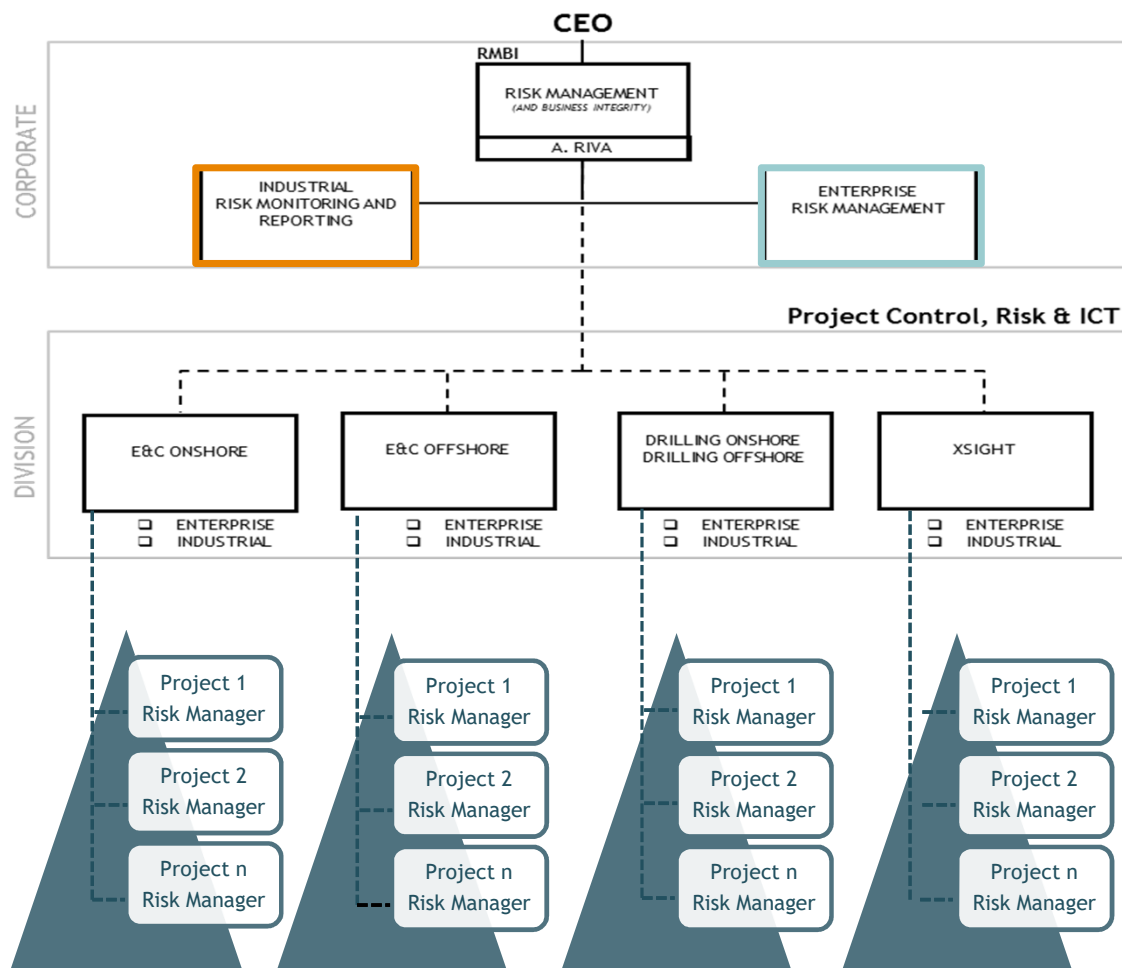


SAIPEM

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SAIPEM TODAY AND ITS ORGANIZATIONAL RISK MANAGEMENT MODEL

Organisation and focus areas



SAIPEM RISK MANAGEMENT



ENTERPRISE RISK MANAGEMENT

- TOP-DOWN approach
- FOCUS ON: Strategic, External, Reputational Factors

PROJECT RISK MANAGEMENT

- BOTTOM-UP approach
- FOCUS ON: Project Risk Factors

ENTERPRISE

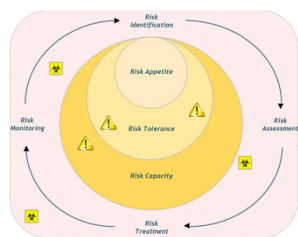
- Risk assessment process aimed at identification, evaluation and management of the main company risk
- Monitoring of risk identified in the assessment phase and measure of treatment actions undertaken

INDUSTRIAL

- Implementation of Industrial Risk Management Methodology on projects, either in commercial and in execution phase, guaranteeing a correct assessment of risks/opportunities and contributing to the identification of actions for their optimal management
- Development and updating of Risk and Opportunity Breakdown Structure and Golden Rules and Silver Guidelines
- Enhancing the Knowledge Capitalisation related to Industrial Risks

INDUSTRIAL RISK MANAGEMENT FUNDAMENTAL ELEMENTS

Industrial Risk Management in Saipem is based on



Risk Appetite Framework (RAF)

The amount of risk, on a broad level, Saipem is willing to accept in pursuit of value.



Golden Rules and Silver Guidelines (GR&SG)

Set of rules collecting and summarizing the multi-year experience of Saipem as an international Oil & Gas contractor in order to manage and address contractual issues.

DRIVERS FOR OFFSHORE PROJECTS

	1 Low	2 Medium	3 High
A. CONTRACT VALUE RANGE	0-200	200-500	500-1000
B. CONTRACT TYPE	Fixed Price	Fixed Price	Lump Sum
C. BUSINESS SEGMENT	Oil	Oil & Gas	Other
D. LOCATION/PROJECT RISK	Low	Medium	High
E. CLAMP/CLAMP RISK	Low	Medium	High

Bid Complexity Index (BCI)

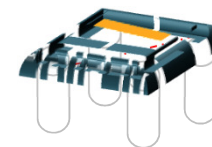
Scoring Model based on Evaluation Criteria and thresholds that trigger processes/actions



Project Risk Management (PRM)

Management of Project risk, defined as "an uncertain event or condition that, if occurring, may have a positive or negative effect on a project's objectives".

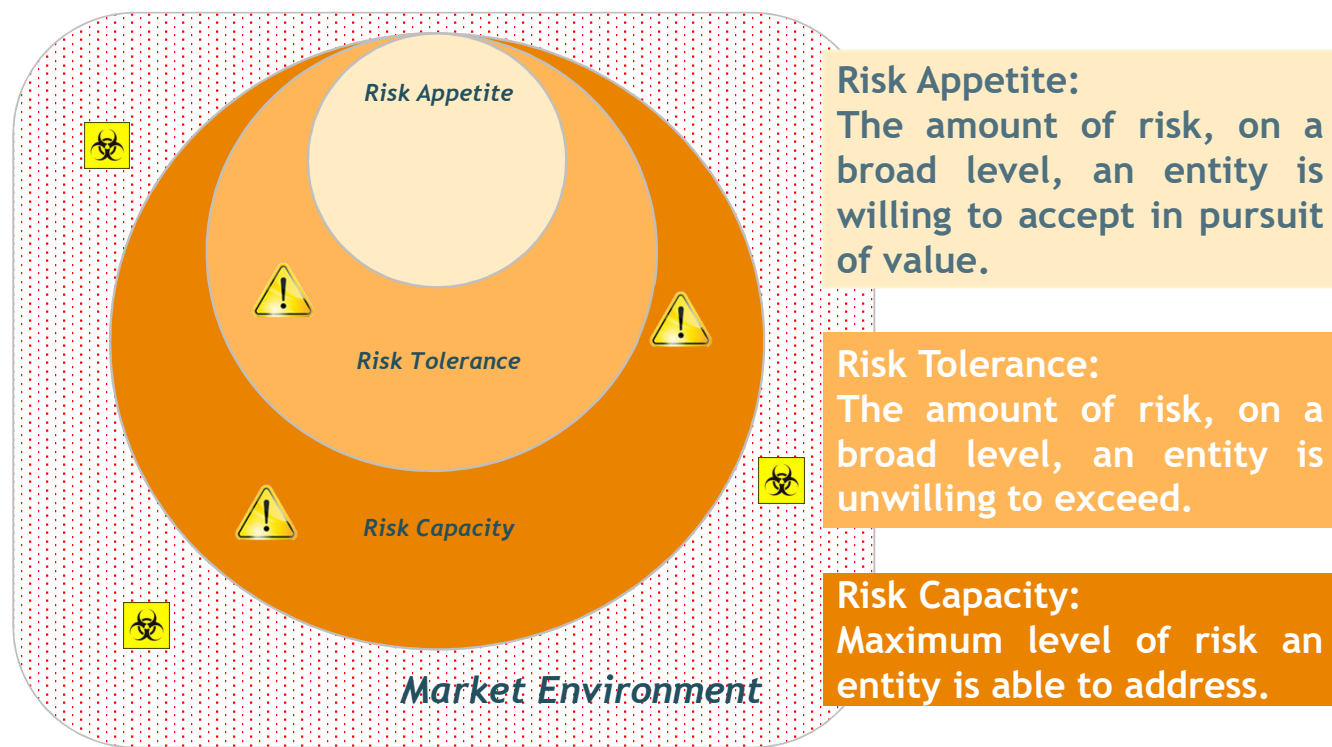
IRM Pillars



INDUSTRIAL RISK MANAGEMENT

FUNDAMENTAL ELEMENTS

Risk Appetite Framework (RAF)



It acts on:

Investments	Board Approval required
Contractual Discipline	Golden Rules framework and deviation authority
Finance	As detailed in Golden Rules (Company Payments and Client Credit Worthiness)
Contract Duration	Maximum Contract Duration
Expected Marginality	Yearly target marginality set for each BU
Portfolio	Balanced portfolio in terms of Country and Client

Off-strategy risks¹

On-strategy risks²

¹ Off-strategy risks are risks the Board and Management have no appetite to assume

² On-strategy risks are risks the Board and Management are willing to accept

INDUSTRIAL RISK MANAGEMENT

FUNDAMENTAL ELEMENTS

Bid Complexity Index (BCI)

DRIVERS FOR ONSHORE AND FLOATERS PROJECTS

	1 Low	2 Medium	3 High
A CONTRACT VALUE (MEUR)	20-200 A1	200-500 A2	> 500 A3
B CONTRACT TYPE	Reimbursable B1	Unit Price EPCM B2	Lump Sum B3
C BUSINESS SEGMENT	Environmental Systems Onshore Transport System FPSO Leased & OPEX Maintenance, Modifications & Operations C1	Upstream Field Development Regasification Infrastructures C2	Gas Monetization Refining & Heavy Oil Conversion Petrochemicals Power Natural Gas Liquefaction Floaters C3
D LOCATION (TRACK RECORD)	CONSOLIDATED PRESENCE If need be: quality of track record D1	OCCASIONAL PRESENCE If need be: quality of track record D2	1ST PRJ FOR SAIPEM If need be: quality of track record D3
E CLIENT (TRACK RECORD)	- International Clients (incl. Saudi Aramco and similar companies) If need be: - EXCELLENT TRACK REC'D E1	- National/Local/Independent Clients If need be: - Not successfull TRACK REC'D E2	- Int./National/Local/Independent Clients with PMC or Project Financing If need be: - BAD TRACK REC'D E3

A + B + C + D + E = X_n!! → Complex Project!

It acts on:



- (1) *Peer-to-peer* meeting aiming at consolidating the risk register and related project risk profile; attended by representatives of Commercial and Execution departments
- (2) *Check and Balance* meeting aiming at controlling the implementation of Industrial Risk Management Activities and validation of the Risk Register

INDUSTRIAL RISK MANAGEMENT

FUNDAMENTAL ELEMENTS

Golden Rules & Silver Guidelines (GRSG)

- **Best Practices** transferred into essential rules whose waiver could jeopardize Saipem's interests and goals.
- **Specific Procedure** to be followed in order to derogate.



...the more useful the more the commercial process is decentralized

RULE CODE					GENERAL AREA	SPECIFIC ISSUE	GUIDELINE	NOTES / SUGGESTED WORDING	DEVIATION BY
ON	C	G	07	04	Execution Risks	Site	Avoid responsibility for delays and extra costs due to archaeological findings / artificial physical obstructions.	"If during the execution of the Work the Contractor shall encounter archaeological findings / artificial physical obstructions differing from those set forth in the Contract, the Contractor shall forthwith give written notice thereof to the Company and the Company shall issue a Variation Order to properly take into account the relevant impact in cost and/or schedule caused to the Contractor by reason of such differing conditions".	UNWAIVABLE CEO (Bid Evaluation Committee) DIVISION MANAGER PRODUCT LINE MANAGER PROPOSAL MANAGER

EXAMPLE



It acts on:

- COMMERCIAL PHASE
- PARTNERSHIP ON PROJECTS

For Commercial phase and partnership, Saipem has identified:

Golden Rules with exceptions formally authorized by the Top Management.

INDUSTRIAL RISK MANAGEMENT

FUNDAMENTAL ELEMENTS

RISK: Uncertainty that Matters

Project risk is an uncertain event or condition that, if occurring, may have a positive or negative effect on one or more project objectives such as scope, schedule, cost, and quality.

(PMI, PMBOK 5th Edition)



- RISKS ≠ ISSUES



Project Risk Management (PRM)

RISK MANAGEMENT

The *continuous* process of identifying, analyzing and responding to project risks.

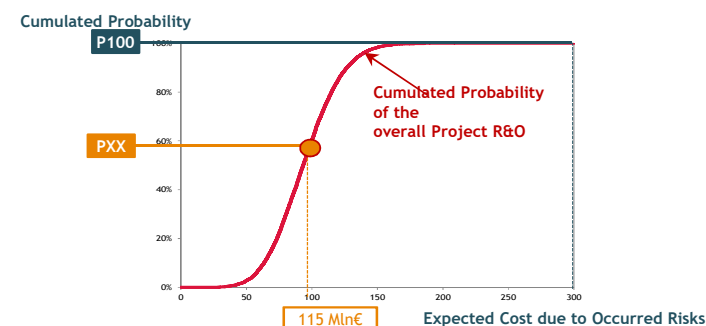


- MANAGEMENT OF RISKS, NO elimination of risks, as that would eliminate the reward

It acts on:

Commercial phase

- Definition of a complete and transparent **risk register** including all risks identified during commercial phase, both for commercial and execution phase.
- Evaluation of each risk,
- Launch of the Montecarlo Simulation in order to identify **PXX** as the minimum level of contingencies to be taken into consideration in the final price before the offer submission.



Execution phase

- Updating the risk register with new risks identified during the execution of the project.
- Comparing the level of contingencies with the Monte Carlo curve in order to identify the **Risk Coverage** and the **Value at risk** of the project.

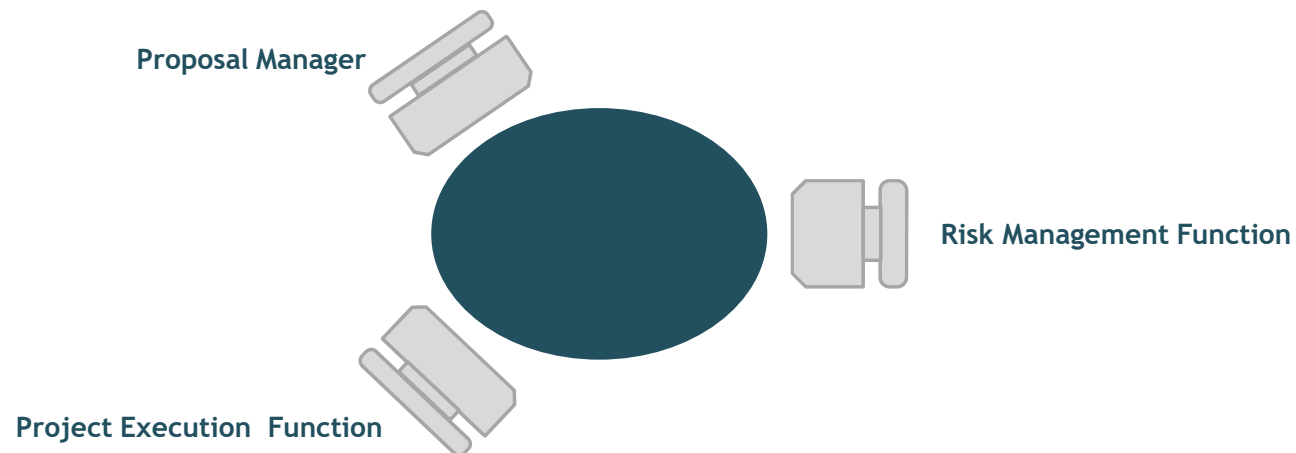
INDUSTRIAL RISK MANAGEMENT

STRATEGIC DRIVERS

Industrial risk management process - commercial phase

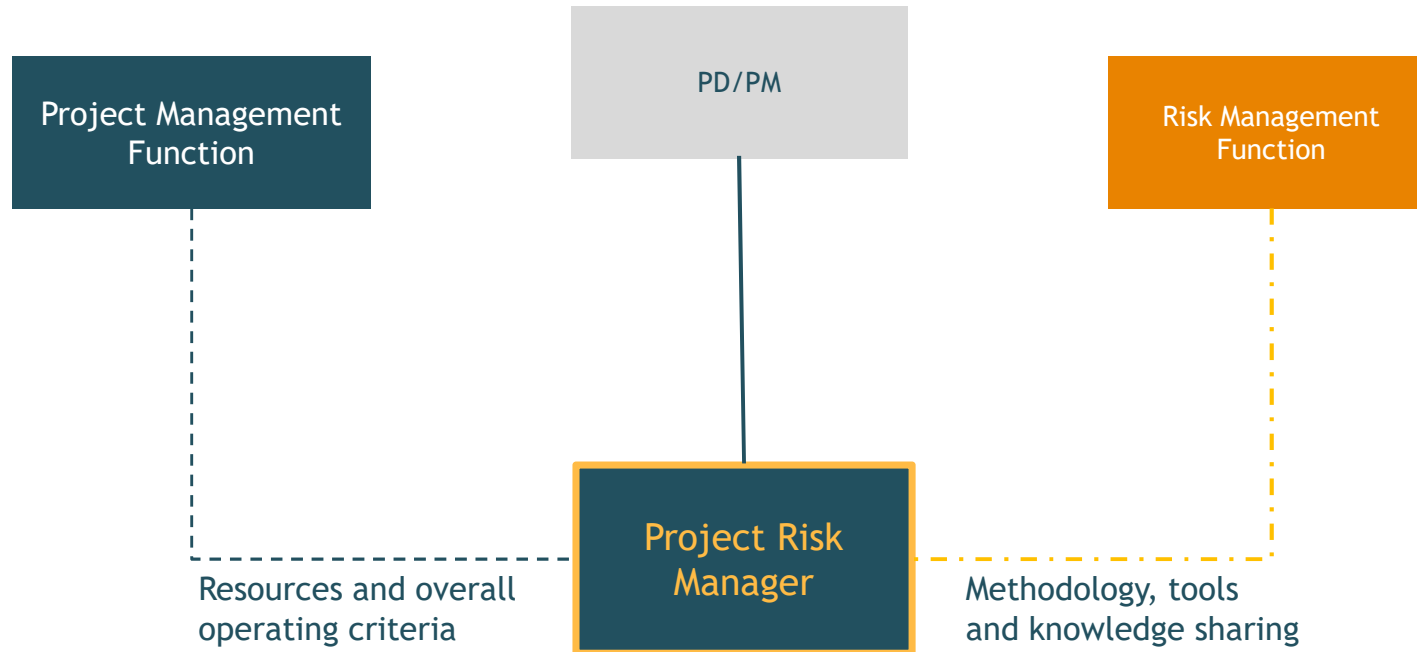
Important Step

Set up a Peer to Peer Review Meeting with the aim to consolidate the Risk Register and its related project risk profile, with the participation of the Risk Management Function, the Proposal Manager responsible for the offer as well as the Project Execution Function



INDUSTRIAL RISK MANAGEMENT STRATEGIC DRIVERS

Industrial risk management process - Execution phase



Legend:

Functional link (PM Function) - - - - -

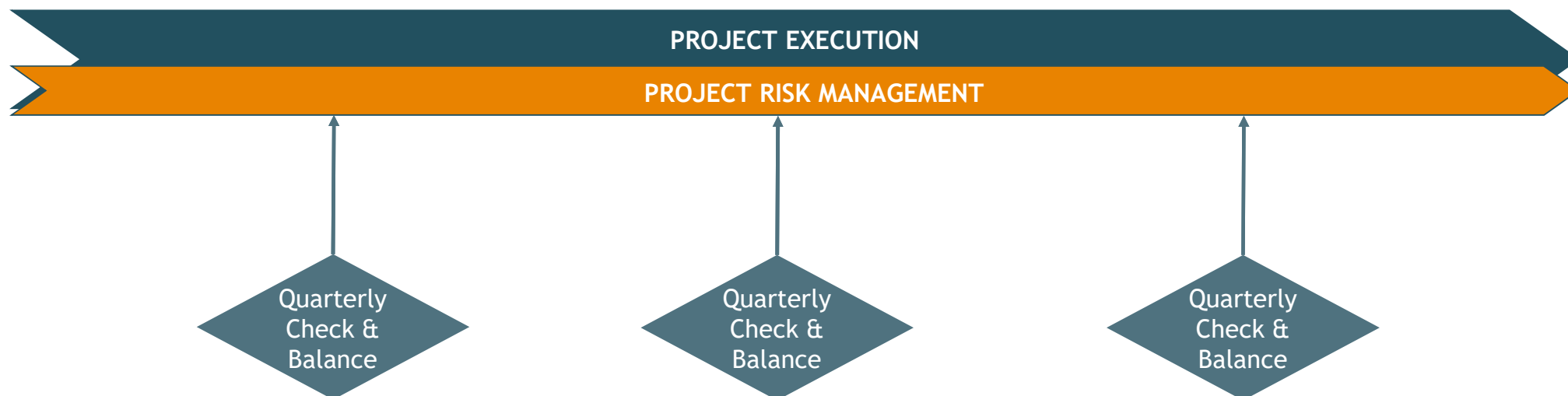
Working link (Project) = = = = =

Supervisory link (OMRM Function) - . - . -

INDUSTRIAL RISK MANAGEMENT

STRATEGIC DRIVERS

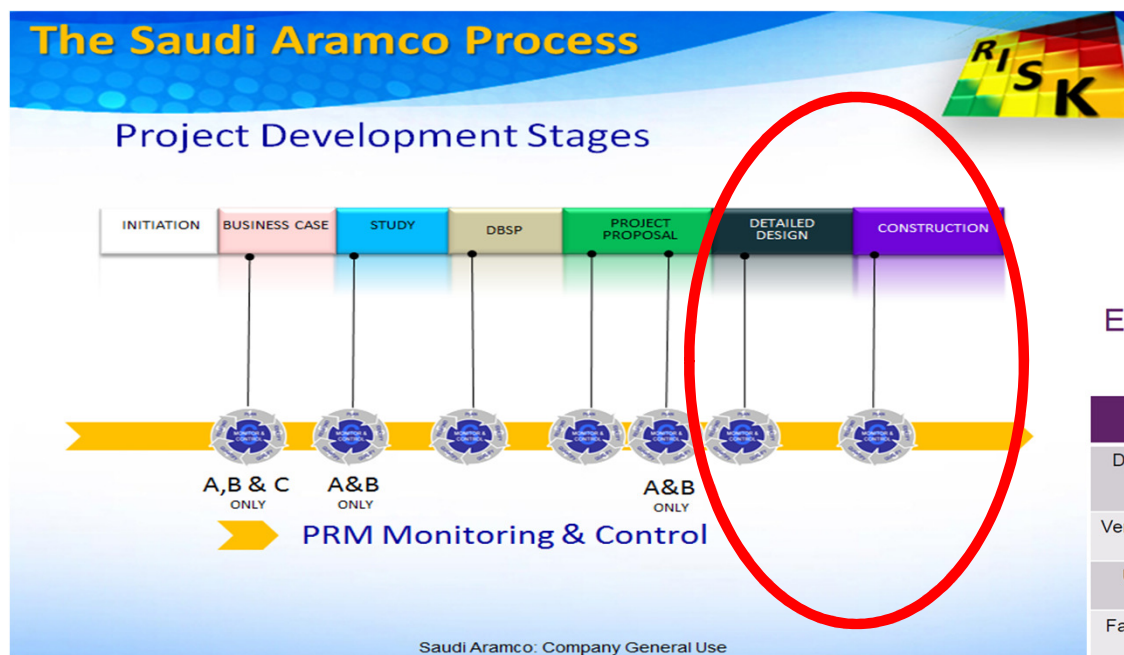
Industrial risk management process - Execution phase



Check and Balance meeting aiming at controlling the implementation of Industrial Risk Management Activities and validation of the Risk Register

INDUSTRIAL RISK MANAGEMENT

CLIENT REQUIREMENTS



EPC59 and EPC45 Risk Criteria



LIKELIHOOD		CONSEQUENCES					
Descriptor	%	Opportunity	Cost/KD	Time/Addn days on CP	Threat		
Very Unlikely	<1	-1 Negligible	<0.1M	<5	1	Negligible	
Unlikely	1-20	-2 Marginal	0.1M-0.5M	5-30	2	Marginal	
Fairly Likely	20-50	-3 Substantial	0.5M-1M	30-60	3	Substantial	
Likely	50-85	-4 Very Substantial	1M-5M	60-120	4	Severe	
Highly Likely	>85	-5 Exceptional	>5M	>120	5	Disaster	

Workshop Client + Contractor during Detailed Design and Construction

Probability and Impact Matrix to be aligned with Client Program Risk Management

INDUSTRIAL RISK MANAGEMENT

CLIENT REQUIREMENTS

Contractor to use Client Database/Software and Report according to Client Standard

Total Risk Exposure Now (\$m)



Total Risk Exposure after mitigation (\$m)



Total Opportunities (\$m)



Risk Heat Map

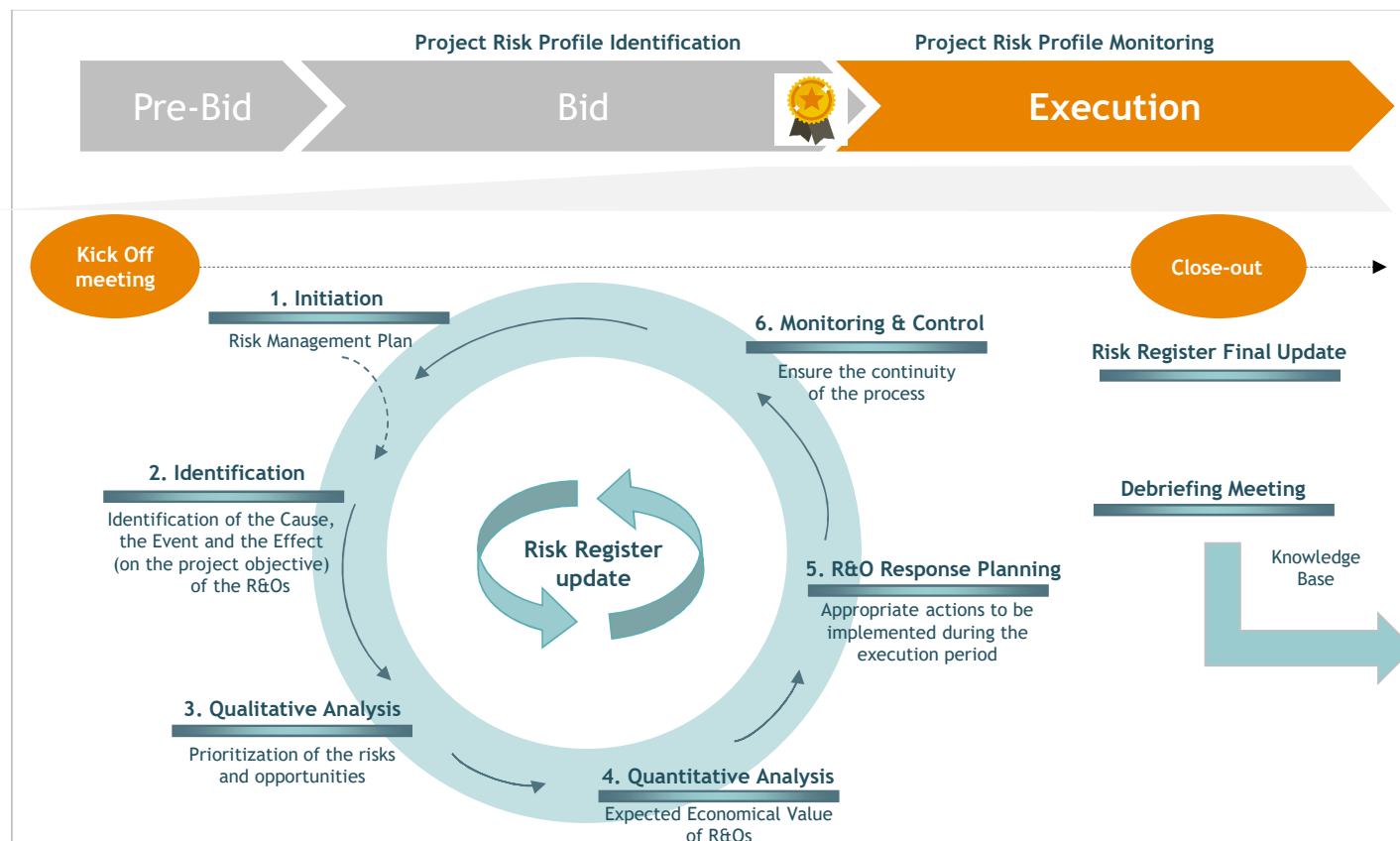
	Severity Rating				
	Low	Minor	Moderate	Significant	High
High	6	4	2	2	0
Significant	1	9	6	1	1
Moderate	5	10	10	9	1
Minor	2	5	8	0	2
Low	2	3	0	0	0

Risk Exposure by Business Unit

Business Unit / Division	Department / Project	Risk Profile (Number of Risks & Relative Cost)	Relative Exposure	Current Risk Level (\$)	Risk Tolerance	Residual Risk Level (\$)	Mitigation Cost (\$)
Civil Aerospace	Navigation Systems	[Bar chart]		596,250	●	225,000	160,000
Energy	Refinery Upgrade	[Bar chart]		65,570,417	●	917,083	
Government / Defense	Stealth Program	[Bar chart]		948,875	●	316,750	350,000
Infrastructure	Facility Automation Program	[Bar chart]		1,295,000	●	224,875	388,001
Shared Services	IT	[Bar chart]		621,250	●	163,750	200,000
	Audit and Assurance	[Bar chart]		768,750	●	697,700	225,000
	HR	[Bar chart]		545,625	●	247,500	150,000
	Finance	[Bar chart]		805,650	●	588,150	120,323
	Strategic Planning	[Bar chart]		187,883	●	187,883	42,000
Transportation	Transit Systems	[Bar chart]		1,010,833	●	121,250	210,500
	Customer Equipment Upgrades	[Bar chart]		232,500	●	100,000	30,000

INDUSTRIAL RISK MANAGEMENT KNOWLEDGE CAPITALIZATION

CONTINUOUS EFFORT

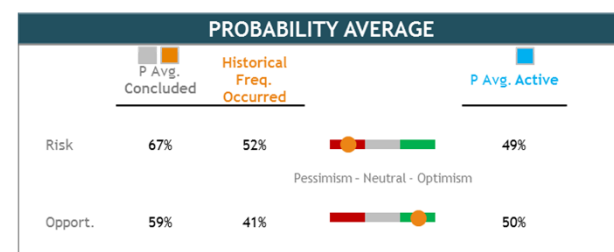


KNOWLEDGE CAPITALIZATION

- Critical Risks, Occurred
- Critical Risks, Successfully Mitigated
- Unidentified Critical Issues, Occurred

Risk ID	R/O	EV (,000)	Risk Status	RBSCode	ROBSZdes	BS (Hist.Freq. Occ.)	Country (Hist.Freq. Occ.)	Client (Hist.Freq. Occ.)	MIN (range)	MAX (range)	P	Traffic Light
1	R	15.461	Active	3.1	Legal Aspects and Contractual	39%	100%	100%	39%	100%	20%	Yellow
166	R	4.770	Active	3.1	Legal Aspects and Contractual	39%	100%	100%	39%	100%	50%	Green
165	R	3.896	Active	4.2	Project Organization (Chart & Resources)	65%	33%	60%	33%	65%	65%	Green
181	R	3.735	Active	4.1	Partnership	88%	88%	88%	88%	88%	75%	Yellow
151	R	3.468	Active	4.6	Third Party	100%	100%	100%	100%	100%	50%	Yellow
183	R	2.092	Active	3.4	Project Schedule	69%	50%	75%	50%	75%	20%	Yellow
184	R	1.925	Active	8.1	Construction and Installation activities - General	17%	3%	0%	0%	17%	55%	Red

- How many times have similar risks occurred on the same kind of projects?
- Why do I think that the probability is lower/higher now?



- Have our risk evaluation proven to be pessimistic, optimistic, neutral?
- Are there any biases affecting our evaluations?

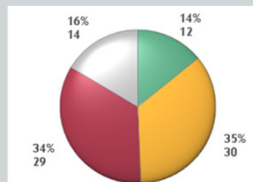
INDUSTRIAL RISK MANAGEMENT

MONITORING, CONTROLLING AND REPORTING

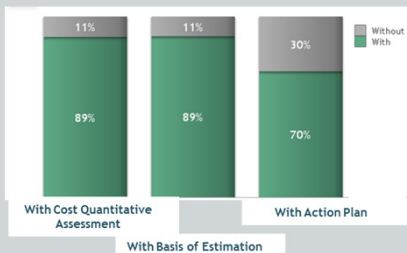
Controlling the Process

- Controlling the process through high level indicators:
 - Are we covering our backlog?
 - Is the information Up-to-date, Complete and/or reliable?
 - Are we following the applicable procedures?

Frequency of update

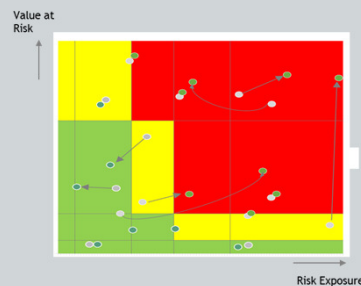


Completeness of Risk Registers



Monitoring the Risk Profile

- Monitoring the risk profile in terms of:
 - Is the portfolio balanced?
 - How is the risk profile moving?
 - Do we have enough contingencies?



RISK COVERAGE (RC): Risk Coverage (RC) is the confidence level that Contingencies will be enough to cover the impacts of all the risks occurring on the Project/Portfolio, or, in other words, the probability for the Project/Portfolio to meet the current Margin forecast.

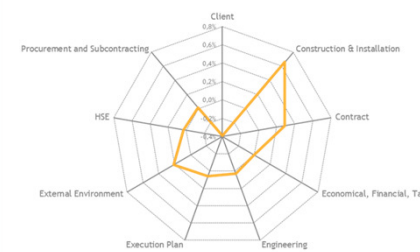
RISK EXPOSURE (RE): Risk Exposure (RE) is equal to 1-RC and represents the probability for the Project/Portfolio not to meet the Current Gross Margin Forecast

Value At Risk (VAR): Value at Risk (VAR) is the residual (i.e. not covered by Contingencies) risks impact that the Project/Portfolio could face within a confidence level of 75%.

Providing Management Tools

- Which are the type of risks mostly impacting the Project/Business Unit?
- Are they incidental or systemic?
- Who has the levers to help my project?

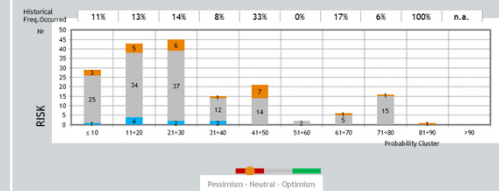
Amount of Risks by Risk Categories



Other analyses

- Are there any biases affecting our evaluations?

Probability Distribution



THANK YOU