Risk Management Workshop

Rome, 19 December 2015

UNIVERSITA' degli STUDI di ROMA
TOR VERGATA

COURSE OF BUSINESS AUDITING
UNIVERSITY OF ROME TOR VERGATA

DECEMBER 2015

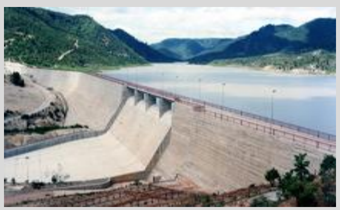
Today we will be talking about:

- Astaldi - Company Profile
- Risk Management Overview
- The Enterprise Risk Management
- Country Risk Manager
- The Project Risk Management

Astaldi - Company Profile

A leading Italian General Contractor and one of the most important players in the construction sector at global level, delivering value through a dual construction-concession approach, integrated with engineering and procurement.

Sectors



Key Milestones

TRANSPORT

- ✓ 5,000+ kms of railways and undergrounds, 15,000+ kms of highways and roads
- ✓ 160+ kms of viaducts, 215+ kms of railway/road tunnels
- ✓ 12 TBM (Tunnel Boring Machine)

WATER AND ENERGY

- ✓ 68 dams, 33 hydroelectric power plants, 80 acqueducts/ wastewater treatment plants
- ✓ 110+ kms of hydraulic tunnels
- ✓ Hydroelectric Plants, adding to a total of 6,000MW installed capacity

CIVIL AND INDUSTRIAL BUILDING

- ✓ 20 hospitals, for a total of 8,100+ beds
- ✓ 18 airports
- ✓ 6,202 parking spaces

Global Presence (*)

- ✓ 3rd Contractor worldwide in Bridges
- ✓ 7th Contractor worldwide in Airports
- ✓ 8th Contractor worldwide in Hydro Plants
- ✓ 12th Contractor worldwide in Mass Transit & Rail
- ✓ 16th Contractor worldwide in Transportation
- ✓ 17th Contractor worldwide in Highways
- ✓ 25th Contractor worldwide in Buildings (Healthcare)

22nd Contractor in Europe and 85th Contractor worldwide in 2014 ENR Global Contractors List (**)

(*) 2014 ENR (Engineering News Record) Sourcebook - 2013 consolidated figures
(**) 2015 ENR (Engineering News Record) Sourcebook - 2014 consolidated figures

Astaldi - Company Profile

Key consolidated 2014 figures:

- Revenues: € 2.7 billion
- EBITDA: € 306 million (11.6% margin)
- Total Backlog(1): over € 28 billion
- Approx. 100 projects in 17 countries
- 9.600+ employees

ASTALDI

Construction

Concessions

Transport Infrastructures	Renewable / Water & Energy	Civil & Industrial Buildings	Plant Design & Maintenance	Concession Participations

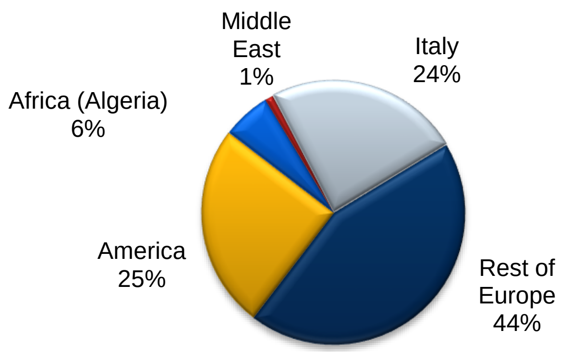
A global leader in infrastructure construction and concessions

(1) Total Backlog includes €13.8 billion in execution and €14.5 billion of orders in pipeline

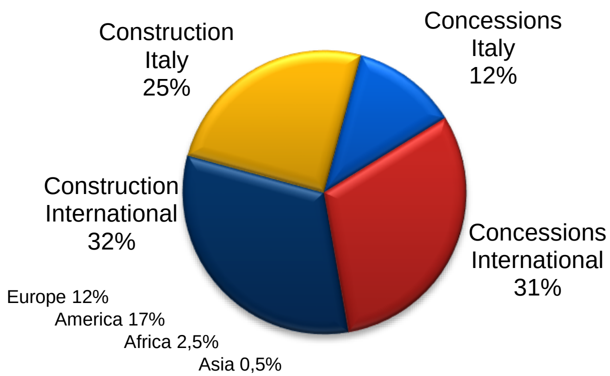
Astaldi - Company Profile

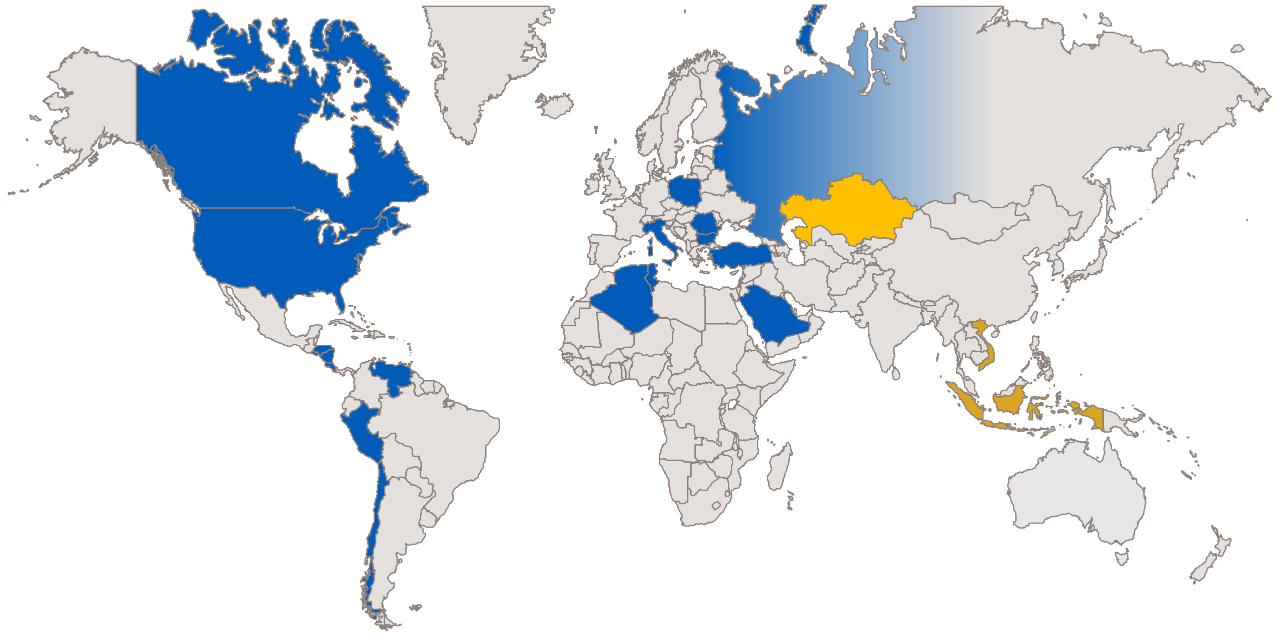
Present since: before 1980	1980-1990	1990-2008	2008-today	TOMORROW
Italy, Africa, Venezuela, Central America…	… USA, Turkey…	…Algeria, Romania, Middle East…	… Chile, Peru, Poland, Russia, Canada …	… New Markets…

2014 Revenues split by country



2014 Backlog in execution split by country





Algeria	El Salvador	Peru	Saudi Arabia	Australia
Canada	Honduras	Poland	Turkey	Indonesia
Chile	Italy	Romania	USA	Vietnam
Costa Rica	Nicaragua	Russia	Venezuela	

- Core markets
- Scouting markets

Risk Management Overview

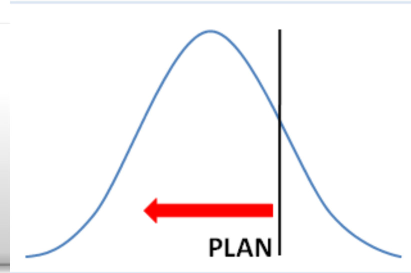
What is risk?

"RISK" can be defined as any uncertain event that could have an impact (positive or negative) on the company's business objectives and strategies.

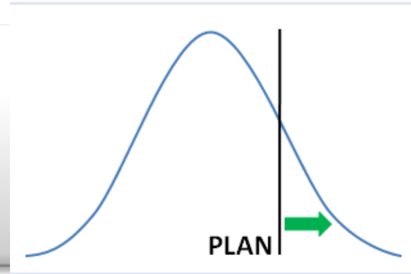
"RISK" is therefore an integral part of doing business: THERE IS NO REWARD WITHOUT RISK.

Some definitions:

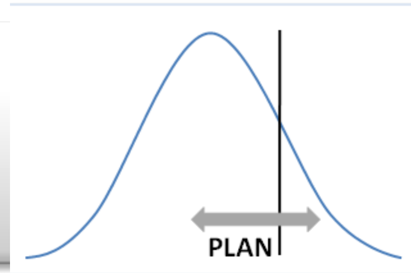
***Risk** is a probable **negative deviation** from the plan*



***Opportunity** is a probable **positive deviation** from the plan*



***Volatility** is a **fluctuation** around the plan*



Why is it important to manage risks?

*Taking **measured** risks, ensuring that the company’s risk profile is **consistent** with its strategic objectives, is a core Management responsibility!*

Risk Management Overview

Why is important to manage risks? (2 of 2)

The main reasons to implement a risk management process can be summarized as follows:

- *Organizational **goals** must be **aligned with** the organization's **strategy** and **risk tolerance**;*
- ***Significant risks** should be identified, assessed, quantified, managed and monitored;*
- *Appropriate **risk responses** should be selected in order to **align** risks with the organization's **risk appetite**;*
- *Relevant **risk information** should be **captured and shared** in a timely manner across the organization, enabling staff, management, and the board to carry out their responsibilities.*

The Enterprise Risk Management

Enterprise Risk Management

- … is a **proactive process** integrated with existing decision-making and planning processes…
- … with the objective - through a gradual journey - of enhancing Management capabilities **to anticipate and manage risks** affecting the Company's objectives and expected results…
- … while **responding to** recent **Corporate Governance** pressures (i.e. stronger expectations from investors and analysts, alignment with RM best practices, periodical reporting to the Board as requested by the Codice di Autodisciplina of Borsa Italiana).

The Enterprise Risk Management

What ERM is? (2 of 3)

PLANNING PROCESS

RISK MANAGEMENT PROCESS

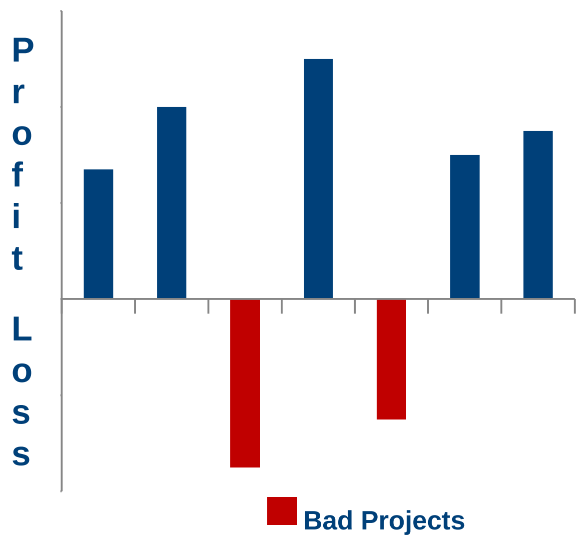
The Enterprise Risk Management

What ERM is? (3 of 3)

Past — Present — Future

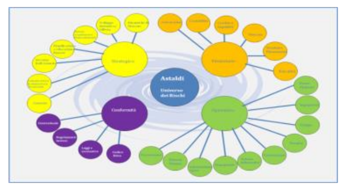
Typical Portfolio of Large Projects (# of projects in portfolio)

- A few «bad» contracts have impacted Astaldi's portfolio over the years



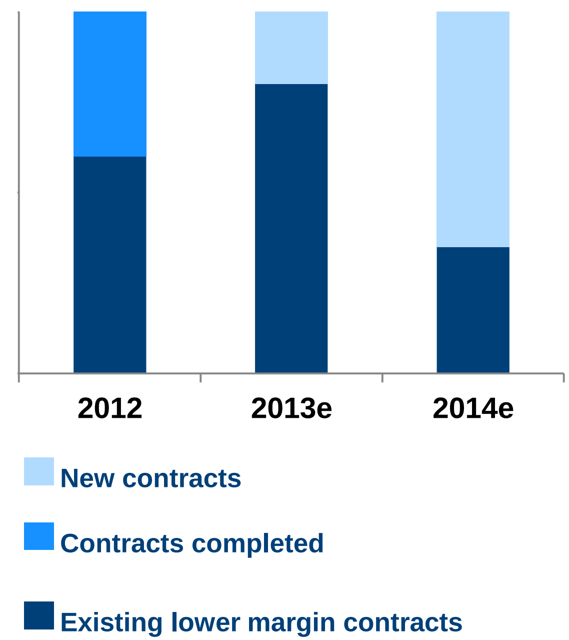
Risk Management: *No contract* is better than a *Bad contract*

- Risk Management system successful in avoiding bad contracts



Evolution of Portfolio mix

- The aim will be to reduce/eliminate the poor contracts from Astaldi's Portfolio



... in order to answer these questions Astaldi:

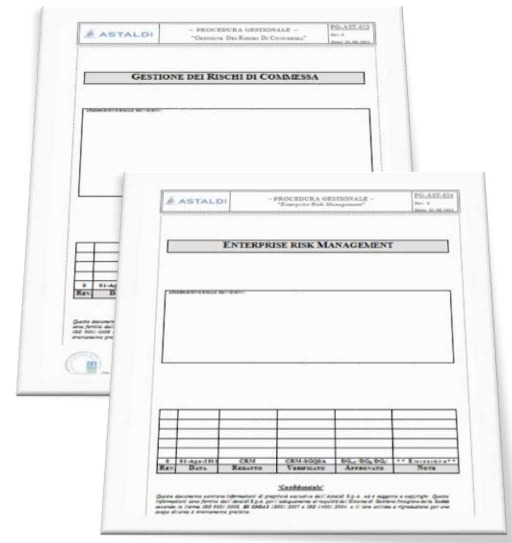
- Established a “Corporate Risk Management” department;
- Issued two procedures (PG-AST-023 and PG-AST-024) to define and govern the RM processes (Project RM and Enterprise RM)

The Enterprise Risk Management

ERM in Astaldi – Processes and procedures

The risk management processes are depicted in two procedures:

- **PG-AST-023** describes the Project Risk Management process, referring to the risk analysis, quantification and management activities that are carried out with reference to a **specific project** for its entire lifespan (from the bid phase to the handover of the project to the Client). The main activities of the risk management process are:
    a) Risk classification;
    b) Risk identification;
    c) Risk evaluation;
    d) Risk management;
    e) Risk monitoring and reporting.

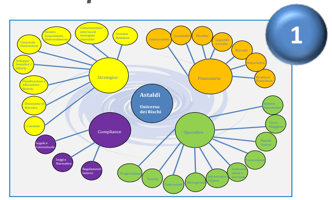


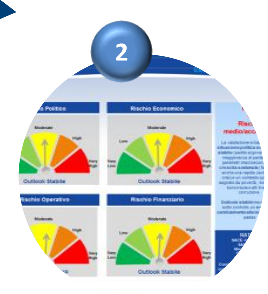
- **PG-AST-024** describes the Enterprise Risk Management process which is carried out across the **entire company** to assess, select, quantify and mitigate the so called Top Risk faced by the company. The ERM process is composed of the following phases:
    a) Strategies definition;
    b) Risk evaluation;
    c) Risk management;
    d) Risk monitoring;
    e) Efficacy evaluation.

The Enterprise Risk Management

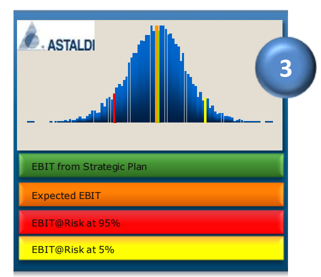
ERM in Astaldi - Key Activities

Development of the Risk Universe and Top Risk selection

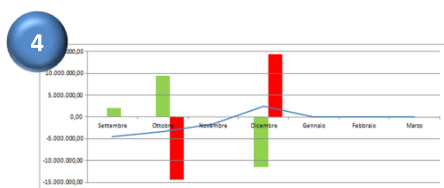




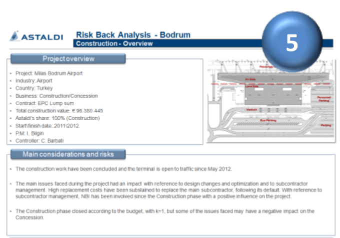
Country Risk Analysis and Report



Analysis using EBIT@Risk methodology (risk quantification, risk response, reporting)



Cash-flow@Risk and risk-adjusted financial forecast



Back Analysis on closed projects

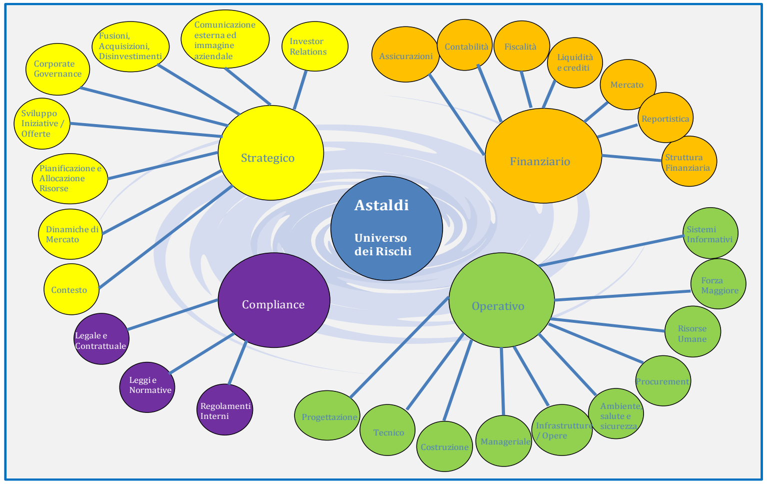
Development of Tagetik ERM: software suite for risk analysis, quantification and monitoring activities

ASTALDI

The Enterprise Risk Management

1. Risk Universe and Top Risks

In the startup year the CRM developed the **Risk Universe**, which is now composed of **approximately 120 risk events**.
15 Top Risks were then selected according to Corporate Risk Management and Top Management's insight on the business' evolution



Rischi Finanziari

Liquidità e crediti

1. Indisponibilità finanziarie/incapacità di far fronte in modo tempestivo ed efficiente alle obbligazioni di pagamento o alle esigenze di investimento

Mercato

2. Oscillazione dei tassi di cambio

Struttura finanziaria

3. Squilibrio livello indebitamento/livello equity

Rischi Strategici

Contesto

4. Rischio Paese (politico/governativo, di sicurezza (sequestri di persone o beni), sociale, economico/finanziario, di maggior rigidità degli standard normativi/burocratici)
5. Contesto normativo ed evoluzione normativa con impatto sulle attività di business del Gruppo

Sviluppo Iniziative/Offerte

6. Errori di valutazione delle iniziative e della redditività dei progetti

Rischi Operativi

Progettazione

7. Errori/carenze di disegno o progettazione

Manageriale

8. Errori/ritardi nella definizione e gestione dell'organizzazione di progetto
9. Errori/inefficienze/ritardi nella gestione dei sub-contractor
10. Inefficace/inefficiente gestione dei partner di iniziativa
11. Inefficace/inefficiente gestione del cliente

Ambiente, Salute e Sicurezza

12. Incidenti con danni all'ambiente e/o alla salute delle comunità locali

Procurement

13. Inaffidabilità di fornitori/subcontractor/outsourcer (i.e. solidità finanziaria, qualità e conformità servizi resi, integrità e reputazione del fornitore)

Risorse umane

14. Difficoltà nel reperire sul mercato competenze tecniche specialistiche

Rischi di Compliance

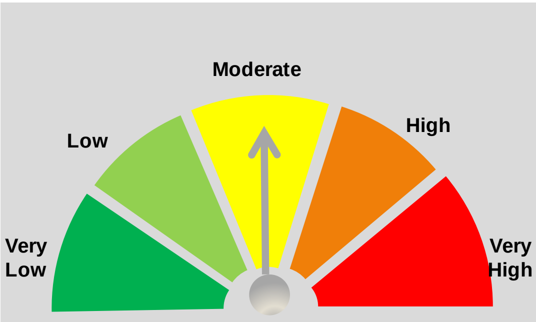
Legale e Contrattuale

15. Mancato rispetto degli obblighi contrattuali

The Enterprise Risk Management

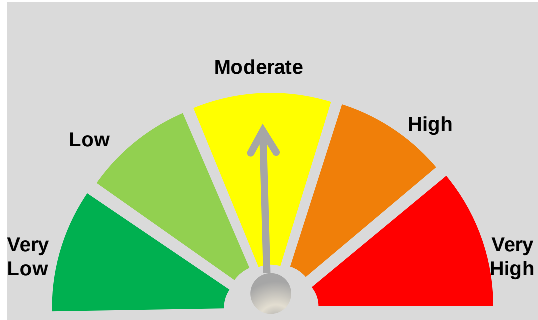
2. Country Risk Reporting

Rischio Politico



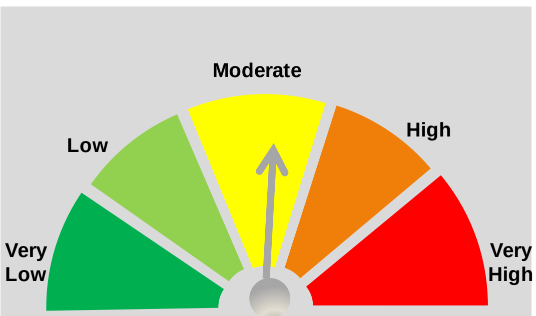
Outlook Stabile

Rischio Economico



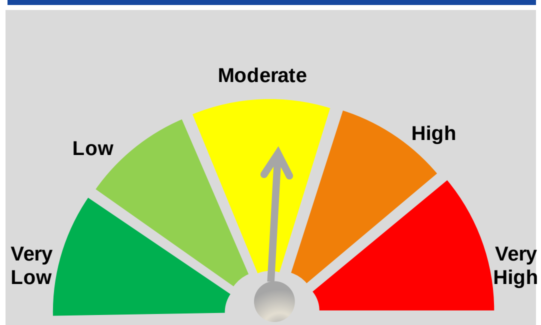
Outlook Stabile

Rischio Operativo



Outlook Negativo

Rischio Finanziario



Outlook Stabile

Perù
=
Rischio medio/accetabile

La valutazione si basa su una **situazione politica non del tutto stabile** (partito al governo non ha maggioranza al parlamento), parametri macroeconomici in **crescita sostenuta** (favorendo anche una rapida uscita dalla crisi) e un contesto operativo segnato da povertà, inefficiente burocrazia e alti livelli di corruzione.

Outlook stabile ma da tenere sotto controllo un **eventuale cambiamento alla leadership** del paese

RATING

SACE → Medio (M1)
S&P → BBB -
Moody's → **Baa3**
Fitch → BBB -
Dagong → BBB+

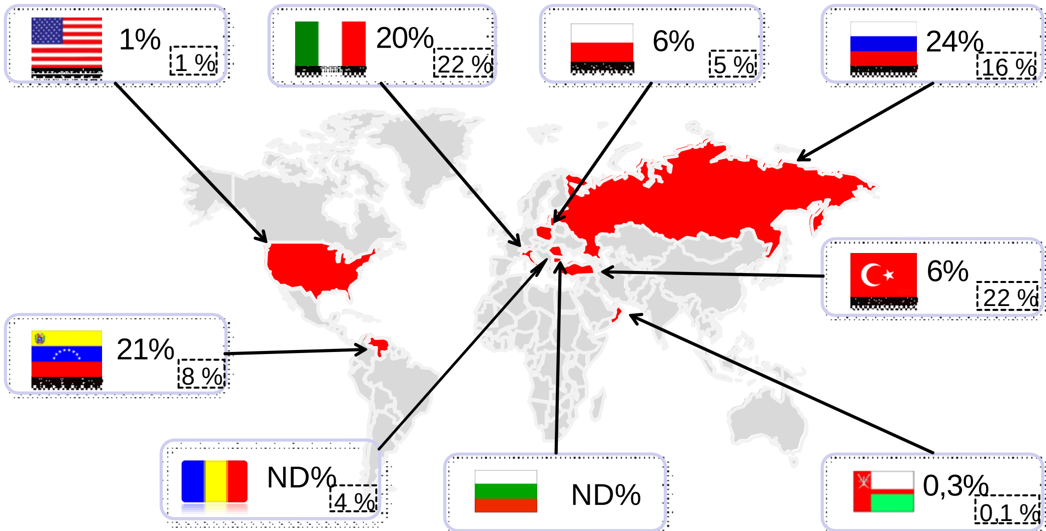
Cond. assicurabilità SACE: senza condizioni rischio sovrano, corporate, bancario

- Given its business, the Group is exposed to **risks related to international activities** (e.g., risks associated with the instability of the political and economic situation and local risks related to changes in the macroeconomic, fiscal or legislative frameworks).
- When commercial activities are pursued in "new" countries where the Group does not currently operate, the Corporate Risk Management department shall create a reporting package on the country in scope in order to facilitate decision-making on new initiatives, the "Country Risk Report".

First release of the Country Report: **general overview of the country**, with macroeconomic and business figures and identification of the **main risks and opportunities** with reference to: **politics, economy, operation, finance**.
Country Report Updates**:** a **check up** is performed **every 6 months** to reflect relevant changes occurred in the period.
(BMI rating, credit rating agencies; meetings with the DP, Country rating update).

Once the integrated RM Methodology was effectively implemented within the Group, the Risk Analysis and its updated version includes many more types of risk (not only Top) and represents a majority of the countries in which Astaldi operates.

Illustrated below are the countries which adhered to the Risk Analysis.



	Risk Analysis 2011	Risk Analysis 2012	Risk Analysis 2013
Reference Period	2011-2013	2012-2014	2013-2015
Countries analyzed	5	8	9
Coverage % of the Group's EBIT	83%	78%	78%
R&O analyzed	**Top Risk**	**Universo dei Rischi**	**Universo dei Rischi**
R&O quantified	111	123	100

The Enterprise Risk Management

3. EBIT@Risk - Montecarlo simulation

Business Plan Risk Analysis: yearly review and update of the Business Plan Risk Analysis with identification of Risks/Opportunities, quantification of their potential impact on EBIT and monitoring of the R&O's status throughout the year

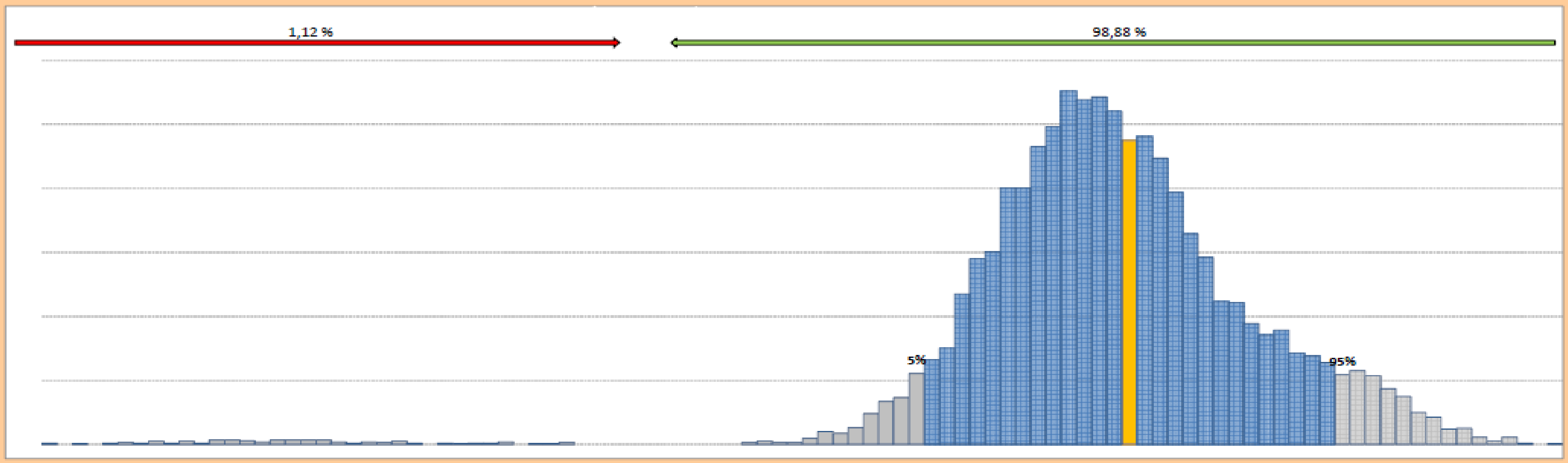
EBIT@RISK

Scenario: 2013_EBIT - Ebit di Piano 2013-2015
Area: Italia
Rischi: All Risks

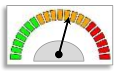
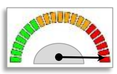
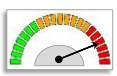
Budget *124.393.144* **Atteso** *153.851.189* **Delta** *29.458.045*

		su Budget
worst case: 5%	**17.916.894**	**142.310.038**

		su Budget
best case: 95%	**44.599.732**	**168.992.876**



After evaluating the Risk Analysis' results, a risk prioritization is defined in order to identify the **related risks responses** that are developed together with Astaldi's Management:

RISK EVENT	Risk Family	Project	Exposure	Impact in M€	RISK STRATEGY
1 Description	Country Risk	xxx		xxxx €	Avoid/Exploit
2 Description	Procurement	xxx		xxxx €	Transfer/Share
3 Description	Cash-flow and Credits	xxx		xxxx €	Mitigate/Enhance
4 Description	Contractual liability	xxx		xxxx €	Accept

Avoid a threat or Exploit an opportunity (this strategy involves taking the actions required to address a threat or an opportunity in order to ensure either that the threat cannot occur or can have no effect on the project, or that the opportunity will occur and the project will be able to take advantage of it)

Transfer a threat or Share an opportunity (this strategy entails transference to a third party that is better positioned to address a particular threat or opportunity)

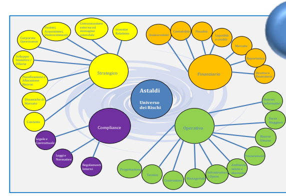
Mitigate a threat or Enhance an opportunity (mitigation and enhancement are the most widely applicable and widely used response strategies. Here, the approach is to identify actions that will decrease the probability and/or the impact of a threat, and increase the probability and/or the impact of an opportunity)

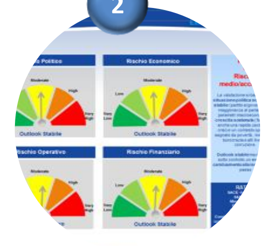
Accept a threat or an opportunity (this strategy applies when the other strategies are not considered applicable or feasible. Acceptance entails taking no action unless the risk actually occurs, in which case contingency or fallback plans may be developed ahead of time, to be implemented if the risk presents itself)

The Enterprise Risk Management

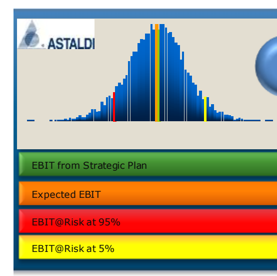
Risk Management in Astaldi - Key Activities Recap

Development of the Risk Universe and Top Risk selection

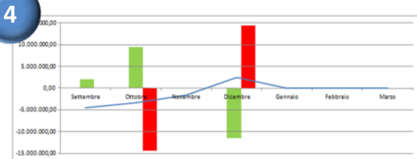




Country Risk Analysis and Report



Analysis using EBIT@Risk methodology (risk quantification, risk response, reporting)



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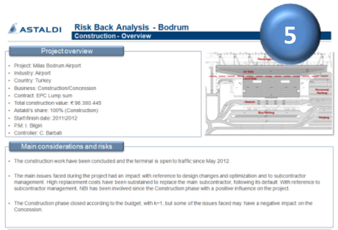
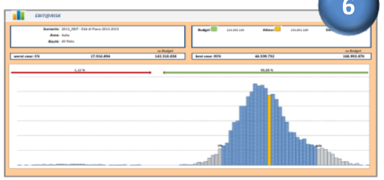


Back Analysis on closed projects



Development of Tagetik ERM: software suite for risk analysis, quantification and monitoring activities

The Enterprise Risk Management

Process overview

The ERM process is an ongoing activity to assess, quantify and manage the so called “Top Risks” faced by the company and ensure that the Group’s risk exposure is in line with its risk tolerance and its business objectives.

Every two years the CRM organizes an enterprise risk assessment involving:

- the DGs, for a top-down view of the main risks to which the Group is exposed;
- other Departments and Corporate functions for a drill-down on the main risks (i.e., transverse risks);
- Country Management (Directors, staff) for the identification and analysis of relevant risks at the local level.

The process is composed of the following activities:

- identification and analysis of major risk events to which the Group is exposed, by selecting and studying Astaldi’s Risk Universe and its most relevant risk categories with a high degree of impact on the expected results defined in the business plan;
- measurement for the identified risk events of their potential impact on the economical results expected, both at Group and country level;
- selection of the most significant risks and the definition and formalization of mitigation plans to be implemented.

Who should supervise the process in each area?

Country Risk Manager

Job description (1 of 3)

The **Country Risk Manager** reports hierarchically to the CRM and functionally to the DP, as staff.

Main responsibilities:

- Ensures the optimization of decisions and related actions in order to minimize the risk during the different stages of business ranging from the development of Country initiative, the management of the contract until the closing of the Project, intervening directly at the relevant stages.

...in particular:

- Supports the CRM to define and oversee the **mapping and assessment of risks** (operational, strategic, financial and compliance) at various levels of the Group;

- Defines and ensures, both at country and Project level, the **widespread adoption of the criteria, rules, procedures and processes** introduced for the identification, assessment, management and monitoring of risk, interfacing with SQP and SHSEP for insertion and proper integration into the Country / Construction Management System;

- if the CRM has not yet been identified or for low-risk projects, the Country Risk Manager has an "interim“ role;

Country Risk Manager

Job description (2 of 3)

- Supports PME, where deemed necessary and with the help of the work team, in the preparation of the **Risk Management Plan**, in order to identify mitigation actions, related internal and external milestones and implementation costs;

- Activates, where deemed necessary, all the analyzes, assessments and controls to verify that the risk management process in the country is properly followed and that for each key risk **appropriate mitigation actions** have been identified, with related costs;

- Monitors the **implementation of the Risk Management Plan** in the country and verifies that the economic and financial impacts are in line with expectations and requires, where appropriate, the necessary control / mitigation actions;

- Selects and shares with the HR Department of the country, with the DP and the PME **human resources** required to manage the project risks;

- Monitors the development of specific **Risk Management skills** for the human resources of the country;

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Country Risk Manager

Job description (3 of 3)

- Provides Risk Management **training** to its own structures and to the PME aimed at the effective and efficient implementation of the process and at methodological uniformity with the Corporate policies;

- Verifies risk events and **common mitigation** actions to several projects in order to formulate, in accordance with the CRM, hypothesis of optimization solutions;

- Prepares **periodic reporting** with reference to country and project risk management in order to provide the DP / CRM with a comprehensive monitoring package;

- **Informs the CRM** on the current status of the risk management system in the country.

How can I manage risks on my project?

The Project Risk Management

Typical project risks

- ✓ Contractual risks
- ✓ Meeting time and cost requirements
- ✓ Organization effectiveness
- ✓ Dependence on key suppliers
- ✓ Country Risk
- ✓ Joint Ventures/Partnerships
- ✓ Subcontractors
- ✓ Financial Risks (interest rate, exchange rate, liquidity, etc.)
- ✓ Regulatory risks
- ✓ Frauds
- ✓ HSE

New trends in Project Risk Management

- *Risk Quantification based on statistical methodology and scenario analysis*
- *Implementation of an integrated Risk Database organized by project, BU, etc.*
- *Early warning advices*
- *Risk Response monitoring through continuous information flows (top-down and bottom-up)*
- *Risk Analysis since the early phase of a project (pre-bidding and bidding) according to its life-cycle*

The Project Risk Management

Process overview (1 of 2)

The Project Risk Management procedure is composed of the following activities:

Risk classification

At early stage for every new business opportunity, the risk class for the project is assigned (Low, Medium, High).

Risk identification

The risk identification process is carried out during the bid\acquisition phase in the following documents:

- “Country Risk Report” for projects in new countries;
- in the INFOCOM-ITA (Italy) and INFOCOM-EST (rest of the world);
- in the monthly report on business development activities;
- in the feasibility study of the project;
- in the Risk Register;
- in the SCOI (Italy), SCOE (rest of the world) and SCPF (Concessions).

The risk identification is done taking into considerations results from the Back Analysis process (available in Tagetik ERM).
The risk owner fills in the Risk Register.

Risk evaluation

Identified risks are evaluated with a qualitative and/or quantitative methodology. The qualitative evaluation is done according to 5-rank probability and impact scales, while the quantitative methodology is supported by the Tagetik ERM tool for Montecarlo simulation and EBIT@Risk methodology.

Process overview (2 of 2)

Risk management

Risk management plan are defined for the main risks of a project, depicting the strategy to be adopted, milestones, ownership and monitoring. During the study of the risk management plan, its expected benefit should be analyzed, using either a qualitative measurement or the same methodology used for the EBIT@Risk.
The action plan is then formalized inside the Risk Register.

Risk monitoring

The Risk Register for the project and specific risk sheets are updated during the different phases of the acquisition, for every Industrial Plan and twice annually during the Preconsuntivi. The risk evaluation is updated (qualitative or quantitative scoring) and the implementation of the action plan is monitored.

How should the process be implemented on a new business initiative?

Risk Register (1 of 5)

The Risk Register is the tool by which the project risks are identified, assessed and monitored. The tool should be used since the tender phase and updated during the project life cycle.

Risk Management Register for: Project name

Last Update:

				Risk Identification					Qualitative Risk Assessment			Contingency			Quantitative Risk Assessment					Risk Response Plan		Monitoring and Control		
Risk Category	Sub-Category	Code	Risk	Description	Mitigation	Threat or Opportunity	Primary Objective	Risk Owner	Probability	Impact	Risk Value	Yes	No	Value (I)	% Probability	Worst Case (I)	Base Case (I)	Best Case (I)	% Reliability	Response Strategy	Response Actions	Status	Start Date	End Date
		R-O004	Difficulties between the civil works and the electro mechanical works								0													
		R-O005	Unexpected impacts during the operational phase regarding certain design choices made (concession)								0													
		R-O006	Increased construction costs due to the site's morphology								0													

Risks, once inserted, must not be deleted, even if the risk event cannot generate any more impacts. In this way it is possible to monitor the evolution of the project.

The Risk Register should be:

- **prepared** for every new business initiative;

- **updated** during the different stages of the project;

- **shared** inside the team, with the CRM and other relevant actors.

The Project Risk Management

Risk Register (3 of 5)

#1 - Risk Identification

Risk Category	Sub-Category	Code	Risk
		R-O001	Design errors/Faulty design/Difficulties increases costs and creates delays
		R-O002	Unexpected delays during the design phase

Risk Identification

Description	Mitigation	Threat or Opportunity	Primary Objective	Risk Owner
		Threat	Time	
		Opportunity	Cost	

The specific risk event must be linked to Astaldi Risk Universe. The Risk Universe is based on three level of analysis:

- **Risk Category** (operational, financial, strategic and compliance);
- **Sub Category** (specific for each Category);
- **Risk event**.

- **Description:** description of the specific event and its impact on the project
- **Mitigation:** mitigations already in place (e.g., contractual clauses) in order to mitigate the impact of the event
- **Threat or opportunity:** indication if the described event represents a threat or an opportunity
- **Primary Objective:** cost, time, quality and scope
- **Risk Owner**: role/actor who will be managing the event

#2 - Risk Assessment

Qualitative Risk Assessment			Contincency		
Probability	Impact	Risk Value	Yes	No	Value (I)
		0			

Quantitative Risk Assessment				
% Probability	Worst Case (I)	Base Case (I)	Best Case (I)	% Reliability

- **Risk Assessment** based on qualitative scale for probability and impact. The assessment scale is based on five levels, both for probability and impact. The Risk Value is generated automatically.
- **Indicaton of contingencies** for the specific risk event

- For the quantitative analysis, the actor should indicate:
  - **Probability** that the event could occur;
  - **Worst case** / **Base case** / **Best Case**: forecasted economic impacts in case that the event occurs
  - **reliability of estimates** expressed in percentage

#3 - Risk Response and Risk Monitoring

Risk Response Plan		Monitoring and Control		
Response Strategy	Response Actions	Status	Start Date	End Date

- The first column should be filled with the selected strategy to manage the event. The strategies are:
  - **Avoid/Exploit**
  - **Transfer/Share**
  - **Mitigate/Enhance**
  - **Accept**

- **Status**:
  - **Active;**
  - **Dormant;**
  - **Retired.**
- **Start/End date:** indicate if the risk has a start and/or end date (it could be the same as the end of the project)

Thank you for the attention!

Q&A