ProjCon | **Project Controls Services & Training Provider**

Global EPC Project Management for the Energy Industries

Post-Conference Workshop:
**Project Controls Implementation and Risk Management
30 Nov 2011, London UK**

About ProjCon Consultants

ProjCon is exclusive, niche and rapidly growing Project Controls Consultancy offering innovative advisory, implementation and technical support to our Clients. Our Consulting services enables effective use of Project Controls technology, methods and practices for EPC (primarily Oil & Gas) customers.

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About the Author

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Anil Godhawale is Director of ProjCon Consultants and Founder of ProjectControlsOnline.com. Anil has over 14 years of international field and home office experience in Project Planning & Scheduling, Cost Engineering, EVA, Risk and Delay Claims Analysis with project values ranging from $10M to $1.5B. Anil has a strong Project Controls background & has worked in all phases of projects in various sectors that includes Petroleum & Chemicals, LNG regasification & liquefaction facilities, CCU's (Carbon Capture Units), Power Projects and Pipelines.

Anil is also very active with industry professional associations as fellow at ACostE, UK and member of AACEi, USA since last decade. He also contributed to CIOB, UK as member of TDWG to develop guidelines for accreditation in Time Management. Anil also holds distinguished Project Controls Certifications CCE & PSP from AACEI, USA and is a registered member (IEng) of Engineering Council UK. Find out more about Anil and his contribution to industry by visiting www.linkedin.com/in/godhawale

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Index/Topics

- ◆ **Implementing Effective Project Controls at Organization Level**

- ◆ **Implementing Effective Tracking and Monitoring System**

- ◆ **Understanding the Project Risk Management (PRM) Process and Analysis**

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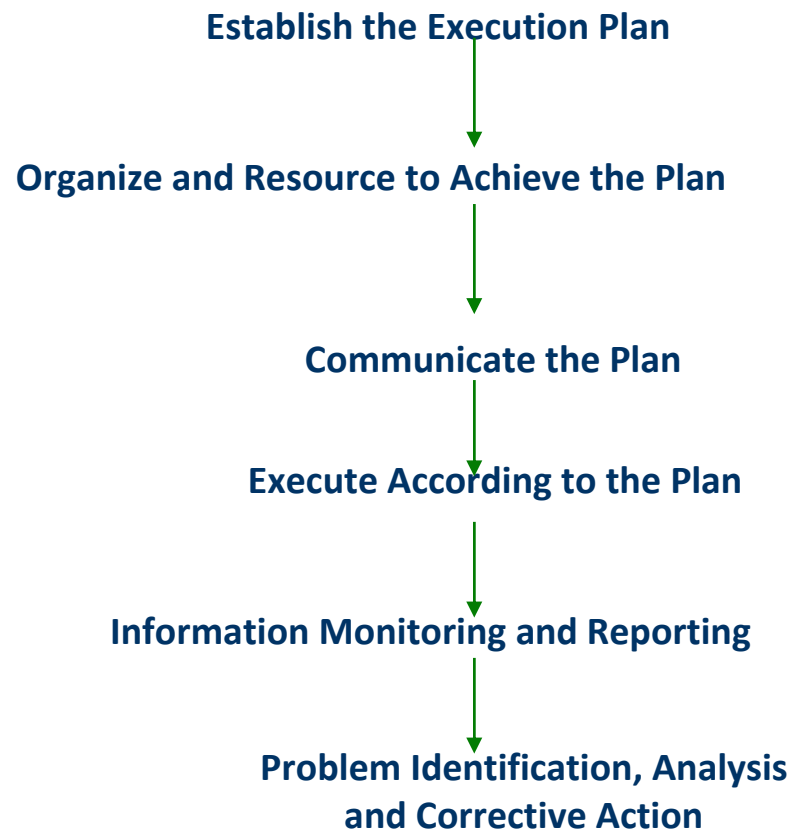
Project Controls Guidelines

- ◆ Planning and scheduling is a joint effort between project controls and the customers (internal/ external).

- ◆ The acid test of a plan and schedule is the customer's acceptance of them.

- ◆ Perform our job as if we are the project manager.

- ◆ Communicate in terms the customer understands.

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Project Controls Objectives

- ◆ Provide timely, pertinent, and objective management information to:
    - ■ Promote team understanding of, and commitment to, cost and schedule objectives and program baselines
    - ■ Create awareness of potential problem areas and develop solutions
    - ■ Facilitate team communications

- ◆ Support informed management decision-making process

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Project Controls Model

Establish the Execution Plan

↓

Organize and Resource to Achieve the Plan

↓

Communicate the Plan

↓

Execute According to the Plan

↓

Information Monitoring and Reporting

↓

**Problem Identification, Analysis
and Corrective Action**

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Project Controls Documents

MUST HAVE Project Controls documents :

- Milestone Schedule
- Work Breakdown Structure
- Project Budget
- Scope Change Register
- Organization Chart
- Staffing Plan
- Contract Document (s)
- Project Cost Report
- Risk Register

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Implementing Effective Project Controls at Organization Level

The vision for setting "effective" Project Controls requirement is successful delivery of projects in a consistent and professional manner, thus providing:

Predictability of outcome

Transparency

Career opportunities

Knowledge and learning

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An Integrated Solution
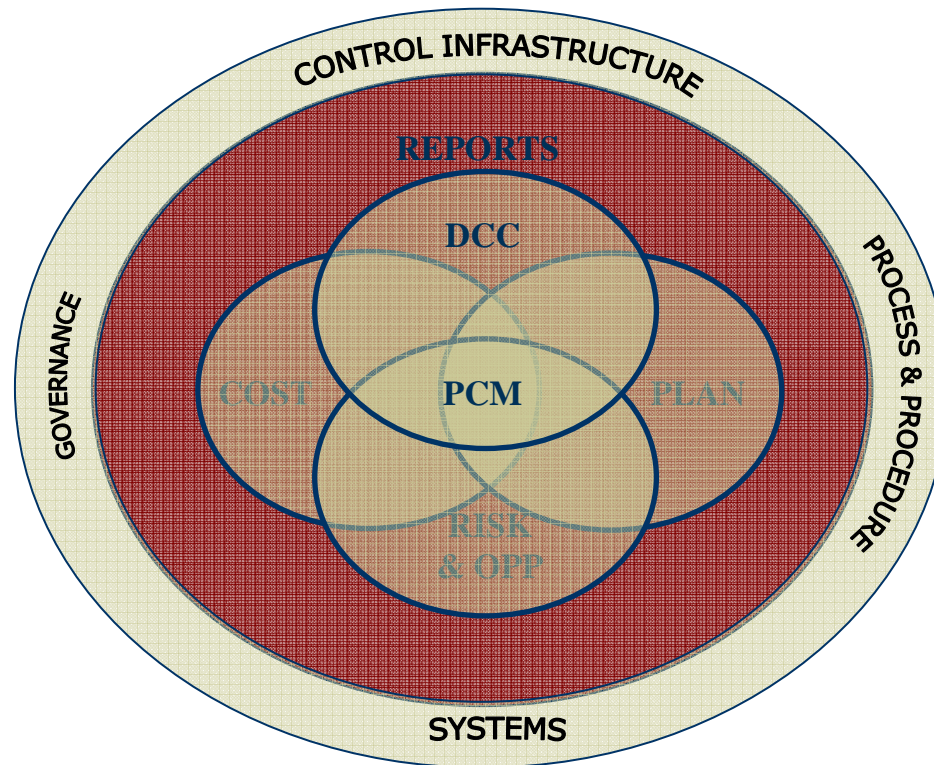
Structure/Infrastructure:

Structure:

Organisational Structure

Project Structure

Infrastructure:

Systems, e.g. cost management tools

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Processes and Procedures:

- Review existing procedure (if any)

- Continuously revise to accommodate the changes at organisation and/or industry level

- Keep it visible to everyone (for ex., on intranet site)

- Training and Awareness

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People

♦ **Should have**

- Clear role definition
- Career development
- Training

Structure/Infrastructure

Planning	**Cost Management**	**Opportunity & Risk**	**Performance Analysis**	**Document Control**
• Top down planning • Bottom up planning • 'Look ahead' planning • Integration of schedules • Milestones • Forecasting • Recovery Planning • Work flow • Progress Measurement • WBS	• Cost Planning • Cost Estimating • Cost Forecasting • Sensitivity analysis • Workflow and Cost Profiles • Budget & Scope Control • Inflation • Contingency • Recovery planning • Interim Valuation • Input Final Account • CBS • Input into Report	• Risk and opportunity input into monthly reports. • Manage interface with other functions (i.e.HSEQ) • Qualitative analysis on projects • Quantitative analysis on projects • Manage R&O registers • Reporting • Mitigation plans • System owners	• Generate the Project Management Report (PMR) • Trend analysis • Portfolio Performance • Benchmarking • Norms • Earned Value Indices • Ad Hoc Analysis and reporting • Dashboards • Reporting	• Document Control Process and systems • Progressing Documents • Document Status • New Project Support/ establishment

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Culture

- What's the existing culture and is that what we want ?
- Regular surveys to see where we are ..

Implementing Effective Tracking and Monitoring System

- Schedules – Level I, II, & III

- Project Controls Exection Plan

- Project Controls Procedure – should contain responsibility matrix, timing of PC deliverables etc and process map.

- Cost Reports and forecast

- SPF Curves

- Man-hours Productivity Analysis

- Project progress forecast analysis

- Critical Path Analysis

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Implementing Effective Tracking and Monitoring System – Contd..

- Overall Project Reforecast Strategy/guidelines

- 2/4 week look ahead report with status

- Change control report identifying change order status (with traffic lights)

- Skycharts

- Dashboard

- Milestone Status Report

- Manpower Histogram by discipline - Plan, actual and forecast in graphical format
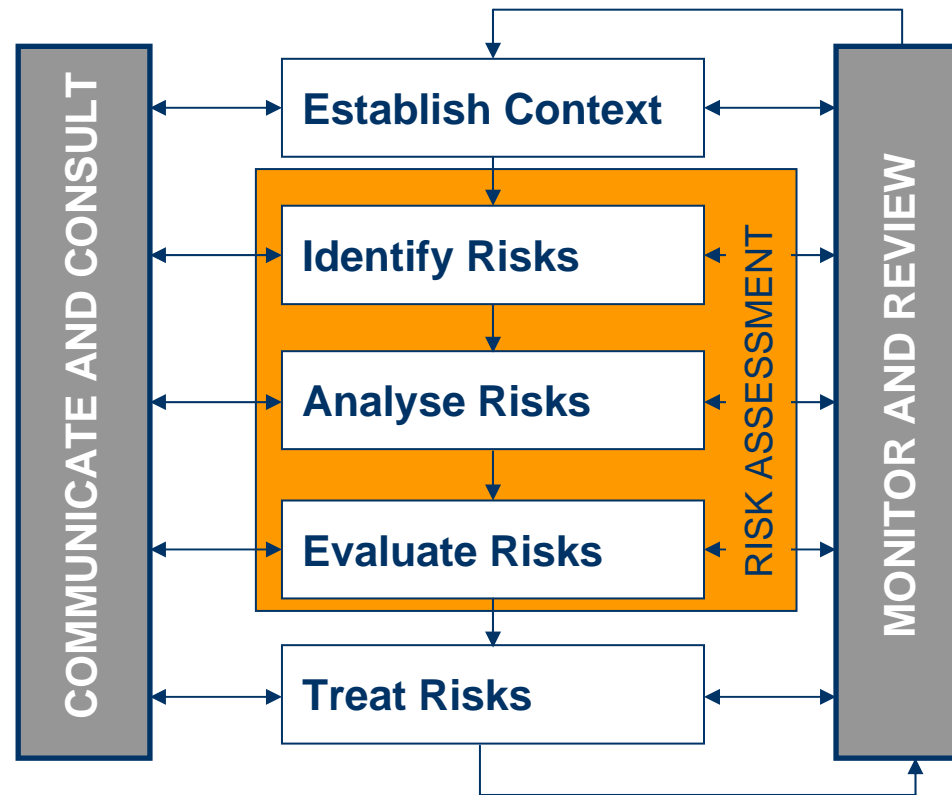
- Quantity/Bulks release & installation curves

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Project Risk Management (PRM)

Definition

Risk = A Function of (Consequence and Likelihood)

Risk = Consequence X Likelihood

R = C X L

Project Risk Management (PRM) process

PRM
Context Establishment

◆ Criteria for a medium-scale project (case example)

- Availability

- Community relations

- Economics

- Funding

- Industrial relations

- Probability

- Quality, Safety and Environment

- Staff Development

- Timing

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PRM - Risk Assessment

- ◆ Risk Assessment include:
    - ■ Risk Identification (both Uncertainties and Events)
    - ■ Risk Analysis - Quantitative
    - ■ Risk Evaluation
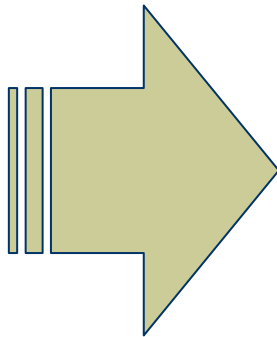
The goal is to have a better understanding of risks / opportunities and their overall impact on the project .

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PRM
- Risk Identification

◆ Process of finding, recognizing and describing risks

- Note 1: Risk identification involves the identification of risk sources, events, their causes and their potential consequences.

- Note 2: Risk identification can involve historical data, theoretical analysis, informed and expert opinions, and stakeholder's needs

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PRM
Risk Analysis - Quantitative

- ◆ It provides a numerical estimate of the overall effect of risk on the objectives of the project.

- ■ Consequences may be estimated by modelling the outcome of an event or by extrapolation from the experience/past data

- ■ Likelihood is usually expressed as a probability, a frequency, or a combination of exposure & probability

- ■ Using data from a variety of sources

- ■ It employs mathematical techniques to estimate probabilities and outcomes

- ■ Often performed on high priority risks, identified from qualitative analysis

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Schedule/Cost Risk Analysis

◆ For big projects, an integration of Schedule & Cost & Risk is required as:

- Schedule, Cost and Risk are related;

- Time Dependent Costs;

- Correlations between risks and opportunities; and

- One Schedule / Cost Risk Model for the project.
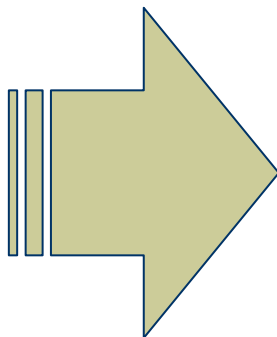
In other words Project Cost Management, Project Time Management and Project Risk Management need to be integrated! !

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Criteria's for Risk Schedule

- Be between 50 and 200 activities (the smaller the better).

- Have only finish to start relationships. Can also use start-to-start or finish-to-finish should be kept to the very minimum but never on the critical or near/sub critical paths.

- The plan must have no constraints e.g. Must Start On Date, Cannot Finish Later Than Date etc.

- The plan should only contain future and current (remaining scope) activities. Completed activities are not required.

- Lags and leads should also be avoided

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Criteria's for Risk Schedule

◆ Ideally the plan should have one start and one finish. However, if the plan has more than one end then multiple ends are possible. If this is the case then thought must be given to structuring the plan so that activities can be deleted to review each end separately, if required. This may be needed as the analysis will show the critical path for the last/longest activity/path and therefore, shorter paths (to the other ends) will not show up as critical. To show these as critical the other ends and their associated activities can be deleted and separate runs carried out.

Criteria's for Risk Schedule

♦ Titles should be self-explanatory and not reliant on summary level descriptions e.g. the plan may have various sections the first called Design. Ideally the plan should be developed using a single calendar. Ideally the plan should be developed using a single calendar. The activities in the Risk schedule should must be defined in such a way that they can be correlated with risks identified in Risk Register.

♦ Weather modelling and non productive time will be modelled within software such as Primavera Risk Analysis (PRA).

Schedule Risk Analysis Histogram & Statistics
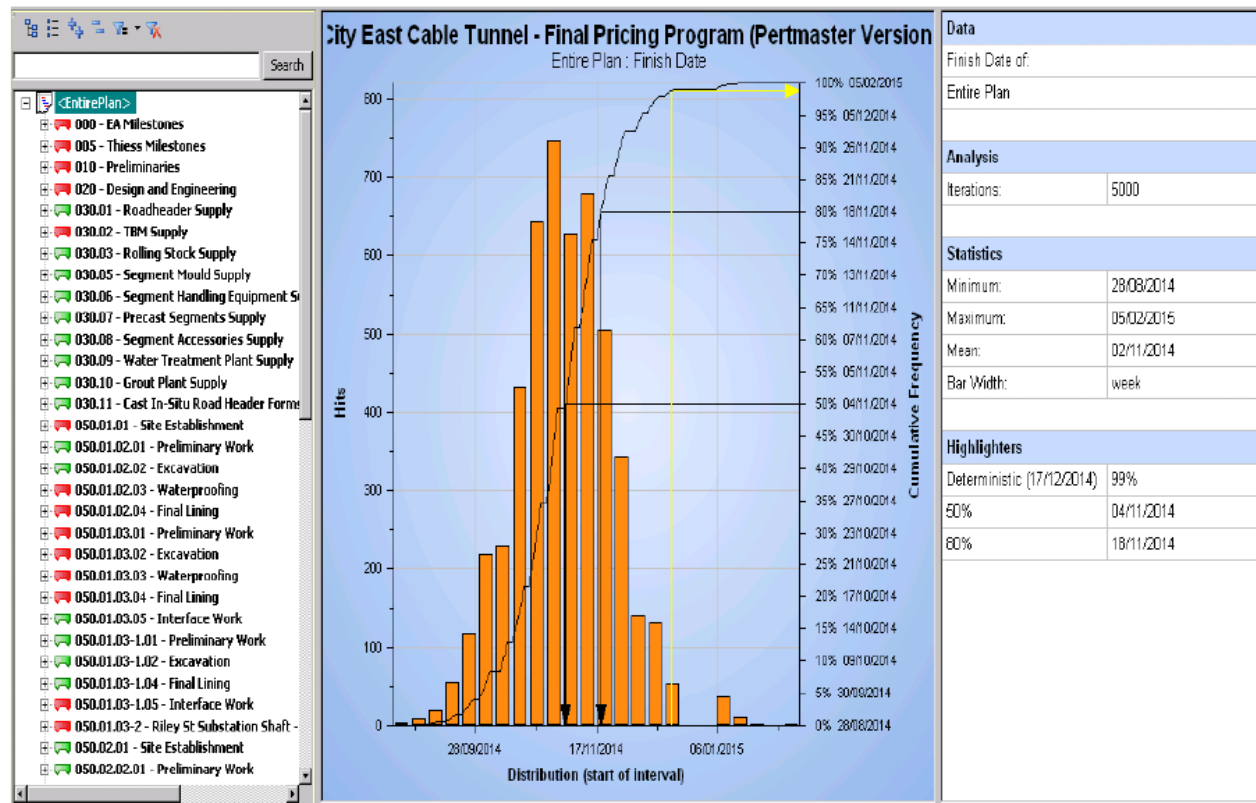
Schedule Risk Analysis
Criticality Index Tornado

The Criticality Index of an activity is the proportion of the iterations in which the activity was critical. Usually more attention will be given to the activities with Criticality Index of more than 50%.

PRM
Risk Evaluation

◆ Risk Evaluation uses the understanding of risk obtained by risk analysis to make decisions for actions.

◆ Decisions may include:

- Whether a risk needs treatment
- Whether an activity should be undertaken
- Priorities for treatment.
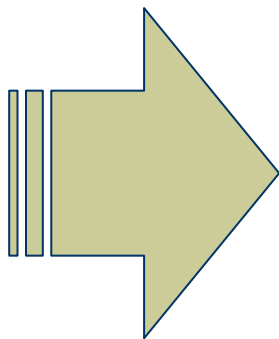
Criteria used to make decisions must be consistent with the defined external, internal and risk management context and take account of the objectives, of the organisation, of the risk exercise and stakeholder views, etc.

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PRM
Risk Treatment

- ◆ Risk Response Strategies
  - ■ Avoid a Threat or Exploit an Opportunity
  - ■ Transfer a Threat or Share an Opportunity
  - ■ Mitigate a Threat or a Enhance an Opportunity
  - ■ Accept a Threat or an Opportunity
  - ■ Applying Risk Response Strategies to Overall Project Risk

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PRM
Glossary

- **Cause:** Events or circumstances which currently exist and which might give rise to risks.

- **Opportunity:** A condition or situation favorable to the project, a positive set of circumstances, a positive set of events, a risk that will have a positive impact on project objectives, or a possibility for positive changes.

- **Probability:** A measure of how likely an individual risk is to occur.

- **Risk:** an uncertain event or condition that, if it occurs, has a positive or negative effect on a project's objectives.

- **Risk Breakdown Structure (RBS):** A hierarchically organized depiction of the identified project risks arranged by risk category and subcategory that identifies the various areas and causes of potential risks.

- **Risk Register:** The document containing the results of the qualitative risk analysis, quantitative risk analysis and risk response planning. The risk register details all identified risks, including description, category, cause, probability of occurring, impact/s on objectives, proposed responses, owners, and current status.

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Thank you

Thanks for listening. If you are interested in our courses, please visit our website **www.ProjCon.co.uk** for off-the-shelf training modules we offer in classroom environment. We also offer all our courses in e-learning (online videos) and can be accessed by visiting **www.ProjectControlsOnline.com**.

For any questions/queries, please free to contact us at **info@ProjCon.co.uk** or **info@projectControlsOnline.com**

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