

# Advanced Techniques in Project Management



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## **1.0 The Approach of the Workshop**

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The Workshop aims at discussing advanced techniques in Project Management that are not often presented in regular Project Management Workshops. Some are presented but in a more detailed and advanced manner.

## **2.0 Who Should Attend?**

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- Technical personnel managing engineering projects
- Those embarking on promotional drives such as planning and controlling advertising campaigns, preparation of materials for media, printing projects, market surveys and research, etc.
- Marketing personnel
- Those involved in the launch of new products and services
- Contractors
- Launching new products or services
- Starting new departments
- Embarking on Reengineering or TQM projects
- Preparing for exhibitions
- Introducing new equipment or production lines
- Preparing to move to new locations
- Preparing a training plan
- Preparing for mergers, acquisitions, splits, etc.
- Embarking on various technical projects such as IT, installation of ATM', new exchanges, Internet web sites, E-Commerce, etc.
- IT Managers
- Project Leaders
- Operations Managers
- Technical Directors
- Engineers
- Auditors and Financial Comptrollers
- Senior Directors
- Persons involved with launching new services, departments or divisions.

## **3.0 The Form and Duration of the Training**

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The proposed duration of the workshop is 18 actual hours which can be spread over 3 days. More than 40% of this time is spent in practical workout sessions, trying case projects and using different techniques to analyze and control them.

It is strongly advised that attendance should be around 15 persons to allow the instructor enough time to address the needs of each.

## **4.0 The DVD**

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The instructor has prepared a DVD-ROM that contains a variety of supplementary material of use to the attendees such as:

- Articles and presentations on project management

- Articles and presentations on various related issues such as risk management, costing, metrics, etc.
- Demo software
- Training and sample examples for Microsoft Project
- Workshop exercises
- Exercise results from previous workshops
- Templates and forms presented and discussed in the workshop: project plans, costing sheets, communication plans, risk event forms, etc.
- Templates and forms downloaded from various sites to be used as supplementary material to those discussed in the workshop
- Special material on IT Project Management
- A variety of relevant downloads
- A list of interesting web sites
- A bibliography of books on Project Management

The DVD-ROM contains around 2 Gigabytes of material.

## 5.0 The Contents of the Workshop

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The following sessions define the material of the workshop. All the following material will be provided in the handout.

### Session 1 – Advanced Earned Value Management

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(Note: this may not be so relevant to the Public Sector as its projects do not “earn”. However, the Public Sector should recognize that projects executed on its behalf by contractors will benefit greatly if Earned Value Analysis is applied).

The Project Manager would have to be involved in the continuous comparison of planned work, completed work and actual work done at any one stage in the project. Moreover, such comparisons can be projected forward to analyze the overall completion figures of a project. Finally, similar analysis can be applied by phase, unit, responsible, product breakdown, etc.

Earned value is a management technique that relates resource planning to schedules and to technical performance requirements. Earned value analysis (EVA) uses earned value as the tool for integrating cost, schedule, and technical performance management, and risk management

EVA provides a powerful technique that integrates scope, cost, and schedule.

- It provides schedule and budget variance
- It objectively measures project performance
- It measures a project’s progress
- It forecasts its completion date
- It forecasts its final cost
- Is an industry standard method

EVA is based on 3 data points ONLY

- Budgeted Cost of Work Scheduled (BCWS)
- Budgeted Cost of Work Performed (BCWP)
- Actual Cost of Work Performed (ACWP)

Variances, Estimates at completion and other Indices can be derived from these.

EVA Asks about the Past:

- Are we on schedule?
- Are we on cost?
- What are the significant variances?
- Why do we have variances?
- Who is responsible?
- What is the trend to date?
- And at any time, about the Future:

And about the future:

- When will we finish?
- What will it cost at the end?

How can we control the trend?

## **Session 2 – Advanced Risk Analysis**

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Risk Management is one of the 9 areas in the PMBOK of the Project Management Institute. In most workshops, it is presented as a mainstream activity that covers the computation of the Project Exposure to damaging events. Then, the workshop shows ways of responding to such events by revising plans.

This session covers additional material such as:

- The Risk Reduction Leverage
- Expected Monetary Value (decision making under uncertainty)
- PERT (Project Evaluation and Review Technique)
- Using Simulation for Risk Analysis (to be detailed in the next Session)

Special focus will be given to using EVA in Microsoft Project.

## **Session 3 – Using Monte Carlo Simulation for Better Project Management**

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This is a special computation technique whose objective is to analyze situations with lots of uncertainties.

Monte Carlo Simulation can solve such problems as queuing, costing scenarios, inventory planning, pricing, machine life and other operational and production problems. The technique rests on preparing a computational formulation then varying selected input parameters using specific statistical random distributions while monitoring the results of the formulation.

The following is a "Sample" of what Monte Carlo simulation can do:

1. **Costing scenarios:** in a specific costing formulation, there will be many variables that are not certain. The prices of specific items can be statistically varied over a normal distribution, or a uniform one, or a specific one that the analyst sets. An example of the latter is a situation where 30% of the time, the price is 100, 40% it is 110, 20% it is 120 and the remaining 10%, it is 130. Excel can be setup to "draw" samples from the Uniform situations to meet this distribution. Excel can also be setup to "run" thousands of simulations, showing 1000s of lines with different total pricing depending on the random prices selected for each line. Taking averages, standard deviations, min and max values allows the analyst to have a statistically global view of his or her formulation.
2. **Banking Risk Analysis:** any formulation can be setup with random variations applied to different parameters in the formulation.
2. **Inventory:** purchasing and demand can be simulated using Monte Carlo techniques to arrive at the best purchasing policies.

Using Monte Carlo Simulation in projects allows us to:

- Enter durations that are sampled from specific distributions such as: preset probabilities, normal, poisson, beta, etc. and other distributions

- Enter assignments as sampled values
- Enter costs as sampled values

The workshop introduces Palisade's @Risk for Project Management.

#### **Session 4 – The Project Management Office**

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Organizations that are veering towards a Project Driven structure or towards a Matrix Driven one (See the PMBOK of the Project Management Institute), will eventually require to implement an internal Project Management Office.

This unit will provide the following services:

**Project support:** project management guidance to project managers in business units.

**Project management process/methodology:** Develop and implement a consistent and standardized process.

**Training:** Conduct training programs or collect requirements for an outside company.

**Home for project managers:** Maintain a centralized office from which project managers are loaned out to work on projects.

**Internal consulting and mentoring:** Advise employees about best practices.

**Project management software tools:** Select and maintain project management tools for use by employees.

**Portfolio management:** Establish a staff of program managers who can manage multiple projects that are related, such as infrastructure technologies, desktop applications and so on, and allocate resources

The workshop session discusses the setup and organization of a PMO, its benefits and its risks.

#### **Session 5 – Enterprise Project Management**

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Most workshops cover Microsoft Project to be used for planning and monitoring individual projects. However, Enterprise Project Management has other tools for it as well as its own proper techniques.

The Workshop will introduce Microsoft Enterprise Project Management server and show how it can be used to allow a Project Manager to setup his or her project and make available the task information through collaborative software to team members and management.

#### **Session 6 – Advanced Management of Resources**

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Resources are at the heart of any project. Managing resources has still not been applied widely using software such as Primavera or Microsoft Project. This session concentrates on the planning and tracking of resource usage. It uses Microsoft Project to demonstrate the following:

- Defining resources starting with the Work Breakdown Structure
- Estimating costs
- Developing budgets
- Monitoring the usage of resources
- Analyzing the variations between planned and actual usage

The above applies to equipment, human and material resources.

### **Session 7 – Handling Project in Trouble**

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It is very often that projects are recognized as being "in trouble". This session covers the following techniques:

- How to recognize that a project is in trouble: what are the indicators?
- How to rescue a project in trouble?
- How to prevent projects from going into trouble?

The above is a summary of a separate 5 day workshop.