

Risk Management Plan Tutorial

Business Area/Schedule/Resource/Cost

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I. Introduction

Any management entity has the responsibility to make formal judgments and appropriate decisions that will lead the organization to a successful destiny. Ideally, such decisions should be made in an environment of total certainty, wherein all the necessary information is available for making the right decision and the outcome can be predicted with a high degree of confidence. In reality, most decisions are made without complete information, and therefore give rise to some degree of uncertainty in the outcome. In the extreme case of complete absence of information, nothing is known about the outcome and total uncertainty prevails.

Organizational survival in today's world is achieved by pursuing opportunities within this spectrum of uncertainty; projects are typically launched to take advantage of these opportunities. Thus, the whole point of undertaking a project is to achieve or establish something new, to venture, to take chances so risk has always been an intrinsic part of project work. However, in today's markets, with heavy competition, advanced technology and tough economic conditions, risk has assumed significantly greater proportions. The goals of risk management, therefore, are to identify project risks and develop strategies that either significantly reduce them or take steps to avoid them altogether. At the same time, steps should be taken to maximize associated opportunities. In essence, it involves planning which minimizes the probability and net effects of things going wrong and carefully matches responsibility to residual risks that are unavoidably retained. It is a very constructive and creative process.

However, before risks can be identified, mitigated, or managed at all, certain preliminary work must be accomplished in order to form the foundation for structured project information. These elements will be discussed in the next few sections.

II. Definition of Work Scope, Schedule, Resources, and Cost Elements.

One of the most effective methods of defining work scope is the development of a Work Breakdown Structure (WBS). The WBS displays the products, services, and data items to be developed for the project in a hierarchical arrangement that relates the WBS elements to each other and to the end product. It provides essential definition for schedule and cost baselines, change control mechanisms, cost tracking, contractual actions, and logical execution of work. The project WBS clearly and explicitly identifies all project deliverables from which to base project estimates for schedules, resources, costs, and performance measurement.

The WBS is the essential element necessary for defining a project's activities and formalizing this information into a schedule. From a planning perspective, schedules forecast work to be accomplished during the project's life cycle. This provides the structure for critical milestone decision points, establishes the framework for accountability of time-phased resources and budgets, and establishes the basis for assessing schedule, cost, business, and technical risks.

When organizations responsible for the work agree on the schedule, budget, technical specifications, and required resources, all of these areas are baselined. This baselining exercise forms the foundation for measuring project performance, managing project risk, and calculating

resource availability and consumption. When the actual project data is collected, validated, and compared to the baseline project plan, the schedule and cost variances can be identified, investigated, and resolved. It is in this area where project risks are identified, mitigated, and managed.

For project definition assessment purposes, the necessary steps for the identification of work scope, schedule, resources and cost elements are:

1. Develop a project WBS.
2. Develop a project master schedule and detailed schedules.
3. Estimate project cost and finalize the budget.
4. Identify required and available resources.
5. Establish performance measurement metrics.

Once these five areas are completed, the project baseline can be approved. The next logical step is the development of the project's minimum and maximum baseline thresholds for the purposes of measuring project performance and identifying project risks.

III. Minimum and Maximum Baseline Thresholds

The first step in the establishment of baseline thresholds is to establish threshold requirements with the customer. This will entail a planning meeting with the customer to develop specific qualitative and quantitative performance measurement parameters. The performance measurement parameters should be established in the following areas:

1. Schedule

- a. Timeframes (Activity and Milestone Dates - Actual vs. Baseline)
- b. Critical Path (Identification of Positive and Negative Float)
- c. Percent Complete and Remaining Forecast
- d. Schedule Variance (BCWP - BCWS)

2. Resources

- a. Level of Effort (Required Skill Sets and Numbers of People)
- b. Required Hours (Allotted vs. Expended)
- c. Availability (Individual and Organization)

3. Cost

- a. Dollars (BCWS, BCWP, ACWP)
- b. Cost Variance (BCWP - AWCP)
- c. Burn Rate (Dollars vs. Hours)

Once the baseline threshold requirements are established and approved, the actual performance measurement metrics can be developed, approved, and used to measure project performance.

Upon completion of the project baselining activity, the format and sequential steps for project

reporting can be developed.

IV. Baseline Reporting Requirements

Using the project baseline information, the next step is to develop a consistent, accurate, and timely reporting process depicting project performance. The first step is to develop a customer approved reporting format that will be easy to read and understand. Once the format has been reviewed and approved, reporting pattern and frequency can be determined. The reporting pattern should be based upon a time sequence that makes sense to the customer and provides the necessary data when needed. In addition, a “real” time mode should be adopted in the reporting requirement to address executive requests.

V. Schedule, Resource, Cost, and Risk Integration Requirements

As the team begins to measure the performance of schedule, resources, and cost, the PMT must evaluate this information to aid in the identification of project risks which could possibly impact the planned completion of the project. One of the most effective methods of identifying, mitigating, and managing risk is the development of a Risk Management Plan (RMP). The RMP will define and incorporate a Risk Management process that is organized, understandable, and measurable.

VI. Risk Identification

Risk Identification is the process that systematically selects all possible sources of risk, assesses the probability of occurrence, and quantifies the project impact in terms of schedule, resources, cost, and technical performance. Risk identification techniques include questionnaires, interviews with key project personnel, structured "brainstorming" workshops, and examination of project plans, schedules, and network logic diagrams. The project risks are then populated into a relational database or other electronic formats (tables, spreadsheets, etc.) which saves time, improves accuracy, and facilitates analysis and reporting of the information.

The management of risk information can be very labor-intensive. If the process bogs down under its own administrative weight, it will not be accepted and used. A risk manager is assigned for each identified risk and is responsible for ensuring that mitigating actions are defined and performed. Some actions may be applicable to more than one risk; the database captures these linkages and eliminates the redundancy of risk elements. A risk matrix methodology is utilized to get consensus of the probability of occurrence and the criticality of impact to the project. Calculations of a Probability-Impact (P-I) score for each risk will be performed; this allows for each risk to be prioritized and ranked by severity or category of impact to the schedule, resources, cost, or technical performance. This provides the PMT with tailored lists of risks that are the most critical and that are relevant to each area of responsibility. Once this stage has been reached, the next step is for the PMT to develop the levels or parameters of acceptable risk for the project.

VII. Identification and Development of Acceptable Risk Parameters

Risk parameters are nothing more than thresholds that depict levels of risk acceptability to the project. The PMT must ascertain what levels of risk are acceptable and what levels of risk are not acceptable to the project. This process is rather intense in that the PMT must agree on the acceptable levels of risk.

Risks are described using pre-defined scales of probability and impact. These parameters should be scaled in the following manner:

<u>Scale</u>	<u>Probability</u>	<u>Schedule (Months)</u>	<u>Cost Performance (\$)</u>
1. Very High (Red) (Lose major functions, failure to achieve primary mission, or systems not accepted.)	90%	>10%	>10%
2. High (Yellow-Red) (Lose a major requirement or have system degradation.)	70%	5%-10%	5%-10%
3. Medium (Yellow) (Degrade major requirement or lose many minor requirements.)	50%	2%-5%	2%-5%
4. Low (Green-Yellow) (Lose a minor requirement.)	30%	1%-2%	1%-2%
5. Very Low (Green) (Minor requirement degradation.)	10%	0%-1%	0%-1%

Within each scale, the PMT must develop a quantifiable or qualifiable measure in which to assess the magnitude of each risk element within each risk area - magnitude meaning the severity of risk based on the acceptable scale.

VIII. Risk Types and Risk Areas

Risk types are categories from which risk can be identified and described. They also aid in identifying dependencies between risks during the analysis process. The following list depicts the most probable Risk Types to be considered in a program or project (not in order of priority):

1. Requirements
2. Performance
3. Technology
4. Complexity
5. Reliability
6. Safety

7. Security
8. Skills and Availability of Resources
9. Experience
10. Communication
11. Contractual
12. Operational
13. Management
14. Information
15. Support
16. Procurement
17. Schedule
18. Cost

Work areas are also used to describe risks. For example, the risk database will link risks to specific activities in the WBS, schedule, and budgets. This facilitates integration with the project control processes and enables accounting of the risk itself when it is assigned its own schedule activity number or cost account number.

For the purposes of this program, work areas will be assigned as business areas. The business areas for this project are identified below:

1. Policy
2. Technical (Web, hardware, software, interfaces, architecture, etc.)
3. Training
4. GOTS/COTS
5. Systems Development
6. Implementation

Each business area will be analyzed for risk. Each business area's risks will be assessed against other business areas for risk impact and integrated mitigation steps.

The identified business areas are subject to change based on the maturing of the project life cycle.

IX. Risk Analysis

Once the risks and parameters have been identified the next logical step is to develop an analytical process by which project risks and impacts are evaluated. This analysis can be simple or complex. At this stage of the project, a simple analytical process should be used in which risk is assessed within the project. The forum in which this should take place is the weekly and monthly project team meetings. Each PMT member should be prepared to discuss status of the project based upon schedule, resource, and cost parameters. At the same time, the PMT should be watchful of the potential risks that may surface, based upon the pre-determined risk areas, and perform an analysis of their potential and/or real impact to the project. Once the analysis is accomplished, the PMT project management consultant should assess, with concurrence of PMT management, the level of risk for each activity and the impact to the overall project. This

analysis is then used to determine mitigation procedures and a course of corrective action.

X. Risk Impacts

Once the project risk has been analyzed, the PMT and PMT project management consultant(s) will assess the identified risk elements against schedule, resource, and cost thresholds. This effort will be conducted via the risk assessment matrix that is attached. The PMT and PMT project management consultant will input the necessary information based upon the following categories:

➤Schedule

How does each risk element impact the approved schedule as it pertains to activity duration, float, critical path, and project completion date?

➤Resources

How does each risk element impact the resources assigned to each activity?

➤Cost

How does each risk element impact the allotted funding?

➤Other

How does risk impact other areas, events (internal/external) and/or issues relative to the project?

XI. Risk Mitigation Planning

Risk Mitigation Planning involves the response taken to control risks facing a project. The process includes reporting, reviewing, developing and prioritizing responses to risks, and continuing risk identification and analysis on a regular basis. This planning process monitors the progress and effectiveness of risk reduction. It also determines the cost of mitigation strategies and any secondary risks associated with such strategies. The overall objective is to contain, reduce, and plan for project risks as far in advance as possible.

Risk mitigation should be conducted using only available resources and within a reasonable period of time. The planning effort should include specific corrective actions to be taken and deadlines to which the actions will be measured. Each stakeholder will provide status and updates to the risk mitigation process as required by PMT management.

Once the Risk Mitigation Planning process is complete, the final activity will be to input the data into the Risk Management Database.

XII. Risk Documentation and Reporting Requirements

The documentation of risk should be performed at every major step of the project. For the purposes of this project, risk documentation should begin with the weekly PMT project status updates. During these weekly updates the subject of risk should be addressed so that current risk elements can be statused and new risk elements can be identified, analyzed, mitigated, and entered into the Risk Management Database. From these meetings comes the information that will be reported. Risk reporting formats, quantities, and frequencies should be discussed with and approved by PMT management. Risk documentation and reporting is a dynamic and continuous process and should become part of the weekly routine of managing the project. Examples of risk documentation will be included in the Appendices section of this document.

XIII. Summary

Most projects are launched to take advantage of opportunities, but opportunities are associated with uncertainties which have inherent risks attached. For the project to be successful, the benefit resulting from a favorable probability of gain must be higher than the consequences and probability of loss. Therefore, the risks associated with a project must receive careful examination in the context of the organization's willingness or aversion to taking risks.

With careful planning and good management some inherent risks in the project management process can be substantially reduced or virtually eliminated. Steps towards this goal include:

1. Thorough and realistic appraisal of the project concept and project scope definition.
2. Observing good project management practices in the project planning and development phase, including realistic estimation of time and cost.
3. Examining the uncertainty and risk inherent in the project, and identifying ways of mitigating this risk. This may involve operating within certain contingency allowances where the scope of work is uncertain.
4. Preparing contingency action plans and work-arounds.
5. Developing sound procurement strategies designed to optimize performance, supported by an appropriate organizational structure and distribution of responsibility.
6. Assigning specific responsibility for risk in a way that motivates by recognizing that risk and reward are often linked as one.
7. Examining contract documents for risk identification, general clarity, and potential sources of misunderstanding.
8. Seeking innovative but practical solutions to offset potential areas of risk.

While the details described in this document are applicable to this project, the principles involved are just as applicable to any size project in any field of endeavor. Since there is no point in taking any risk that has negative expected value, the principles of risk management should be an established part of early project management activities on all projects, whether simple or complex, small or large.