Risk Management Made Easy[1, 2]

By Susan Parente

ABSTRACT

Many people know and understand risk management but are struggling to integrate it into their project management processes. How can you seamlessly incorporate project risk management in an effective way for your projects?

The focus of this paper is on effective and efficient implementation of risk management within project teams. This paper discusses how to implement an effective risk management program. Successful strategies will be discussed to address common problems and challenges encountered while implementing project risk management within an organization.

OVERVIEW

The objectives of this paper on Risk Management Made Easy are to define and provide an overview of risk management, discuss the risk management process (including identification, assessment, response planning, execution, monitoring, documentation and communication), and lastly focus on how risk management directly applies to projects.

The goal of this paper is to provide readers with a framework on risk management for implementing on projects.

RISK MANAGEMENT DEFINED

The Triple Constraint. The project management triple constraint (iron triangle) consists of: scope, time and cost (denoting the management of these project aspects). Often quality is shown in the middle of this triangle and Risk may be show as a cloud around the triangle, or in the background, as it is shown in figure 1 below.

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[1] Second Editions are previously published papers that have continued relevance in today's project management world, or which were originally published in conference proceedings or in a language other than English. Original publication acknowledged; authors retain copyright. This paper was originally presented at the 5th Annual University of Maryland PM Symposium in May 2018. It is republished here with permission of the author and conference organizers.

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Figure 1. The Triple Constraint.

Fundamentally, only 2 of the 3 aspects of the triad can be selected (or detailed). The third is then determined by the aspects which are selected. This is particularly critical when changes occur to the project. The project performance baseline includes the baselines for these 3 project objectives: the scope baseline, the schedule baseline and the cost baseline. If any aspect of the approved project performance baseline is modified (through a change request, or otherwise), then at least one of the other 2 baselines will be effected. For example, if the project schedule is reduced by a month, either the budget must be increased, the scope of work schedule must be adjusted or the scope of the work must be decreased to meet the project objectives.

The other project objective of quality (also known as customer satisfaction) must be met but as a best practice is never changed to accommodate a change to time, scope or cost. What a customer requires to be satisfied is what they require. A customer will not generally agree to less than their interpretation of good project quality, even if the budget or schedule is reduced, or the project scope is increased.

Risk Defined. A Risk is an uncertain event or condition, which if it occurs, has a positive or negative effect on at least one objective. A risk is denoted using the properties of probability and impact. Probability is the likelihood of a risk occurring. It is the possibility of a project objective not being met using the current project plan. Impact is the consequence of a risk occurring. It details the penalty incurred, if the project objective, associated with the risk, is not obtained.

Risk exposure is calculated by multiplying a risk's probability of occurring times the impact (usually denoted in days or dollars).

$$\text{Probability x Impact = Risk Exposure}$$

As shown in figure 2 below, increased probability and/ or impact increase the exposure of a risk.

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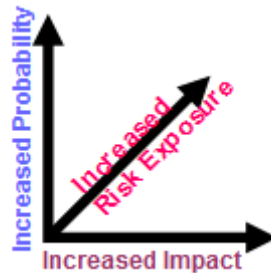by Susan Parente
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Figure 2. Probability and Impact.

It is important to understand the distinction between a risk and a problem/ issue. A Risk is an event that may occur in the future. A Problem or Issue is something which has already occurred and is being dealt with or has been resolved.

Project Risk Management Defined. Risk Management is an organized, systematic decision-making process that efficiently plans, assesses, handles, monitors, and documents risk to increase the likelihood of achieving project goals and decrease the likelihood that a risk would become a future problem

Project Risk Management has one inquire in uncertainty within their project: What are our project unknowns; what are the project's known unknowns; or what are the project's unknown unknowns? Risk Management provides a capability to quickly and effectively communicate risk information up and down the management chain.

The Risk Management Process. The risk management process includes the following: identification, assessment, response planning, execution, and planning, monitoring, documentation and communication. See figure 3 below for how these work together.
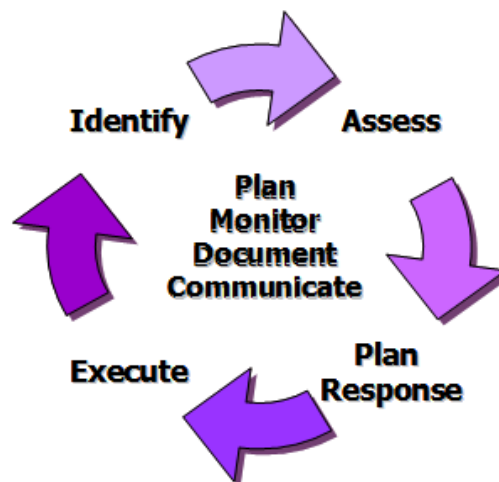

Figure 3. The Risk Management Processes

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The focus of risk identification is the discovery of potential risks to the project. In particular, in includes distinguishing any uncertain event which may positively or negatively affect the obtainment of project objectives. The process of risk assessment includes the review, analysis, and prioritization of project risks. This may include qualitative and/ or quantitative risk analysis. Qualitative Risk Analysis uses a subjective assessment; while quantitative risk analysis uses values for risk impacts, usually days or dollars.

After identified risks are prioritized, response planning can be developed for risks. As a best practice this is completed for higher exposure risks first. Since there are generally limited resources for risk management, it is important to focus on risks which are most urgent (could potential occur sooner) and highest (due to a high level of probability and/ or impact). Threat risk response strategies include: mitigate, avoid, transfer or accept. Opportunity risk response strategies include: enhance, exploit, share, and accept. After these response strategies have been planned, they are executed, while continuing to monitor and control these risks and identify an emergent risks (new risks which have appeared which were not initially identified. Throughout the project risk management process, planning, monitoring, documentation and communication of risk also occur. These are foundational to the risk management process and are essential to repeat iteratively throughout the project. They are also part of continuous process improvement for the project's Risk Management Plan.

Why Manage Risk. Risk Management is what we have been doing for years as successful PMs, but in a structured and rigorous manner. It has us inquire in uncertainty: what are our project unknowns? known unknowns (identified risks)? Unknown unknowns (unidentified risks). Risk management provides a capability to quickly and effectively communicate risk information up and down the management chain.

Benefits of Risk Management. Risk management assists us in identifying existing, as well as, potential project problems. (Existing problems are issues and must be handled through the issue management process. Potential problems are risks and must be handled through the risk management process.) Risk management also assists us in describing and classifying risks, which helps us to decrease threat risks and increase opportunity risks for projects. We are also able to prioritize risks, through the risk assessment processes (qualitative and quantitative risk analysis), so resources may be effectively applied. Here are some additional benefits of risk management:

- Identifies strategies to reduce threat risks

- Minimizes safety risk to personnel

- Provides a structure and systematic review of the processes to manage risk

- Provides an ongoing structure for project improvements

- Provides continuous risk communication

Risk Management facilitates communication by offering processes, mechanisms, and a common language for stakeholders to identify, define, evaluate and control risks.

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THE RISK MANAGEMENT PROCESS

   Risk Identification. The discovery of a potential risk

   Risk Assessment. The review, analysis and prioritization of identified risks. They may include both qualitative and quantitative risk assessment.

   Risk Response Planning. Planning actions to reduce threat risks and increase the likelihood of opportunity risks. Threat risk response strategies include: mitigate, avoid, transfer, accept, or escalate. Opportunity risk response strategies include: enhance, exploit, share, accept, or escalate.

   Execution. This is also known as Implementing Risk Response Planning,

   Planning, Monitoring, Documentation, and Communication. These continue throughout the project. These are foundational for project management and are essential to all processes of risk management. This is part of continuous process improvement for the risk management plan.

RISK IDENTIFICATION

Who? Any and all personnel on a project are responsible for identifying risks – it's an everyday part of the job.

At this point, it is not necessary to resolve the risk, simple capture the potential problem.

Identification Methods. Tools and techniques for risk identification include the following:

- Brainstorming

- Checklists

- Cost/ Schedule Analysis

- Functional/ Failure Analysis

- Interviewing

- Subject Matter Expertise

When? When is it appropriate to identify a risk?

- If the risk poses threats to meeting success criteria, mission objectives, critical milestones, etc.

- If you need resources to resolve the risk

- If broader awareness is needed

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- If the risk presents threats to completing tasks

Risk Statements. Risk statements are written in a structured manner. State the risk in the format of an "If…, then…" statements. Each risk statement includes the following:

- Condition ("If") statement: A short, succinct statement that describes the background information and/ or description of the problem.

- Consequence ('Then') statement: A short, succinct statement that describes the key possible outcome(s) of the current conditions.

Consequences should be directly traceable to the event. Here is an example of risk statement: "If I have a flat tire while commuting to work, then I may not get to work on time."

RISK ASSESSMENT

What is Risk Assessment? This includes both qualitative and quantitative risk analysis. Not all projects use both processes for risk assessment. Two questions that are answered in risk assessment are:

- What is the probability of the risk occurring?

- What is the impact if the risk occurs?

  - Qualitatively, the impact assessment is subjective. For example: "significant", "severe".

  - Quantitatively, the impact is assessed in days or dollars. For example: 2 days or $10,000.

Both Probability and Impact are determined for both qualitative and quantitative risk analysis.

These are used to evaluate the risk as follows:

- Qualitative Assessment - Ex.: Risk Score or using the Probability and Impact Matrix. Figure 4 below is an example probability and impact matrix. These may be 3 by 3 or 5 by 5 (as shown).

- Quantitative Assessment - Ex.: EMV (Expected Monetary Value) = Probability x Impact

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Figure 4. Probability and Impact Matrix

Quantitative Risk Analysis results in a quantitative value (dollar or day) for the risk, which is based on the probability and impact of the risk.

Methods Include:

- Monte Carlo Analysis (and Latin Hypercube)

- EMV (Expected Monetary Value)

- Decision Analysis

RISK RESPONSE PLANNING

Risk Response Strategies (for Threat Risks): These include:

- Mitigation: Pre-Event actions to reduce the probability or impact of a risk

- Avoidance: Eliminate the risk producing activity entirely by choosing an alternate approach.

- Transfer: Take actions that redistribute risk to another area. (This does not relieve the responsibility of tracking and closing the risk)

- Accept: Accept the risk as stated with no other action. Passive: Accept and do nothing

- Active: Accept and put a plan in place to minimize the impact of the threat, should it occur. Acceptance of a risk may be passive or active. In passive risk acceptance, the risk is accepted and nothing is done. In active risk acceptance, the risk is accepted

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and a plan is put in place to minimize the impact of the threat, should the risk event occur.

Risk Response Strategies (for Opportunity Risks): These include:

- Enhance: Increase the likelihood of the risk event occurring and/or increase the magnitude of its impact.

- Exploit: Pre-Event actions to increase the probability and/or impact of an opportunity risk, to ensure it occurs and is full realized.

- Share: Optimize probability and/or impact of an opportunity risk occurring.

- Accept: Accept the risk as stated with no other action. Acceptance of a risk may be passive or active. In passive risk acceptance, the risk is accepted and nothing is done. In active risk acceptance, the risk is accepted and a plan is put in place to take advantage of the opportunity, should it occur.

EXECUTION

PMI calls this Implement Risk Response. What is implemented is based on the actions detailed in the risk response plan for each risk. The responses executed include, for threats: mitigate, avoid, transfer, and accept, and for opportunities: enhance, exploit, share, and accept.

After a risk response plan is put in place, it may result in a secondary risk. A secondary risk is the "consequence" of implementing a risk response plan. In some cases, a risk response plan (for example avoid) might result in another (new) project risk. Another result of risk response planning is residual risk. Residual risk is the risk that remains after implementing the risk response for a risk. Another important risk management term is risk trigger. A risk trigger is an event which, when it occurs is a warming that the risk event will soon occur.

All risks should be recorded and tracked in the risk register. This includes the risk, fields associated with each risk, risk assessment, risk response plan, and status for each risk.

RISK PLANNING, MONITORING, DOCUMENTATION & COMMUICATION

Monitor, track, document, and communicate risk includes tracking the progress of mitigating the risk. This information is communicated to management and internal and external stakeholders. This also includes the integration of risk management processes with cost and schedule processes.

Part of monitoring, tracking, documenting, and communicating risk includes facilitating early mitigation and minimize project or program issues. This also includes escalation of risks to the management level where they can be resolved, or the elevation of critical risks to upper management can be expedited.

APPLICABILITY TO PROJECTS

Potential areas for implementing risk management include the areas of: project objectives (identifying and managing project uncertainty), project management processes, information security (for IT related projects) and product development (regardless of the type of product). Risk categories, which may be used to help identify and group project risks include the following: Integration (hardware/software), Logistics Support, Manufacturing, Schedule, Technology, Budget (funding), Capability of Developer, Management Strategies, Requirements, Test/Evaluation, Environment, Systems Engineering, Maintenance/ Supportability, Portfolio Management, Marketing, and other.

CONCLUSIONS/ LESSONS LEARNED

In conclusion, this paper on risk management made easy highlights the basics of project risk management and how the risk processes are used to manage risk for a project. The following topics were covered in this paper: definition of Risk Management, Risk Management overview, Risk Management processes (including: Identification, Assessment, Response Planning, Execution, Monitoring, Documentation and Communication), and lastly the applicability of risk management to projects.

In summary, Risk Management is an organized, systematic decision-making process that efficiently plans, assesses, handles, monitors, and documents risk to increase the likelihood of achieving project goals and decrease the likelihood that a risk would become a future problem. Risk Management adds structure and rigor to a fundamental process. To be successful completed, to support a successful project, risk management is everyone's job and that starts with each person on the project team!

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