Project Risk Management

What It Is

A process for identifying, assessing, and mitigating risks to scope, schedule and cost on a project. Risks come in the form of opportunities and threats and are scored on probability of occurrence and impact on project.

Why You Need It

Risk Management is 1 of 10 Knowledge Areas in the Project Management Body of Knowledge (PMBOK®) which a Project Manager must understand to get the Project Management Professional (PMP®) certification.

What You Need

1. A Risk Management Plan
   Defined process agreed upon by stakeholders

2. Identify Risks – Risk Capture Form
   A way to efficiently capture identified project risks and add to Risk Register

3. Risk Register – Log Risks
   A log of identified risks and their status

4. Qualitative / Quantitative Analysis Tools
   Methods for analyzing / evaluating risks

5. Risk Response / Mitigation Plan
   Determine if Risk is acceptable or not based on assessment and plan for mitigation

6. Control Risks
   Assess effectiveness (risk audits) and improve

Risk Register - Example

<table>
<thead>
<tr>
<th>Risk Identified</th>
<th>Probability</th>
<th>Impact</th>
<th>Action to Prevent / Manage Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure to retain key project staff</td>
<td>Low</td>
<td>High</td>
<td>Establish team with written commitment to timeline, ensure knowledge captured through project</td>
</tr>
</tbody>
</table>

Qualitative Assessment

Subjective evaluation of risk factors visualized in a matrix (heat map – see reverse) and prioritized based on probability and impact.

Rating scales are pre-defined.

Impact scales are tailored to the organization and the project objectives.

Quantitative Assessment

Objective numerical probabilistic assessment of impact and probability of risk factors.

There are many methodologies available:
- Critical Path Method
- Fault Tree Analysis
- Monte Carlo Simulation
- Sensitivity Analysis
- FMEA
**Project Risk Management**

*Efficiency Notes – Risk Series*

## Probabilities and Impact Matrix (Heat Map)

<table>
<thead>
<tr>
<th>Probability</th>
<th>Threats Risk Score = Probability x Impact</th>
<th>Opportunities High (RED) / Med (YEL) / Low (GRN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.90 Very Likely</td>
<td>0.05 0.09 0.18 0.38 0.72</td>
<td>High High High Med Low</td>
</tr>
<tr>
<td>0.70 Likely</td>
<td>0.04 0.07 0.14 0.28 0.56</td>
<td>High High Med Med Low</td>
</tr>
<tr>
<td>0.50 Possible</td>
<td>0.03 0.05 0.10 0.12 0.40</td>
<td>High High Med Low Low</td>
</tr>
<tr>
<td>0.30 Unlikely</td>
<td>0.02 0.03 0.06 0.12 0.24</td>
<td>High Med Med Low Low</td>
</tr>
<tr>
<td>0.10 Very Unlikely</td>
<td>0.01 0.01 0.02 0.04 0.08</td>
<td>Med Low Low Low Low</td>
</tr>
<tr>
<td></td>
<td>0.05 0.10 0.20 0.40 0.80</td>
<td>Very High High Med. Low Very Low</td>
</tr>
</tbody>
</table>

*Example Impact Definitions – May Be Tailored to Each Project Objective*

**Impact on an Objective (e.g. Cost, Schedule, Scope, Quality)**

- Very High
- High
- Med.
- Low
- Very Low

Risks on the log are scored to determine impact on the project and what (if anything) needs to be done to mitigate and control that risk.

Evaluated risks with a mitigation / control plan are logged on a Risk Response Matrix.

### Mitigation

Objective is to reduce the probability and/or consequences of a risk event to an acceptable threshold and define appropriate response.

**Questions To Ask:**
- What are the available options?
- Tradeoffs (cost / benefit) of each option?
- Impacts of current decisions on options?

Mitigation actions may be costly / time consuming; actions are balanced against priority level of the risk.

Organizations transfer risk where possible.

Low-risk factors may be recognized but absorbed as a matter of policy.

### Risk Response Matrix

<table>
<thead>
<tr>
<th>Risk Event</th>
<th>Response</th>
<th>Contingency Plan</th>
<th>Trigger</th>
<th>Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment Malfunction</td>
<td>Mitigate: vendor change</td>
<td>Replace</td>
<td>Failure</td>
<td>J. Smith</td>
</tr>
<tr>
<td></td>
<td>Transfer: warranty</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>