Agenda

△ Context

△ Fundamentals in Risk Management

△ Best Practices
  △ Risk Management - Project Management Institute (PMI), Project Management Body of Knowledge (PMBOK)
Context
When you hear risk management – what do you think of?

Eliminate or be prepared for unknowns / uncertainties

Effectively and successfully execute the project to meet the business objectives
Risk
Something unknown or uncertain that *may* stand in the way of a project successfully completing on time, within budget, and with desired functionality. When/if a risk becomes reality, then it should be logged/managed as an issue.

Issue
Something that *is* preventing a project from successfully completing on time, within budget, and with desired functionality.
Everyone on the team is responsible for identifying risks

Project manager / leader is accountable for ensuring a risk management process and execution
Areas of Risks

Enterprise

Organization

Enterprise Portfolio

Project
Areas of Risk - Project Level

- People
- Processes
- Product
- Tools

Project
Areas of Risk – Enterprise Portfolio Level

Trissential’s Essential Business Model®
Areas of Risk - Organization Level

- Customers
- Employees
- Vendors / Suppliers
- Enviroment
- Competition
- Government
- Community
Impacts of Risk Realization

- Morale
- Allocation / Capacity
- Relationships

- Cost over-runs
- Lower than expected ROI

- Reduced benefit
- Delayed benefit realization
- Impacts to other projects
- Opportunity costs

- Warranty work / rework

Resources:
- Employees
- Vendors

Project Success

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Observations

- Executives think risk is being managed effectively / or not at all
- Middle management knows they should have risk management under more control
- Teams confused and/or dread - risk process undocumented or complex process; not followed consistently
Fundamentals
**Inputs:** Statement of Work, Project Plan, Change Request(s)

**Outputs:** Risk List, Risk Plan, Revised Project Plan, Updated Status Report

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**Identify Risks**
1. Identify areas of risk
2. Identify participants
3. Identify risks

- Risk List

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**Quantify Risks**
1. Define risk probability
2. Define risk impact
3. Calculate risk exposure
4. Prioritize risk response

- Risk List with probability, impact, and exposure

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**Respond to Risks**
1. Define risk strategy type (avoid, accept, transfer)
2. Develop risk plan (mitigation / contingency, avoidance, transfer)
3. Owner of risk
4. Review, Signoff and Implement plan

- Risk List / Plan, Sign-off
- Revised Project Plan

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**Control Risks**
1. Monitor risk indicators
2. Review risks
3. Modify plans as required
4. Report on key risks

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*Ongoing*
Align on When and How Often?

- **Beginning**: Once the team has solid project objectives, deliverables, timeline, resources, approach
- **Any Major Change**: Change in scope, timeline, resources, etc.
- **Regular Intervals**: Each team meeting, End of milestone / phase, End of iteration

**Situational:**
- Small project with little expected risk can be more informal and less frequent
- Complex projects can be several times per day
How to Identify Risks?

Brainstorming sessions
Team meetings
Department meetings
1:1’s
Other projects
Case studies
Potential Key Risks – Project Level

▲ People
  ▲ Sponsorship / Ownership
    ▲ Single Sponsor / Owner
    ▲ “Natural Owner”
    ▲ Engagement / Management attention

▲ Stakeholders
  ▲ All Identified?
  ▲ Benefits and Obstacles

▲ Team Members
  ▲ All roles and resources identified
  ▲ Roles & Responsibilities – who is doing what and when
  ▲ Willingness and ability (skillset, experience, knowledge)
  ▲ Availability
  ▲ Culture
Potential Key Risks – Project Level

▲ Processes
  ▲ Framework / methodology
    ▲ Unusual steps
    ▲ “right sized”

▲ Gatekeepers
  ▲ Special requirements

▲ Resource on-boarding

▲ Release Management

▲ Quality Assurance / Control

▲ Implementation
Potential Key Risks – Project Level

▲ Tools
   ▲ Equipment
      ▲ Hardware / Software
      ▲ PCs, LAN, VPN

▲ Disaster recovery
   ▲ Development environment
   ▲ Training environment
   ▲ Project repository
Potential Key Risks – Project Level

▲ Product / Solution
  ▲ Tied to strategy

▲ Scope / deliverables
  ▲ Clear, understood

▲ Meet requirements

▲ Schedule

▲ New technology or “never been done here before”
Potential Key Risks – Project Portfolio Level

- Business Architecture
  - Alignment to strategy, goals and objectives

- Technical Architecture
  - Alignment to technology strategy, goals and objectives
  - Platform

- Evaluation
  - Cost / Benefit
  - Complexity

- Conflicting priorities
- Resource availability
- Strategic change
Potential Key Risks – Project Portfolio Process

**Strategy Execution**

- Leadership
- Top down process & communication
- Bottom up process & communication

Project Management Execution

- Initiate, Plan, Execute, Monitor & Control, Close

Software Development Lifecycle

- Design
- Build
- Test
- Install
Potential Key Risks – Organizational Level

△ Client
△ Expectations
△ Changes to scope, budget, schedule
△ Engagement
△ Funding

△ Employee
△ Change readiness
△ Morale
△ Org structure / Capacity

△ Vendor
△ Capability
△ In-sync
△ Contractual obligations
Potential Key Risks – Organizational Level

▲ Competition
  ▲ Competitive advantage

▲ Technology
  ▲ Application lifecycle
  ▲ Legacy systems resources
  ▲ Budget
  ▲ Skillset / training to stay current
Every project should have a process for dealing with unexpected events to minimize the impact on the organization.

Having a plan can give your organization a competitive advantage:
- avoid disastrous situations
- recover faster than those who do not have a plan
Expect the unexpected; often leads to the value of planning

No easy solution to risk management

Identify where the project is most vulnerable

Write down the things that “keep you up at night”

Look for things that will:
  ▶ Impact the success of the project
  ▶ Impact the project for a week or more

Don’t call risk sessions, “risk sessions”

Listen for clues
Best Practices
Project Management Processes

Initiating Processes
- Develop Project Charter
- Develop Preliminary Scope Statement

Planning Processes
- Develop Project Management Plan
- Scope Planning
- Scope Definition
- Create WBS
- Activity Definition
- Activity Sequencing
- Activity Resource Estimating
- Activity Duration Estimating
- Schedule Development
- Cost Estimating
- Cost Budgeting
- Quality Planning
- Human Resource Planning
- Communications Planning
- Risk Management Planning
- Risk Identification
- Qualitative Risk Analysis
- Quantitative Risk Analysis
- Risk Response Planning
- Plan Purchases and Acquisitions
- Plan Contracting

Executing Processes
- Direct & Manage Project Exec.
- Perform Quality Assurance
- Acquire Project Team
- Develop Project Team
- Information Distribution
- Request Seller Responses
- Select Sellers

Closing Processes
- Close Project
- Contract Closure

Monitoring/Controlling Processes
- Monitor & Control Work
- Integrated Change Control
- Scope Verification
- Scope Control
- Schedule Control
- Cost Control
- Perform Quality Control
- Manage Project Team
- Performance Reporting
- Manage Stakeholders
- Risk Monitoring & Control
- Contract Administration

Source: Project Management Institute (PMI) – Project Management Body of Knowledge (PMBOK)
Note: see Appendix for detailed process info
Risk management education
- Internet searches
- Trissential

Risk management training
- St. Thomas University
- ESI / George Washington University
- Trissential

Risk management certification
- PMI – RMP (Risk Management Professional)
Action Plan
△ Be engaged on your projects!

△ Ensure fundamentals

△ Look broader than the direct project – think about the business

△ Identify, document and prepare for responses as much as possible for your domain

△ Inform / educate / mentor others and then hold team accountable – realize there is a time period to mature

△ Start simple and evolve as necessary

△ Support the project leadership, team members, management
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk</td>
<td>Something unknown or uncertain that may stand in the way of a project successfully completing on time, within budget, and with desired functionality. When/if a risk becomes reality, then it should be logged/managed as an issue.</td>
</tr>
<tr>
<td>Risk Management</td>
<td>A process for identifying, analyzing, prioritizing, and managing project risks to ensure project success.</td>
</tr>
<tr>
<td>Risk Exposure</td>
<td>An number calculated by multiplying the Occurrence Probability with the Impact Severity to create a relative priority among all identified risks.</td>
</tr>
<tr>
<td>Occurrence Probability</td>
<td>A percentage describing the probability of the risk occurring. (1% - 99%)</td>
</tr>
<tr>
<td>Impact Severity</td>
<td>A number between 1-5, with 5 being high and 1 being low, that signifies the discomfort or hardship your project will face if the risk occurs.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Risk Strategy</td>
<td>A plan or method for eliminating or minimizing a risk’s impact to a project. Three possible routes can be used to address the risk: Avoidance, Transfer, Acceptance.</td>
</tr>
<tr>
<td>Avoidance</td>
<td>A description of how the project can be reorganized so that it cannot be affected by risk.</td>
</tr>
<tr>
<td>Transfer</td>
<td>A description of how the project can be reorganized so that someone or something else bears the risk (customer, vendor, bank, another element, etc.). This plan should include some form of transfer acceptance signoff to ensure communication/accountability.</td>
</tr>
<tr>
<td>Acceptance</td>
<td>A description of how the project will live with the risk. The description should focus on both the Mitigation and Contingency plan that will be followed.</td>
</tr>
<tr>
<td>Mitigation</td>
<td>What immediate, pro-active steps should be taken to reduce the probability or impact of the risk.</td>
</tr>
<tr>
<td>Contingency</td>
<td>What course of action the project should take if the risk becomes and actual problem.</td>
</tr>
</tbody>
</table>
Risk Management Planning - Inputs

- Project Charter
- Organization’s Risk Management policies
- Defined Roles and Responsibilities
- Stakeholder Risk Tolerances
- Template for the Organization’s Risk Management Plan
- WBS
Risk Management Planning - Tools & Techniques

- Planning Meetings
  - Include the project manager, the project team leaders, management with responsibility for the risk plan, key stakeholders, and others as needed
Risk Management Planning - Outputs

• Risk Management Plan
  – Describes how risk identification, qualitative and quantitative analysis, response planning, monitoring and control will be structured through the project life cycle (Risk Response Plan describes responses to specific risks).
Risk Management Plan

- Defines Methodology
- Defines Roles and Responsibilities
- Establishes a budget for risk management
- Defines how risk management will be performed in a timely manner
- Defines the scoring and interpretation methods
- Lists the threshold criteria for risks to be acted upon
- Defines risk reporting formats
- Documents how risk activities will be recorded and audited
• Determining what risks might affect the project and defining their characteristics

• Include the project team, risk management team, SMEs from other areas in the company, customers, end users, other project managers, stakeholders, and outside experts

• Risk Identification is iterative

• Simple and effective risk responses can be implemented immediately
Risk Identification - Inputs

• Risk Management Plan
• Project Planning Outputs
  – Project Charter, WBS, Product Description
  – Schedule and Cost estimates, Resource Plan
  – Procurement Plan, assumptions and constraints
• Risk Categories
• Historical Information
  – Project files
  – Published information
Risk categories should be well documented

Categories include:
- Technical, quality, or performance risks
- Project management risks
- Organizational risks (cost, time scope, funding)
- External risks (changing legal or regulatory rules)
Risk Identification - Tools and Techniques

• Documentation Reviews
• Information-gathering techniques
• Checklists
• Assumptions Analysis
• Diagramming Techniques
  – Cause-and-effect (fishbone)
  – System or Process Flow Charts
  – Influence Diagrams
• Brainstorming
  – Goal is comprehensive list
  – May use outside experts, but usually is project team

• Delphi Technique
  – Uses outside experts
  – Participants remain anonymous
  – Identifies main risks quickly
• Interviewing
  – Usually of key people unable to make a meeting
  – Needs some prep work (documents sent, preliminary lists made, etc.)
  – May miss risks
• SWOT analysis (Strengths, Weaknesses, Opportunities, Threats)
  – Used to increase breadth of coverage of risks
• Risks

• Triggers (risk symptom or warning sign)

• Inputs to other processes
• Process of assessing the impact and likelihood of an identified risk.
• Includes prioritization of the risk list on their potential effect on the project
• Time Criticality of the event may magnify the impact of the event.
• Trends can indicate a need for more or less Risk Management activities
Qualitative Risk Analysis - Inputs

- Risk Management Plan
- Identified Risks
- Project Status
- Project Type
- Data Precision
- Scales of Probability and Impact
- Assumptions
• Risk Probability and Impact/Consequence
  – Risk Probability - likelihood it will occur
  – Risk Impact - effect if the risk event does occur
• Probability / Risk Rating Matrix
• Project Assumptions Testing
  – Assumption Stability
  – Effect if Assumption is False
• Data Precision Ranking
Risk Rating Matrix

• Done before risk list is evaluated
• Can be ordinal or cardinal
  – Ordinal (low, medium, high)
  – Cardinal (.4, .6, .8)
  – Cardinal may or may not be linear!
• Defines what the project effect is (schedule slipping <5%, Major areas of scope impacted)
<table>
<thead>
<tr>
<th>Risk ID</th>
<th>Risk Title</th>
<th>Risk and Impact Description</th>
<th>Probability</th>
<th>Impact Severity</th>
<th>Risk Exposure</th>
<th>Risk Strategy</th>
<th>Strategy Plan Steps (Avoidance, Transfer, Mitigation/Contingency)</th>
<th>Owner</th>
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<tbody>
<tr>
<td>6</td>
<td>This is a test 6</td>
<td></td>
<td>96%</td>
<td>5</td>
<td>4.75</td>
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<tr>
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<td>88%</td>
<td>5</td>
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<tr>
<td>4</td>
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<tr>
<td>2</td>
<td>This is a test 2</td>
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<td>20%</td>
<td>2</td>
<td>0.40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>This is a test 1</td>
<td></td>
<td>10%</td>
<td>1</td>
<td>0.10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
• Extent of the understanding of the risk
• Data available about the risk
• Quality of the data
• Reliability and integrity of the data

Caution:
– Mathematical techniques used may create a false sense of precision and reliability
Qualitative Risk Analysis - Outputs

- Overall Risk Ranking for the project
- List of Prioritized Risks
- List of Risks for further analysis and management
- Trends in Qualitative Risk Analysis results
Quantitative Risk Analysis

• Opportunities to Pursue, Response to Threats
  – The major output from risk quantification is a list of opportunities that should be pursued and of threats that require attention.

• Opportunities to Ignore, Threats to Accept
  – The risk quantification should also document those sources of risk and risk events that the project management team has consciously decided to ignore; and who made the decision to do so.
Quantitative Risk Analysis

• Analyze numerically the probability of each risk and its consequence on project objectives as well as the overall project risk
  – Determining the probability
  – Quantifying the risk exposure
  – Identifying risks that need most attention
  – Identify reasonable and achievable cost, schedule and scope targets
• Generally follows qualitative risk analysis
Quantitative Risk Analysis - Inputs

- Risk Management Plan
- Identified Risks
- List of Prioritized Risks
- List of Risks for additional analysis and management
- Historical Information
- Expert Judgment
- Other Planning Outputs
Quantitative Risk Analysis - Tools & Techniques

- Interviewing
- Sensitivity Analysis
- Decision Tree Analysis
- Simulation
Quantitative Risk Analysis - Outputs

• Prioritized list of quantified Risks
• Probabilistic Analysis of the project
• Probability of achieving cost and time objectives
• Trends in Qualitative analysis results
Risk Response Planning - Inputs

- Risk Management Plan
- List of Prioritized Risks
- Risk Ranking of the project
- Prioritized list of the Quantified Risks
- Probabilistic analysis of the project

- Probability of achieving the Cost and Time objectives
- List of potential responses
- Risk Thresholds
- Risk Owners
- Common Risk Causes
- Trends in Qualitative Risk Analysis results
• Avoidance – Change project plan to decrease risk
• Transference – Insurance, Performance Bonding, Warranties
• Mitigation – Early action to reduce the probability of a risk
• Acceptance – Contingency and fallback plans
Risk Response Planning - Outputs

- Risk Response Plan
- Residual Risks – Risks that remain
- Secondary Risks – New risks that result from mitigation
- Contractual Agreements
- Contingency Reserve Amounts Needed
- Inputs to Other Processes
- Inputs to a Revised Project Plan
• Process of tracking risks, monitoring residual risks, identifying new risks, executing risk plans, evaluating mitigation effectiveness.

• On-going process for the life of the project
• Risk responses are implemented
• Response actions are effective or need new responses
• Project assumptions are still valid
• Watch for changes causing new risk exposure
• Determine a risk trigger has occurred
• Ensure policies and procedures are followed
• Notice unidentified risks
• Risk Management Plan
• Risk Response Plan
• Project Communication
• Additional Risk Identification and Analysis
• Scope Changes
• Project Risk Response Audits
• Periodic Project Risk Reviews
• Earned Value Analysis
• Technical Performance Measurement
• Additional Risk Response Planning
Risk Monitoring and Control - Outputs

- Workaround Plans
- Corrective Actions
- Project Change Requests
- Updates to Risk Response Plan
- Risk Database
- Updates to Risk Identification Checklists