

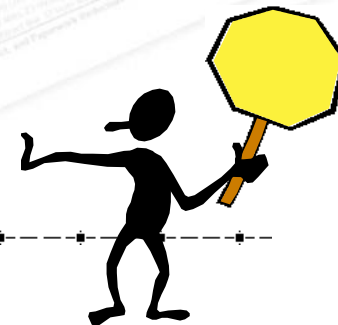
Risk Management: Overview

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A software risk is ...

“The probability of unwanted consequences of an event or decision”



A risk is a probability that some adverse circumstance will occur:

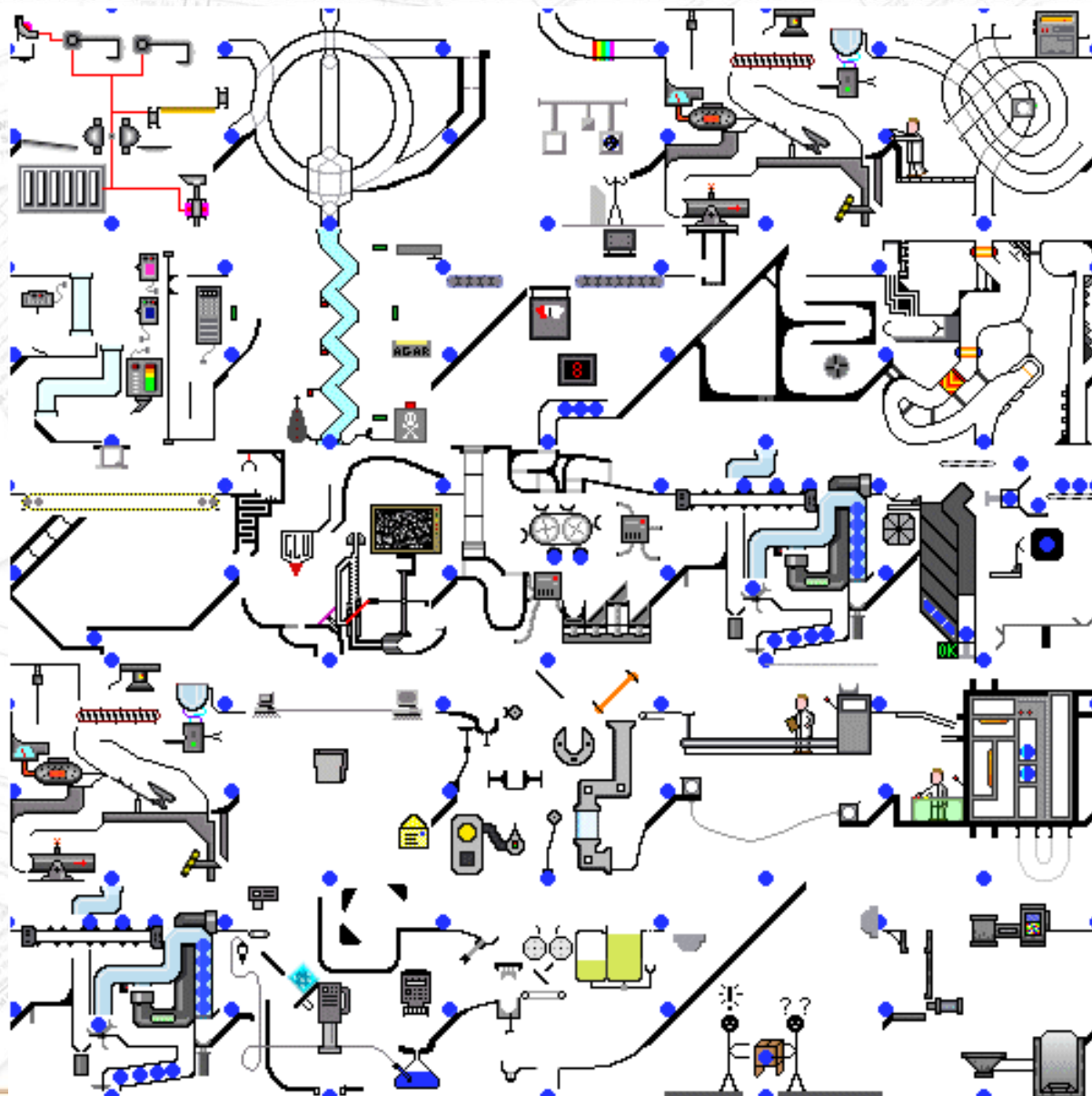
a. Project risks affect schedule or resources;

b. Product risks affect the quality or performance of the software being developed;

c. Business risks affect the organisation developing or procuring the software.

**“Prevention”
is 1/10th the cost of
“Detection and Correction”**

Software project = playing pinball machine?





















We manage “risk” because...



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**While what we have looked at
relates to safety, you can imagine
how a project can turn out ...**

Another excellent example

- **Comparison of the Amundsen and Scott Expeditions**

http://en.wikipedia.org/wiki/Comparison_of_the_Amundsen_and_Scott_Expeditions

- How risk management plays an important role in achieving an ambitious goal successfully

If we go to Antarctic now (\$5000)



Attitude and Thought process

- Reactive verses Proactive
 - *The operator in the slides thought his equipment could handle it.*
 - *Lets just do it.*
 - *It takes longer to plan it than it would to do it.*
 - *We'll fix it if it breaks or ...*
- So Risk Management, like Safety is a state of mind and Project Managers need to adopt it as a way of life.



(Software projects) Risky Business

- KPMG (one of four largest professional services in the world) Study:
 - 55% of runaway projects did no risk management
 - 38% did some, but half of those didn't use their findings after the project was underway
 - 7% didn't know whether they did risk management
- Total: about 80% of runaway projects did no meaningful risk management

When Do Problems Show Up?

- More than 50% of projects show their problems during initial development
- About 25% show their problems during initial planning
- Visibility into runaway projects came first (72% of the time) from project team, not management

What is Project Risk?

- “Project risk is an uncertain event that, if it occurs, has a positive or negative effect on at least one project objective, such as time, cost, scope, or quality.”
- Keys ideas when thinking of Risk
 - Certainty and Uncertainty
 - Bad and Good or (risks & opportunities)
 - Cause and effect
 - Known vs. Unknown Risks
 - Probability of occurrence
 - Range of possible outcomes
 - Expected timing
 - Frequency of events



What is Risk Management?



Project Management Institute

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- PMBOK Definition
 - The processes concerned with conducting risk management planning, identification, analysis and monitoring and control on a project
- Other Definitions
 - Project Risk Management is the art and science of identifying, assessing, and responding to project risk throughout the life of a project and in the best interests of its objectives *“Max Wideman”*

Risk Management

Goal of risk management: increasing the probability and impact of positive events, and decreasing the probability and impact of negative events

Risk Management

Risk
management

Risk
Management
Planning

Risk
identification

Risk analysis

Risk responses

Risk Monitoring
& Control (on-
going process)

Risk Management Process (steps)

- Risk management plan: *deciding how to approach, plan, and executing the risk management activities*
- Risk identification: *determining which risks might affect the project and documenting their characteristics*

Risk Management Process (steps)

- Risk analysis
 - Qualitative Analysis: *prioritizing risks for further actions*
 - Quantitative Analysis: *numerically analyzing the effect*
- Response Planning: *developing options and actions*
- Risk Monitoring & Control (on-going process): *tracking identified risks, monitoring residential risks, identifying new risks, and executing response plan*

Four Phase Approach

Four Phases

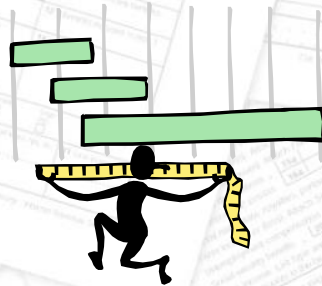
1. Identification



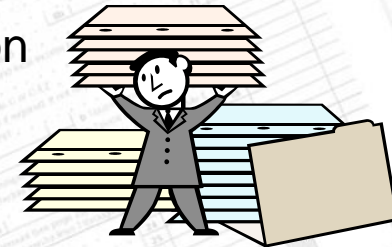
3. Response



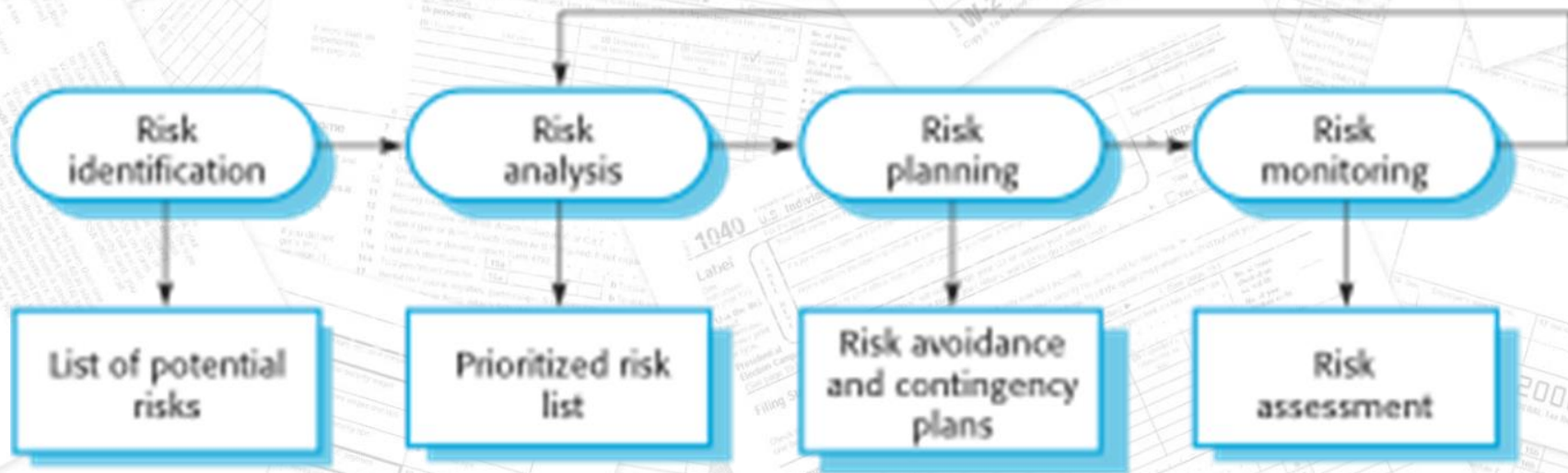
2. Assessment



4. Documentation



Risk Management Process



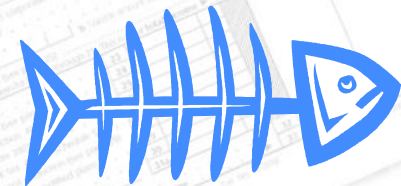
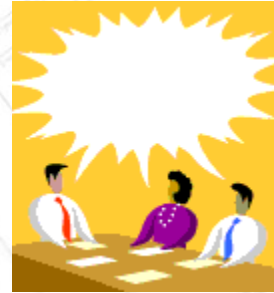
Identifying Risk

- Continuous, Iterative Process
- What it is and what it looks like
- The sooner the better
- The more the merrier
- A fact is not a risk
- Be specific
- Don't try to do everything at once



Identification Techniques

- Brainstorming
- Checklists
- Interviewing
- SWOT (strengths, weaknesses, opportunities, and threats) Analysis
- Delphi (expert questionnaire) Technique
- Diagramming Techniques
 - Cause & effect – Ishikawa or Fishbone
 - Flow Charts
 - Influence Diagrams



Assessment (analysis)

Two forms

Qualitative

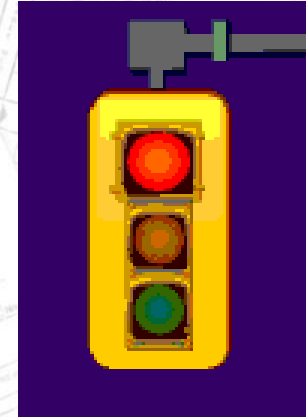


Quantitative



Risk Analysis - Qualitative

- Subjective
- Educated Guess (SWAG)
- High, Medium, Low
- Red, Yellow, Green
- Prioritized/Ranked list of ALL identified risks
- First step in risk analysis!



Risk Analysis - Quantitative

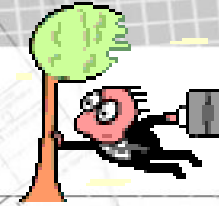
- Numerical/Statistical Analysis
- Determines probability of occurrence and consequences of risks
- Should be focused to highest risks as determine by Qualitative Risk Analysis and Risk Threshold

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Probability & Impact Analysis

Risk	Probability	Impact	Expected Value
1	25%	\$45,000	\$11,250
2	50%	\$2,000	\$1,000
3	30%	\$100,000	\$30,000

Decision Tree Analysis



Decision Definition	Decision Node		Chance Node		Prob x Impact	Net Impact Cost + Total EV
	Cost of the Decision		Probability	Impact		
Develop In House or Contract?	Develop In House (\$20,000)	Early	10%	+\$15,000	\$1,500	
		On Time	20%	\$0	\$0	(\$32,500)
		Delayed	70%	-\$20,000	(\$14,000)	
	TOTAL				(\$12,500)	
Contract	Contract (\$30,000)	Early	10%	+\$15,000	\$1,500	
		On Time	70%	\$0	\$0	(\$31,500)
		Delayed	20%	-\$15,000	(\$3,000)	
	TOTAL				(\$1,500)	

Risk Response Planning



- “What are we going to do about it?”
- Techniques/Strategies:
 - Avoidance – Eliminate it
 - Transference – Hand it off
 - Mitigation – Reduce probability or impact of it
 - Acceptance – Do nothing
- Strategy should be commensurate with risk
 - Hint: Don’t spend more money preventing the risk than the impact of the risk would be if it occurs
- The Risk Response Plan/Risk Response Register



Risk Monitoring & Control

- Continuous, Iterative Process
- Done right
 - Someone IS responsible
 - Watch for risk triggers
 - Communicate...
Communicate...
Communicate...

Oh and did I say
Communicate!



- Take corrective action - Execute
 - Re-evaluate and look for new risk constantly
- Tools:
 - Risk Reviews
 - Risk Audits

Tools & Tricks

- Risk Identification Spreadsheet
- Qualitative Risk Spreadsheet
- Templates
- Checklists
- Make your own



Generic Risks



Risk Register Sample



Risk Checklist



Risk Response Action Plan



Generic Software Risks



Risk Progress Checklist



CA Risk Mgmt Plan Outline



Risk Management Plan Template



Packaged Systems Risks



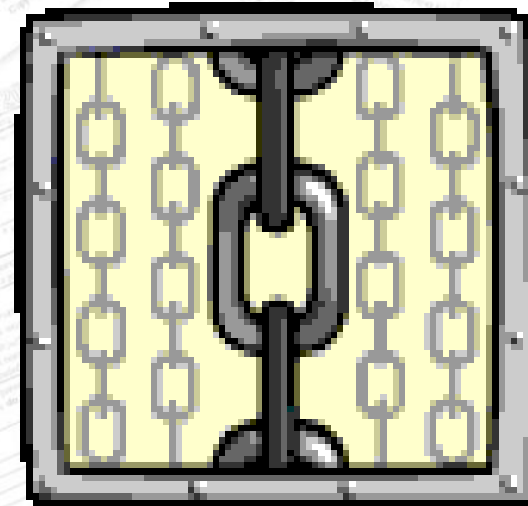
Risk Register II



Risk Form

Helpful Links

- Project Management Institute (PMI)
 - www.pmi.org
- PMI California Inland Empire
 - www.pmicie.org
- Project Connections
 - www.projectconnections.com
- Baseline Magazine
 - www.baselinemag.com
- Gantthead
 - www.gantthead.com
- RMC Project Management
 - www.rmcpjroject.com
- Defense Acquisition University
 - <https://acc.dau.mil/CommunityBrowser.aspx?id=17607>
- Texas Project Delivery Framework
 - www.dir.state.tx.us/pubs/framework/



Questions???

