

# Risk Management 102

ASQ Software SIG



**Enterprise Risk  
Management**

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# Agenda

- Fundamentals of Risk Management (RSKM).
- Advised preparations for doing Risk Management.
- Brief guidelines for identifying the right risks in any project.
- Skills needed to do successful Risk Management.
- Proportionalizing Risk Management (Risk Management Lite vs. Risk Management Heavy).
- A Success Story using Risk Management.
- Risks of doing Risk Management.
- Risk vs. Opportunity Management.



# Fundamentals -- What is Risk?

- “Risk is the **possibility** of suffering loss. In a development project, the loss describes the **impact** to the project, which could be in the form of diminished quality of the end product, increased costs, delayed completion, or failure.”  
(Carnegie Mellon Un. Software Engineering Institute Continuous RSKM Guidebook)\*
- Risk has 3 attributes:
  - Uncertainty
  - Loss to the project
  - Time – when the risk consequence occurs (future)

(Risk Timeframe is the period of time available to do something (mitigation) about the risk before it impacts the project.)

\*Note: Additional sources include:

IEEE 1540-2001, Software Life Cycle Processes – Risk Management  
*A Guidebook for Identifying Risk*, v. 2.0, 2005, NSA in-house, Mike Helton, et al  
*Taxonomy-Based Risk Identification*, Carnegie Mellon Un. SEI, Marvin Carr, et al  
*Risk Management Guide for Defense Acquisition*, DoD, Defense Acquisition Un.  
Project Management Body of Knowledge (PMBOK) – various years



# Fundamentals – Why Does Risk Exist?

- Risk in itself is not bad; it is *essential to progress*. Risk is usually related to what is new or different about a product or service that a project produces.
- Risk exists because of **uncertainty**
- Uncertainty derives from 2 sources:
  1. Inherent variability and unpredictability  
(e.g. toss of dice, operational environment – impossible to predict)
  2. Lack of knowledge
    - Failure rate for a certain component
    - Untrained staff
    - Uncertainty due to lack of knowledge is reducible



# Fundamentals – Risk vs. Issue vs. Problem

- A **Risk** is the possibility of suffering loss – It involves an event or condition that, if it occurs, could lead to a consequence.
  - Key Point – a risk is something that **COULD happen**.
  - A risk can be managed and/or avoided to reduce impact and / or reduce probability.
- An **Issue** is an event or condition that HAS occurred and is a risk.
  - Key Point – an issue is a **condition or event** that **HAS happened**.
  - The risk of an issue is in the uncertainty of the consequence.
- A **Problem** is a risk or an issue that has occurred and is impacting.
  - Key Point – a problem is a **consequence** that **HAS happened**.
  - The risk of a problem is that the problem (consequence) may continue to grow worse.



# Fundamentals – What is Risk Management

- Risk Management is predicting a “bad outcome”, then deciding to do whatever is possible / reasonable to prevent it and / or reduce its impact.

Risk Management is predicting

Risk Management is pro-active

Risk Management reduces crisis management



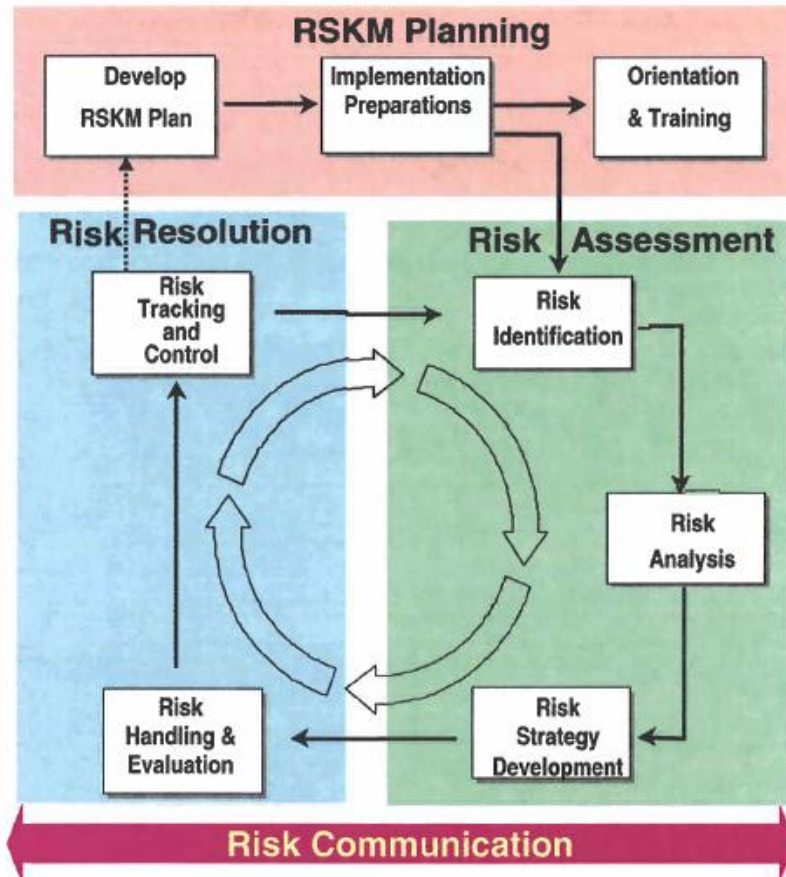


# Why do Risk Management – Key points

- Risk Management is done to:
  - **Prevent problems** before they occur – cheaper to handle problems early
  - Ensure project **stability** – controls potential problems within the context of a baseline project plan and resource allocations
  - Avoid **crisis** management
  - Provide **collaboration** for risk resolution and supports project decisions
  - Increase the likelihood of project **“success”**
  - Provide **Opportunities** otherwise not realized



# Risk Management Process Map



The overall risk management Process consists of three major Activities:

## Risk Management Planning

- Identifying how the formal process is to be carried out, preparing work aids, and informing staff.

## Risk Assessment

- Identifying, analyzing, (includes prioritizing) and strategizing risks

## Risk Resolution

- Implementing handling plans, tracking progress and making adjustments.





# Guidelines for Identifying Risks

- Examine goals and objectives of the project for conditions that will prevent these goals and objectives from being met.
  - Have 2 to 4 person meetings to focus on different areas of the project (SMEs / Managers).
- Use various questionnaires available – see backup slide for example questions (to project management).
  - Select questions that are most applicable to the project.
- Solicit possible problems the project will have from all teams.

Note: All inquires are always on a full disclosure, non-retribution basis.



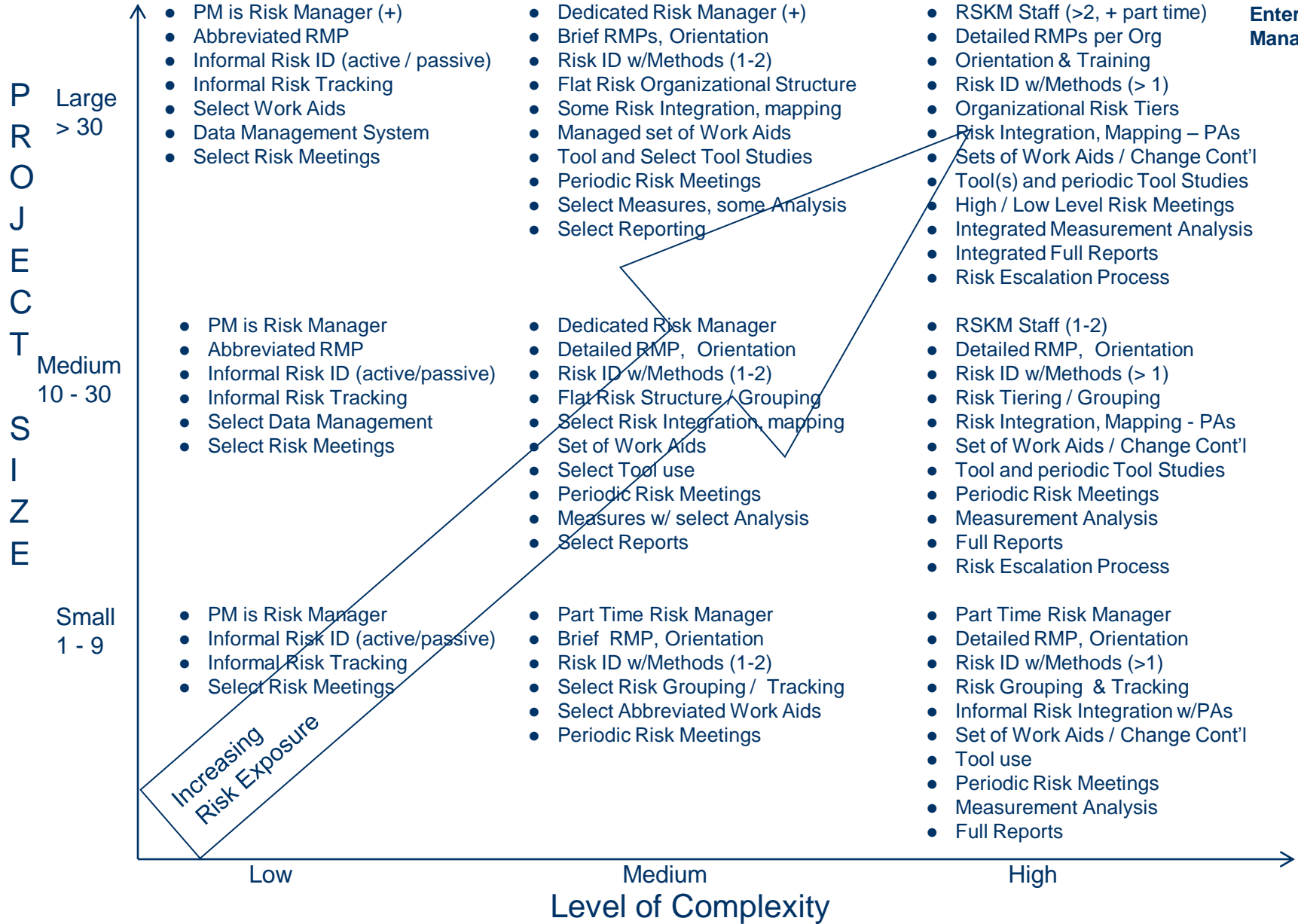
# Skills Needed for Successful RSKM

- Ability to foretell the future – Probability wise.
- Knowledge base of experience levels and expertise on the project.
- Discriminate and organize risks.
- Bring project management to proper points of decision.
- Provide agility in the RSKM implementation to adjust for effective levels.

# Proportionalizing Risk Management

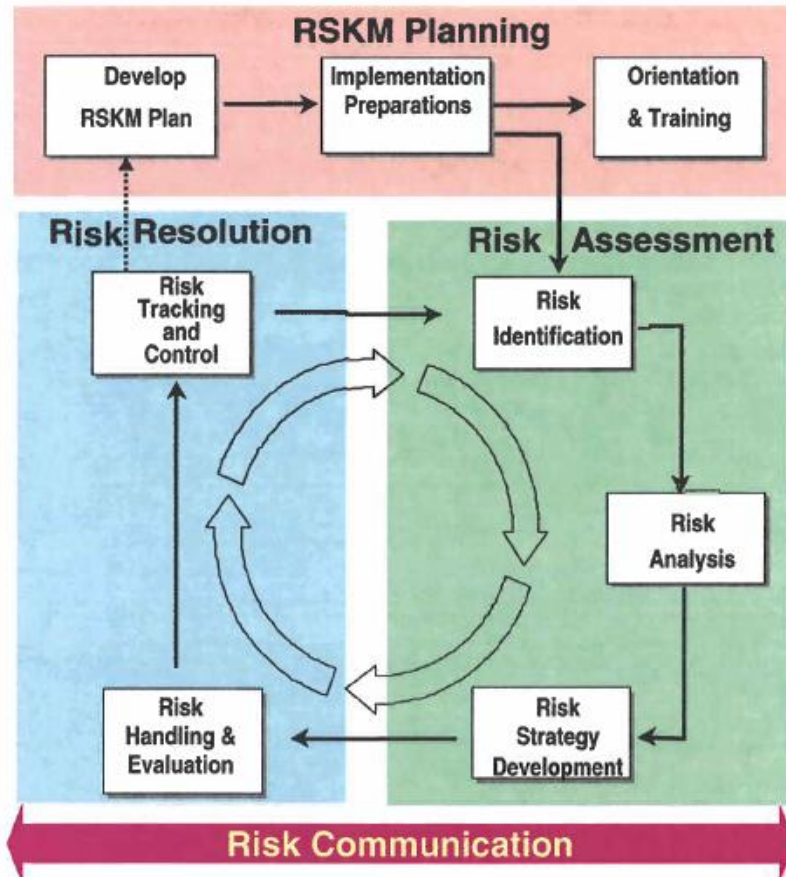


**Enterprise Risk Management**





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# Abbreviated Risk Management (Small Project size (1-9), Low Complexity\*)

- PM is Risk Manager
- Informal Risk ID (some active, most passive)
- Informal Risk Tracking
- Select Risk Meetings

## \*Characteristics Driving Complexity

1. New technology
2. New Processes & Procedures
3. New People
4. Requirements
5. Another ... ?

### Footnotes:

1. ID = Identification
2. “Select” means chosen to meet immediate needs
3. “Passive” means done in combination with other activities
4. PAs = Process Areas
5. PM = Program Manager
6. RMP = Risk Management Plan



# Comprehensive Risk Management (Project Size > 30, high level of Complexity)

- RSKM Staff (>2, + part time)
- Detailed RMPs per Org Structure
- Orientation & Training
- Risk ID w/Methods (> 1)
- Organizational Risk Tiers
- Risk Integration, Mapping – PAs
- Sets of Work Aids / Change Cont'l
- Tool(s) and periodic Tool Studies
- High / Low Level Risk Meetings
- Integrated Measurement Analysis
- Integrated Full Reports
- Risk Escalation Process



# Case Study Example ('Success Story')

*(Generalized high level real project experience)*

- Background – Project A was to design and build a S/W product almost identical to another product being built by a different project (B).
- Identification – Project A identified this as a possible Risk.
- Analyze – Project A determined probability Medium and at first rated the impact Medium. Further review indicated impact could be cancellation, so Risk was rated High. A Risk Owner was selected.
- Strategy– Risk Owner selected a strategy of Avoid:
  - In this strategy Project A would use some new ideas to work with the Project B to develop a better & different product for both projects.
  - Thus the source of the Risk would be eliminated.
- Handling – An Action Plan using Collaboration was successful.
- Tracking and Control – Risk was avoided and no other risks came into play. Risk rating went from Medium > High > Low > Resolved.
- Results – Both projects had a better product and both projects had a team partner and were able to continue growth.



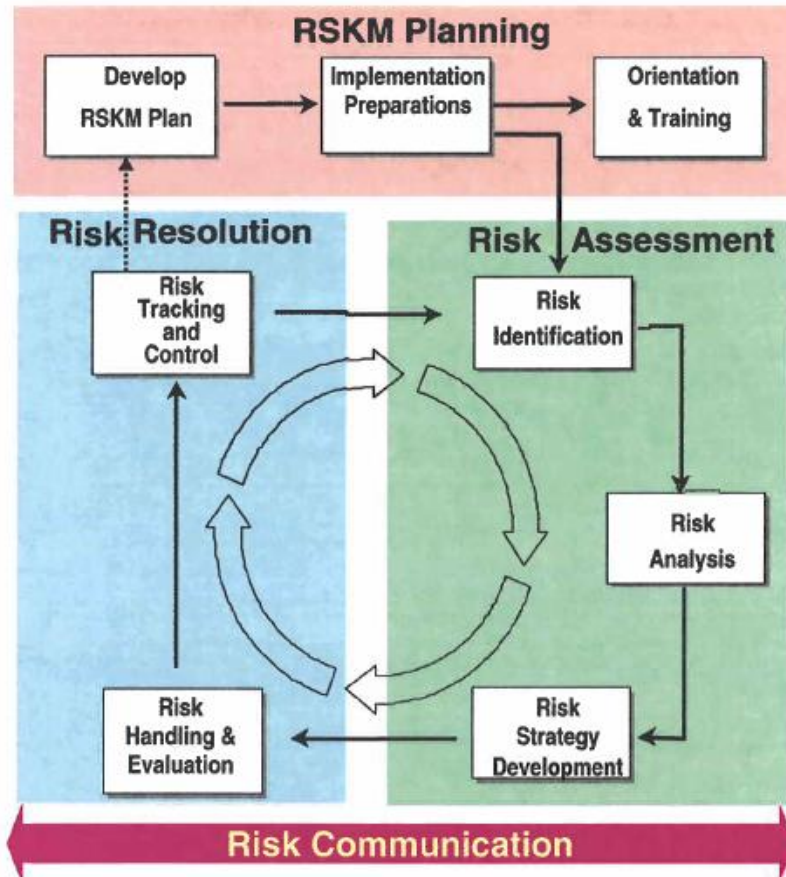
# Risks of Doing Risk Management

- Using methods that produce too many risks.
  - Can defocus work on the project
  - Can detract from important risks to manage
- Using too much or too little procedures to match the size and complexity needed.
- Being disjointed with the management style of the program.
- Risk Management Tool misuse.
- Doing only part of Risk Management  
(i.e. – ignoring effective orientation and communications)
- Becoming defocused with too many uncovered Opportunities.





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# Summary

- The fundamentals of Risk Management:
  - Explains what risk is and what RSKM is
  - Provides terminology to use
  - Identifies the Process
  - Provides reasons for doing RSKM
- Risk Management 102 provides:
  - Skills necessary for effective RSKM
  - Agility considerations for various projects
  - Practical experience as a guide (success stories).
  - Awareness of RSKM pitfalls.
- A risk mantra: “Collaborate or die”.



# Follow up & References

- Presentation at ASQ Section 509 Website:
  - <http://www.asq509.org/ht/d/sp/i/2499/pid/2499>
  - (This and past presentations including Al Florence's presentation of Feb. 26, 2013 on Risk Management)
- Contact information:
  - Email: [mr.helton@verizon.net](mailto:mr.helton@verizon.net)



# **Backup Slides & Supplementary Material**



# Risk Management Plan Outline

## Recommended Items

### 1.0 Introduction

- Purpose of RSKM Plan
- Compliance to applicable standards

### 2.0 Project Summary (including goals and objectives)

### 3.0 Risk Management Strategy and Approach

- Identify methods and tools to be used
- Identify reviews and oversight

### 4.0 Risk Management Organization (including Roles and Responsibilities)

### 5.0 Risk Management Process & Procedures

- Standard process with tailoring to fit the desired project
- Identification of work flow and detailed procedures to be used

### 6.0 Risk Management Documentation

- Reporting requirements
- RSKM Data Base and Metrics

### 7.0 Risk Management Schedule

- Timeline to establish the RSKM Process & training requirements
- Schedule for reviews and related time dependent activities including process improvement

### 8.0 Risk Management Budget (as appropriate)

### 9.0 Risk Management Criteria & Definitions (Acronyms & Glossary)



# Common Risk Analysis Criteria Levels Example

Probability Value		Description		
(HO)	1.0	Has Occurred. Sure to continue as a problem.		$x = 100\%$
(VH)	0.9	Very High chance to occur; there are cases where it has occurred.		$80\% < x < 100\%$
(H)	0.7	High chance of occurrence; similar cases have occurred.		$60\% < x < 80\%$
(M)	0.5	Medium (even) chance of occurrence; sometimes becomes a problem.		$40\% < x < 60\%$
(L)	0.3	Low chance of occurrence; Not much chance of risk becoming a problem		$20\% < x < 40\%$
(VL)	0.1	Very Low chance of risk becoming a problem.		$0\% < x < 20\%$
Near Zero -	0.0	No chance of risk becoming a problem.		$x \cong 0.0$
Impact Value		Schedule	Cost	Performance
(VH)	0.9	90 days < x	\$ 1 M < x	Termination, unrecoverable failure, architecture failure
(H)	0.7	30 d < x ≤ 90 d	\$ 100K < x ≤ 1 M \$	Major failure but recoverable, significant architecture change
(M)	0.5	10 d < x ≤ 30 d	\$ 10K < x ≤ 100K \$	Minor recoverable failure, minor architecture change
(L)	0.3	3 d < x ≤ 10d	\$ 1K < x ≤ 10K \$	Minor but noticeable workarounds required
(VL)	0.1	x ≤ 3 days	x ≤ 1K \$	Changes are "in the noise"
Timeframe Value		Description		
Current		Zero Time		
(N)	Near-term	From 1 to 10 days		
(M)	Mid-term	From 10 days to 90 days		
(F)	Far-term	Greater than 90 days		



# Suggested Risk ID Form

Originator Information			
*Originator:		*Date:	
Originator's Organization:		ID #:	
Reference(s)			
1.			
2.			
Risk Information			
*Risk Title:			
Source of Risk:			
*Condition of Risk:			
*Context of Risk:			
*Consequence of Risk:			
Risk Statement:			
Probability of Impact:			
Risk Impact:			
<u>Impact Area(s) of Risk</u>	<u>Comments</u>		
<input type="checkbox"/> Cost			
<input type="checkbox"/> Schedule			
<input type="checkbox"/> Performance			



# Example – Risk Questionnaires

There are many questionnaires in use for identifying risk. A standard questionnaire is the Taxonomy-Based Risk (TBQ) Questionnaire. This is a systematic set of questions designed to identify problem areas in typical projects (SEI).

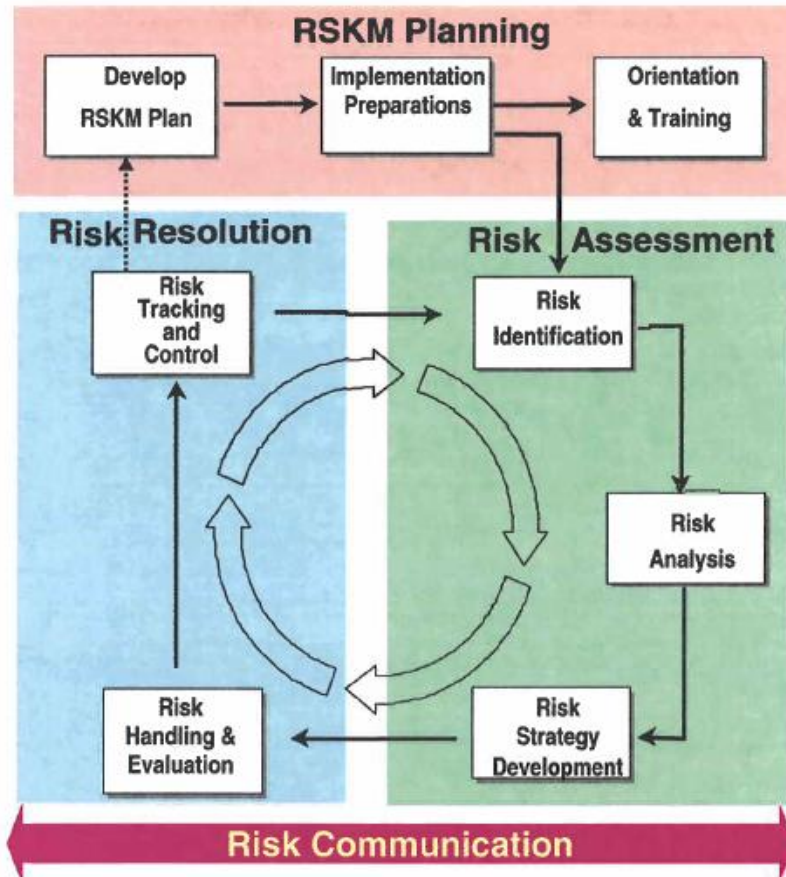
Some typical questions are as follows:

- Do you have a project plan?
- Do you have a project schedule?
- Do you know what the critical path dependencies are?
- Do you know what your funding amount is and is it sufficient?
- Do you have enough staff and are they qualified to do the job?
- Do you have a set of goals and requirements?
- Are your requirements stable?
- Do you have a design/architecture and is it traceable to requirements?
- Do you understand your operational environment and interfaces?
- Do you meet regularly with your full project team and your customer?





# Risk Management Process Map



To Begin – Only consider Risk Identification and then monitor those risks.  
(CMMI Level 2)

More maturity utilizes all functions in Assessment and Resolution Activities including RSKM Planning.  
(CMMI Level 3)

More maturity utilizes all functions and makes adjustments based on Measures and other PAs. (Level 4)

RSKM is always a collaborative effort.