

ASQ Section 509 SIG

Practical Risk Management

WELCOME!

- ▶ Objectives:
 - ▶ Review basic definitions
 - ▶ Take a quick look at some related standards and CMMI
 - ▶ Process Steps: Integrating a risk management approach into the project life cycle
 - ▶ Walk through a sample project to demonstrate risk management techniques

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What is Risk Management?

‘Risks’ have not happened yet...

‘Risk’ is the probability of an event occurring with the possibility of derailing project success.

‘Risks’ that are not managed and controlled can have a negative impact on a project team’s

- ▶ Deliverables
- ▶ Budget
- ▶ Product Quality

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Definitions of Risk

IEEE: The likelihood of an event, hazard, threat, or situation occurring some time in the future

Definition (ISTQB) - Systematic application of procedures and practices to the tasks of identifying, analyzing, prioritizing, and controlling risks

How Do You Define Risks?

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ISO Standards Related to Managing Risks

ISO/ IEC 27002:2013 - Details security policy requirements for protecting an organization's physical and information technology assets

ISO 31000:2009, Risk management - details a framework and process for managing risk.

ISO Guide 73:2009, Risk management - details terms and definitions relating to the management of risk.

ISO/IEC 31010:2009, Risk management - Risk assessment techniques focuses on risk assessment

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CMMI and Risk Management

Risk management is a project management process area for maturity level 3 organizations.

The purpose of risk management (RSKM) is to identify potential issues or problems before they occur; and to have planned activities in place and available to reduce or eliminate the impact of the risk.

For level three organizations, risk management should be an ongoing integrated process; and will address issues that could possibly have a negative impact on project deliverables, costs, and objectives.

Source: Software-Quality-Assurance.org is an independent Web Site that presents information about CMMi

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Consider Levels of Risk Maturity

- (1) Not aware of the need for risk management
- (2) Organizations are aware of the potential benefits, however have not implemented process
- (3) Build management of risks into routine business processes
- (4) Have a risk aware culture

Source: Fundamentals of Risk Management by Paul Hopkin

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When comparing Agile Scrum to Traditional / Waterfall projects, there is no defined process for risk management

Traditional /Waterfall Approach	Agile Approach
<ul style="list-style-type: none">• Project management focuses on costs and schedule, and project goals at a high level.• Tends not to be a working document for teams to use.	<ul style="list-style-type: none">• Focus is on 'day to day' issues and is managed through standups, focus groups, and lessons learned, however there is no formal risk management process shared with the team.

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How do you define risks?



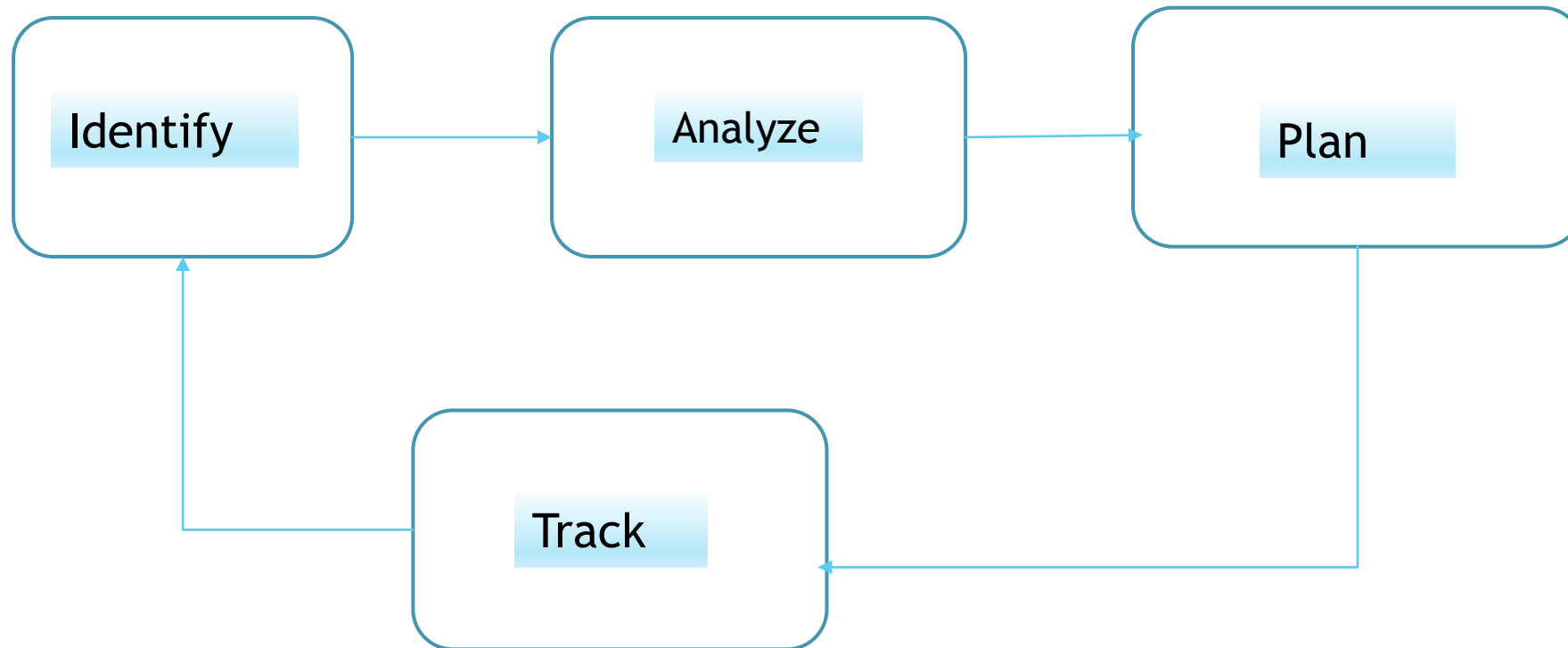
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What's your experience with regard to risk management?



Is risk management relevant to your daily project work?

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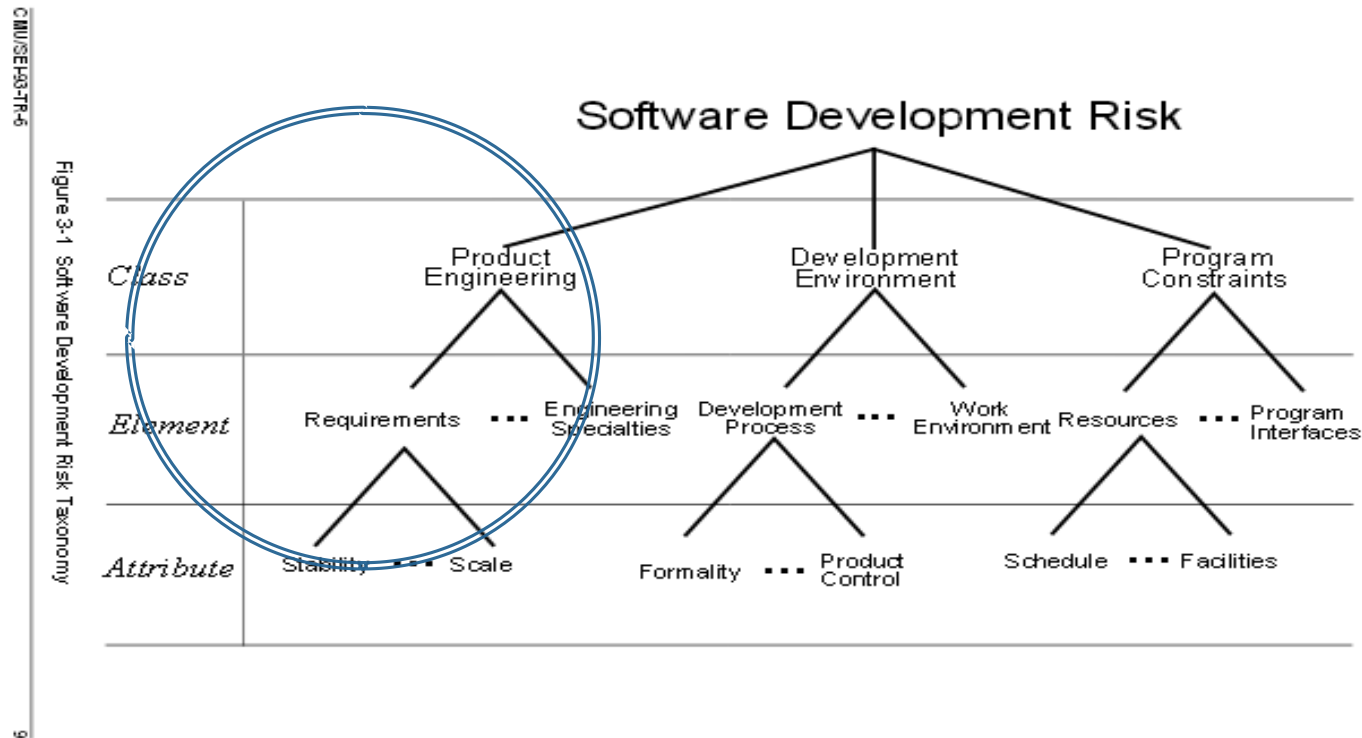
Identifying Risks

Discuss the project risks openly	<i>Taxonomy Based Questionnaire - www.sei.cmu.edu/reports/93tr006.pdf</i>
Conduct interviews, reports	Focus on risks unique to project
Use decomposition to identify risks within the work breakdown structure	Focus is on undesirable consequence (events, hazards, threats)

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Identifying Risks

SEI's Software Development Risk Taxonomy questionnaire can help facilitate risk identification in a specific area of software development.



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Identifying Risks

Input

Brain storm problems and issues that can impact the team's ability to deliver quality products to the customer

Output

Generate an easy to update risk list for tracking actions

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Identifying Risks

- ▶ Determine Your Team's Type of Software Risks
 - ▶ Technical
 - ▶ Management related
 - ▶ Financial related
 - ▶ Contractual /Legal related
 - ▶ Personnel related
 - ▶ Other Areas such as inadequate tool, unavailability of system resources

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Analyzing Risks

The primary purpose of risk analysis is to determine your highest priority risks; and to figure out what actions need to be taken to reduce those risks.

Risk Factors To Prioritize Risks

Context - Events, Conditions, Constraints, and assumptions

Estimated Risk Probability - Likelihood the risk will turn into a problem

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Analyzing Risks

Assess Risk Factors To Prioritize Risks

Time Frames - This is the time frame in which the risk must be addressed

Exposure - Impact of a risk in terms of its expected value

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Analyzing Risks

Assess Risk Factors To Prioritize Risks

Tolerance - The willingness to accept or avoid risk. People and organizations have differing risk tolerances. Some project stakeholders want to risk the delivery of the project they are paying for by taking a chance on something new. Other will welcome the opportunity if the danger is not too great

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Consider the Risk Tolerance of Your Stakeholders, Customers, and Team Members

Stakeholders (Low Tolerance Level)	Customers (Low Tolerance Level)	Team Members (Low to Medium Tolerance Level)
<ul style="list-style-type: none">- Understands how the technology will be integrated- Must comply with multiple levels for governmental regulations- Very low tolerance for any type of system failure- Requires the highest level of quality	<ul style="list-style-type: none">- Understands how the technology will be integrated into their business process- Very much involved in the day to day testing effort- Works well with the project team to overcome any road blocks and get answers to questions related to business process	<ul style="list-style-type: none">- Very close to the technology; In depth knowledge of business requirements;- Work effectively with other test teams in the field and communicate effectively with development staff

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Analyzing Risks

RISK EXPOSURE

RE = Probability (Unexpected outcome) X LOSS (Unexpected Outcome)

Source: Software Quality Engineer Handbook; Linda Westfall

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Taking Action

Risk Actions

Four typical actions that we can take:

Mitigate: Take steps in advance to reduce the possibility and impact of the risk.

Contingency: Have a plan in place to reduce the possibility of the risk to become an outcome.

Transfer: Convince some other member of the team or project stakeholder to reduce the probability or accept the impact of the risk.

Ignore: Ignore the risk, which is usually a good option only when there is little that can be done or when the possibility and impact of that risk are low in the project.

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The Goal: Proactively Manage Risks on a Daily Basis

- ✓ Take Action to Control the Impact of Risks
- ✓ Prioritize and re-prioritize work based on risk level
- ✓ Discuss risks with team members; and add a discussion on risk as a part of daily status meetings

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A Case Study

Project Status: Pre -Production

Field testing is in progress and covers several sites; sites are tested each day to collect data for analysis by senior management

Test team conducts a brief system check to ensure all system components are operational.

- *System Monitor*
- *Receipt Printer*
- *Card reader 'A'*

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General / Non-Technical Risk Areas To Consider

Overall System Complexity

- ▶ *this site test is a major part of a much larger system; the team needs to know who to contact if there are issues that need to be resolved in the field*

Site Test environment

- ▶ *there are many customer constraints for space and equipment and staff within the site office where testing done*

Site Test Staff Training

- ▶ *Since engineering interns make up a great portion of the staff, training for new testers is ongoing.*
- ▶ *Interspersed Development and QA teams*
- ▶ *When an issue is reported from the field, it can be a challenge to communicate details to a remotely located development team*

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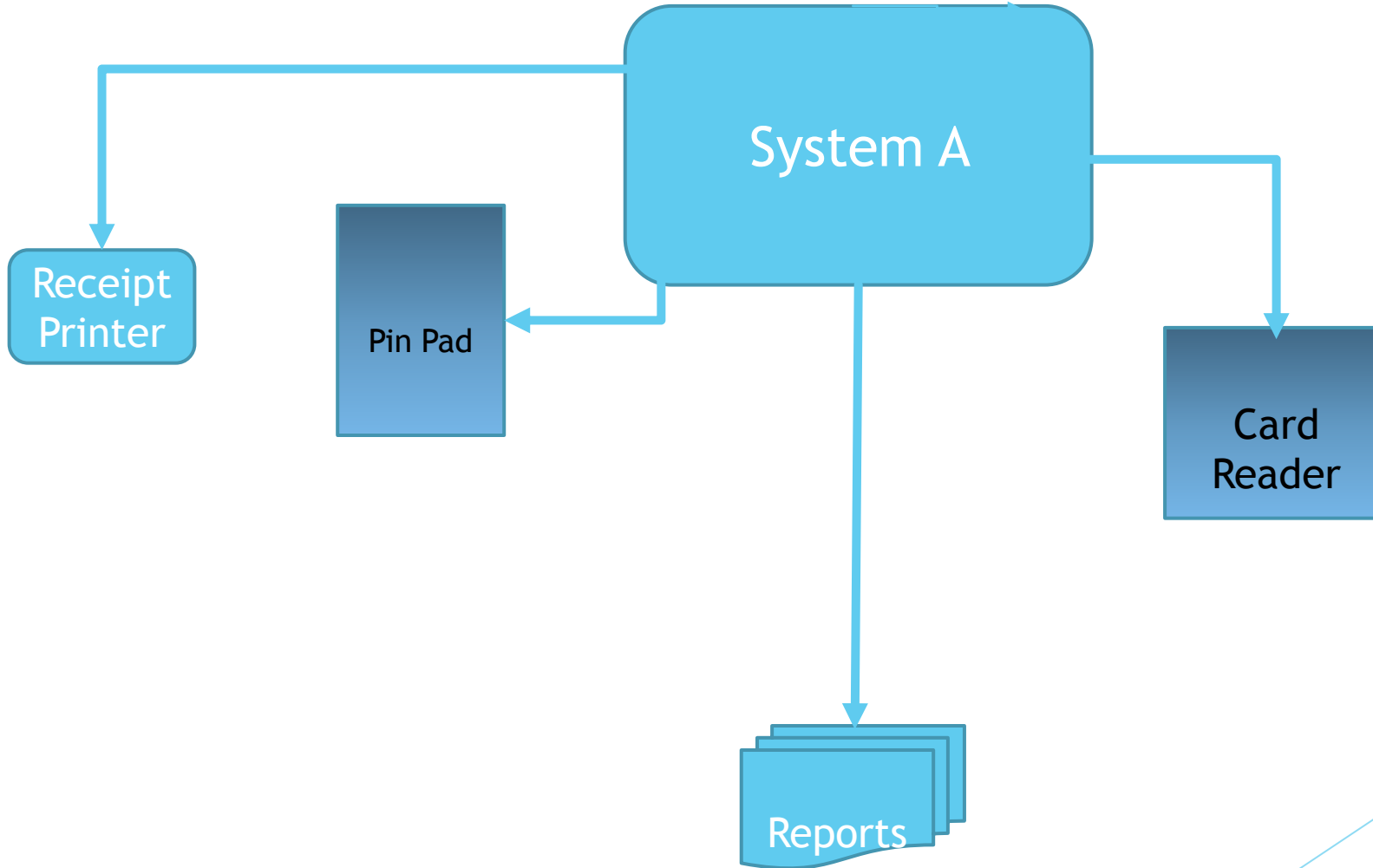
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Technical Risks

Events have been identified that may pose a risk to the project and stakeholders

- ▶ *A button on the touch screen does not respond when selected on the first try; when selected again, the button behaves as expected*

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- ▶ Team executes test scripts to ensure system functionality
 - ▶ *Executes cash and credit transactions at the system monitor to ensure all products can be successfully purchased*
 - ▶ *Cash drawer is counted*
 - ▶ *Reports are run*
 - ▶ *Deposit slips are generated.*
 - ▶ *Products created during the site test are validated.*
 - ▶ *Test data is captured by independent validation team and uploaded to secure site for analysis*

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Planning Phase Questions to Consider

- ▶ Do we have enough information about the risk?
- ▶ Is the risk greater than we can accept?
- ▶ Can the risk be transferred to another party?
- ▶ Is action needed now? Is action needed if the problem occurs?
- ▶ Can we accept the risk?

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Event	Potential Problem for the Customer	Contributing Factors	Constraints /Assumptions	Circumstances /contributing factors	Related issues that can lead to a problem
System Monitor Touch Screen	Recoverable touch screen button issues; Button does not activate when selected on first try	The button functions after several tries; an annoyance to the customer	Button issues is not related to system software	Touch Screen sensitivity needs to be evaluated	Since the problem is related to the screen and not the software, operators need a process to evaluate and adjust screen sensitivity

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Brainstorming Risks as They Impact the Project

Impact on project	Risk	The Challenge (Why?)	Opportunity for Improvement	Taking Action to Remediate the Problem
High	Unplanned Breaks in Test Schedule	Site test scheduling conflicts and lockouts	This an opportunity to preschedule work with our customer to avoid conflict.	Follow-up with Senior Management on a site test schedule pre-approved by client for the upcoming week of testing.

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Communicating Risk In Terms of Risk Exposure

Risk	Risk Tolerance	Context	Likelihood of occurrence	Loss (Days)	Risk Exposure	Action
Without the appropriate business process established (within the preproduction time frame), the client's financial reporting cannot be delivered on time	Client is willing to accept the financial reporting after the scheduled delivery date	Development Team is dependent on completion of business process changes to revise client's financial reporting.	.90	7	6.3	Transfer risk to the client by specifying late delivery if appropriate processes are not available (within the pre-production timeframe)
Button on touch Screen does not function for several keys	Client is knowledgeable of the possible risk.	Hardware and software issues have been ruled out.	.02	.5	.01	Transfer the risk to the maintenance team provide client with a procedure to adjust screen sensitivity