8TH ANNUAL QAI & QAAM REGIONAL CONFERENCE

MANAGING PROJECTS EFFECTIVELY IN A COST CONSTRAINED ECONOMY

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The Role of Quality in Risk Management

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Agenda

- Risk Management Overview
- Mini Workshop #1
- Work Breakdown Structure (WBS)
- Mini Workshop #2
- Practical Risk Management Approach
- Mini Workshop #3
- The Role of Quality
- Putting It All Together

Risk Management Overview

- Definition of “risk”
  - Webster’s defines risk as “exposure to the chance of injury or loss; a hazard or dangerous chance”.
  - ANZ-4360 defines risk as “the chance of something happening that will have an impact on objectives.”
  - PMBOK defines project risk as “an uncertain event or condition that, if it occurs, has a positive or negative effect on at least one project objective, such as time, cost, scope or quality.

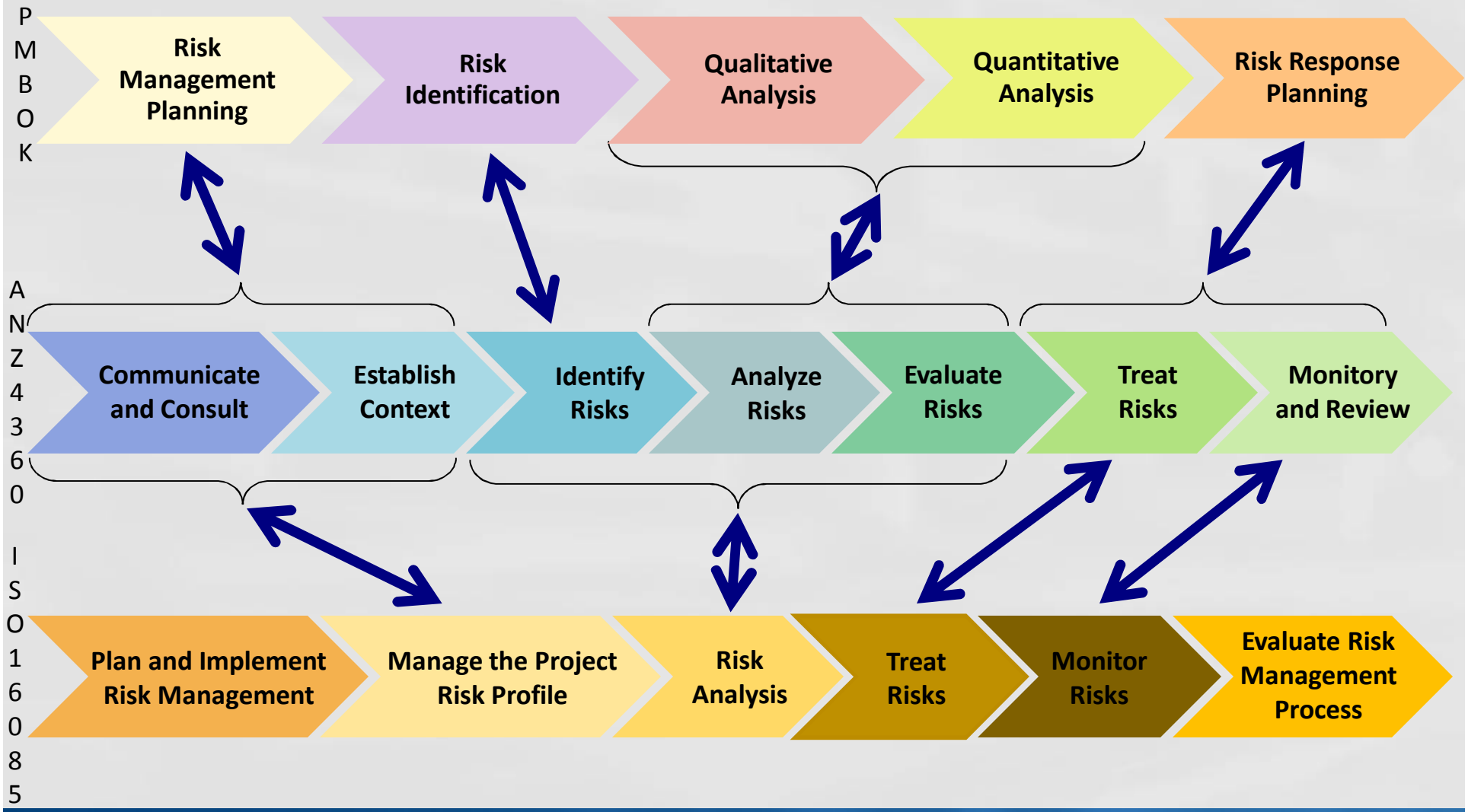
Risk Management Overview

- PMI's Project Management Body of Knowledge (PMBOK)
- ISO 31000 Risk Management
- NIST 800-30
- FAIR
- ANZ-4360 (superseded by ISO 16085)
- IEEE 1540 (superseded by ISO 16085)
- ISO 16085:2004

Risk Management Overview

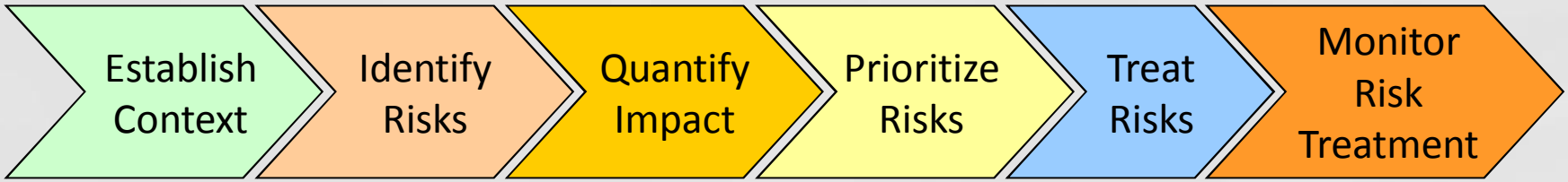
- Both PMBOK, ANZ-4360, IEEE-1540, and ISO 16085 focus primarily on project risk management whereas NIST 800-30, ISO 31000, and FAIR have a much broader scope and focus primarily on organizational or Enterprise risk management.

Risk Management Overview



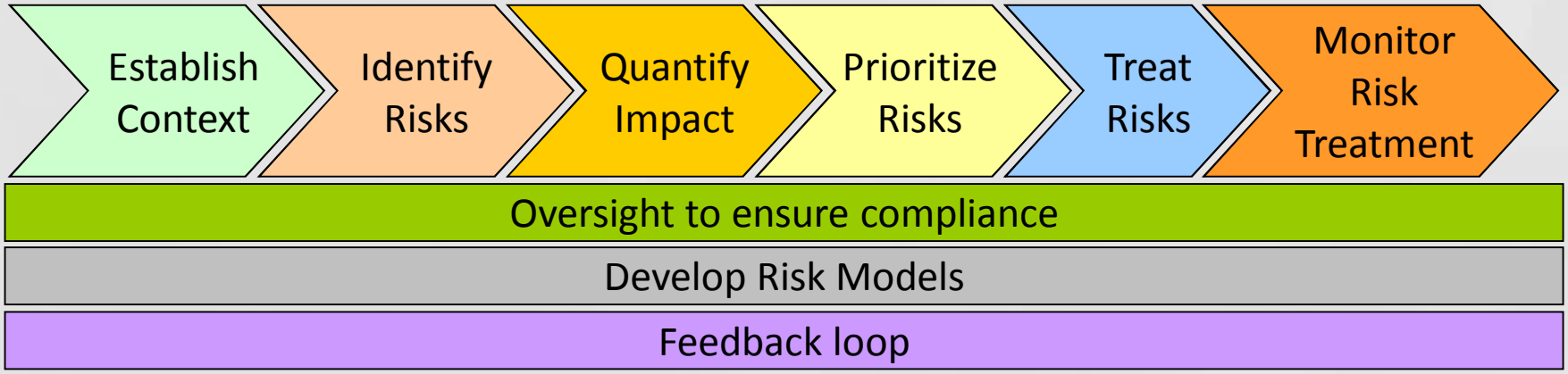
Risk Management Overview

- Risk management is not complex but is difficult to do well because of the nebulous nature of risks.
- An effective project risk management process consists of six discrete process steps
  - establish the context, identify risks, quantify risk impact, prioritize risks, treat risks, and monitor risk treatment.



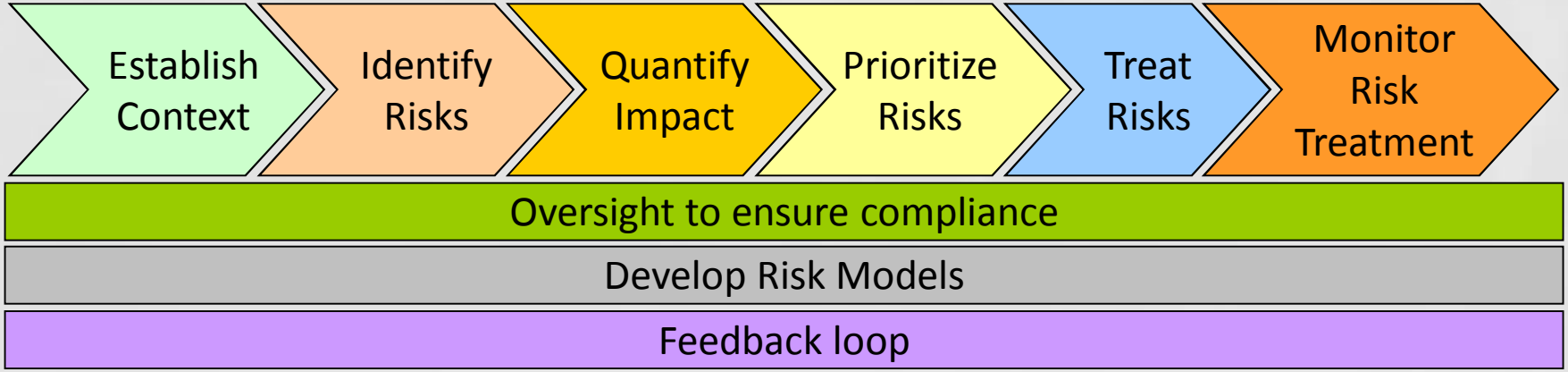
Risk Management Overview

- In addition to the discrete process steps effective project risk management must include three processes that transcend the entire risk management lifecycle;
  - oversight to ensure compliance, develop risk models, and feedback loop.



Risk Management Overview

ISO 16085



Risk Management Overview

Establish Context

- Objectives
- Assumptions
- Constraints
- Risk Thresholds
- Schedule
- Budget
- Quality
- Mission Accomplishment
- Initial Risk Profile
- Communicate Risk Status

Identify Risks

- Don't confuse symptoms, conditions, events, etc. with the actual risk
- Don't confuse issues with risks
- Define risks based on the previously established context
- Proper risk identification is one of the most important critical success factors in risk management

Quantify Impact

- Objectively quantify impact (e.g. three-week schedule delay, $50,000 budget overrun, 500 hours of rework, etc.
- Subjective impact terms such as significant delays, reduced quality, substantial cost overrun are extremely problematic
- Quantifiable impact is a critical success factor affecting all aspects of risk management

Risk Management Overview

Prioritize Risks

- Risks should be prioritized based on impact to the project followed by probability of occurrence.
- Evaluate risks against previously established risk thresholds
- Evaluate each risk independently

Treat Risks

- Select one of the four risk treatment strategies; Avoid, Accept ,Mitigate, or Transfer.
- Treat risks based on previously prioritized risks
- Assumptions
- Constraints
- Risk Thresholds
- Schedule

Monitor Treatment

- Monitor risks throughout the life cycle
- Monitor previously established context elements for changes
- Monitor and evaluate the effectiveness of risk treatments
- Look for new risks

Risk Management Overview

Oversight

- Inadequate oversight leads to rapid degradation of effective risk management
- Oversight is required at both tactical and strategic levels
- Make risk management an integral part of all lessons learned and process improvement activities

Risk Models

- Risk models are one of the most valuable outcomes of risk management
- A risk model is a risk treatment plan that has been proven to be effective
- Risk models should include risk treatments that were applied but were found to be ineffective

Feedback Loop

- Involve all stakeholders
- Provide feedback constantly
- Substantiate feedback with quantifiable results

Risk Management Overview

Risk Management at a Glance
Implement a defined process
Properly identify project risks
Quantify risk impact using objective measures
Prioritize risks based on impact and probability
Develop a treatment plan
Monitor risk treatments
Develop reusable risk models
Provide oversight to ensure compliance
Implement an active feedback loop

Risk Management Overview

- Mini Workshop #1
  - Construct ISO 16085 process
  - Word Match

Work Breakdown Structure

- A Work Breakdown Structure (WBS) is…
  - What is going to be built
  - A project management technique for defining and organizing the total scope of a project, using a hierarchical tree structure
  - A defined a set of planned outcomes that collectively and exclusively represent 100% of the project scope

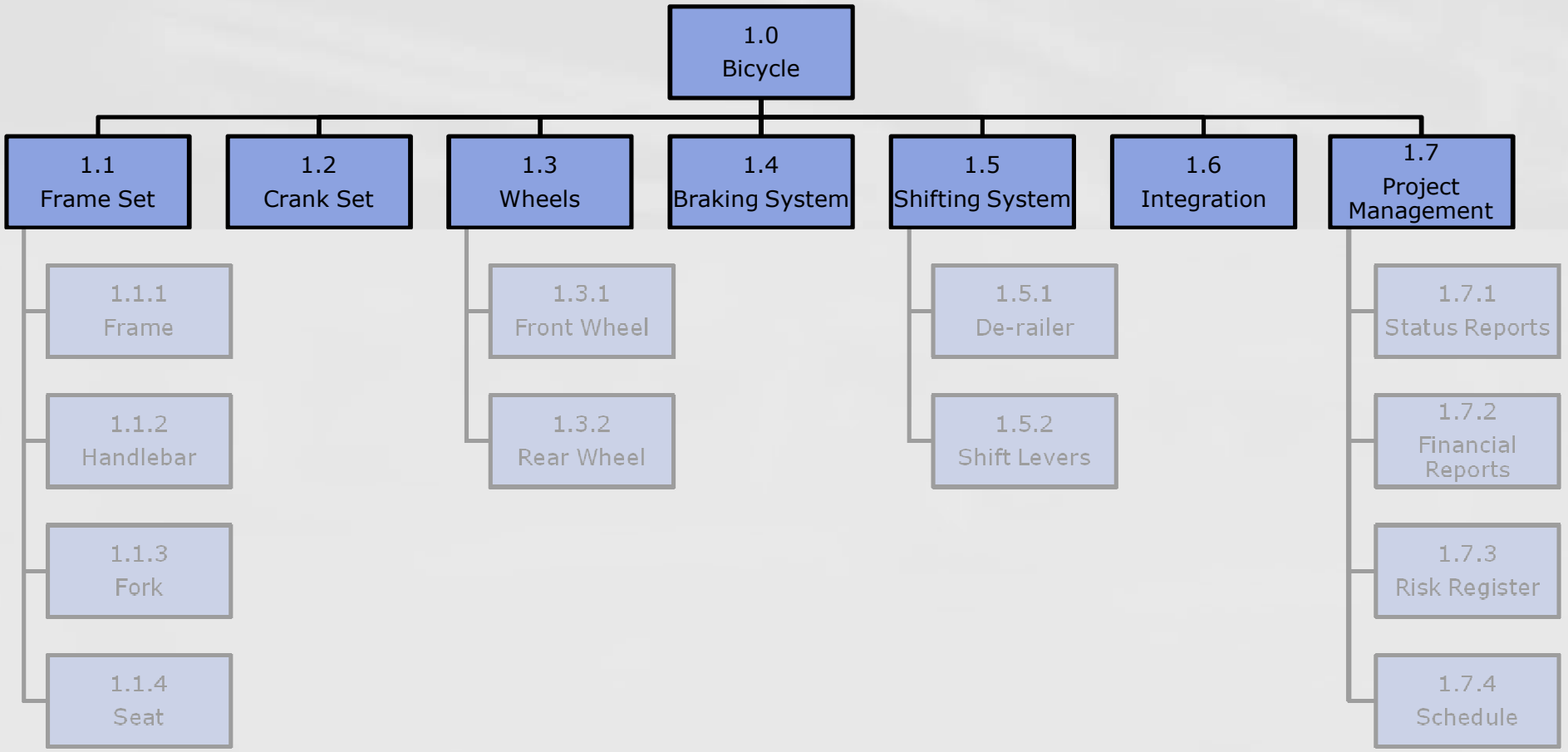
Work Breakdown Structure

- A WBS is…
  - A hierarchical structure where the first two levels of the WBS (the root node and Level 2) represent 100% of the scope
  - A scope management tool that describes planned outcomes (e.g. deliverables, milestones) not planned actions
  - Not overly prescriptive of methods

Work Breakdown Structure

- A WBS is not…
  - A description of how the product is going to be built
  - An exhaustive list of work or activities to perform
  - A project schedule

Work Breakdown Structure



Work Breakdown Structure

- One of the most important WBS design principles is called the 100% Rule.
- The Practice Standard for Work Breakdown Structures (Second Edition), published by the (PMI) defines the 100% Rule as follows:
  - The 100% Rule...states that the WBS includes 100% of the work defined by the project scope and captures ALL deliverables – internal, external, interim – in terms of the work to be completed, including project management.

Work Breakdown Structure

- 100% rule continued
  - The 100% rule is one of the most important principles guiding the development, decomposition and evaluation of the WBS.
  - The 100% rule applies at all levels within the hierarchy: the sum of the work at the “child” level must equal 100% of the work represented by the “parent” and the WBS should not include any work that falls outside the actual scope of the project

Work Breakdown Structure

- WBS Tips
- Do not carry action oriented details in the WBS
  - An action oriented WBS will likely include either too many actions or too few actions. Too many actions will exceed 100% of the parent's scope and too few will fall short of 100% of the parent's scope.
  - The best way to adhere to the 100% Rule is to define WBS elements in terms of outcomes or results. Focus on progress not, activity

Work Breakdown Structure

- WBS Dictionary
  - Fully describes each component of the WBS
  - Includes at least the following:
    - Brief definition of the scope, Deliverable(s), List of activities, and Milestone(s)
  - Optionally can include the following:
    - Quality requirements, responsible individual / organization, start and end dates, resources required, estimated cost, estimated effort, basis of estimate (BOE) and charge number.

Work Breakdown Structure

Attribute	Definition
WBS ID	1.9.3
Control Code	9502-001C
Name	Time Management
Description	Manage the project schedule to assure that deliverables, work products, milestones, etc. are on schedule to be delivered on time
Deliverables	Updated schedule
Work Package(s)	Weekly Effort Variance Analysis Report
Basis of Estimate (BOE)	
Activity List	Collect actual effort from team members Apply actuals to the schedule Conduct effort variance analysis Submit Change Request (CR) to the CCB based on variance analysis
Input(s)	Schedule ISR Timesheets
Dependencies	
Resource Requirements	Project Control Specialist

Work Breakdown Structure

Attribute	Definition	
WBS ID	1.9.4	
Control Code	9502-001D	
Name	Cost Management	
Description	Manage the project budget to assure that deliverables, work products, milestones, etc. are delivered within budget. Reconcile project budget with accounting system and prepare financial reports	
Deliverables	Updated schedule Monthly EVM Report Monthly Program Review Briefing	
Work Package(s)	Weekly Project Labor Report Weekly Project Travel Report	Weekly Variance Analysis Report Monthly Reconciliation Report
Basis of Estimate (BOE)		
Activity List	Update weekly financial data Conduct weekly financial variance analysis Reconcile project financials with labor, travel, and ODC accounting reports Prepare weekly financial report	
Input(s)	Schedule Monthly Forecast Report Monthly Accounting Reports	ISR Timesheets
Dependencies	9502-001C	
Resource Requirements	Project Control Specialist	

Work Breakdown Structure

Attribute	Definition
WBS ID	15.3.2
Control Code	1802-001C
Name	JAD Workshop
Description	Facilitate Joint Application Development (JAD) workshops and document the workshop results
Deliverables	JAD Workshop Documentation
Work Package(s)	Workshop #1, Workshop #2, Workshop #3, Workshop #4, Workshop #5
Basis of Estimate (BOE)	6 hrs / workshop * 5 workshops * 7 resources = 210 hrs 8 hrs / workshop to consolidate documentation * 5 workshops * 3 resources = 120 hrs 330 hrs total
Activity List	Collect background information Plan workshop interviews Schedule workshop Prepare for workshop Conduct workshop Document workshop results Prepare workshop documentation Distribute workshop documentation
Input(s)	Project Schedule
Dependencies	
Resource Requirements	Business Analyst

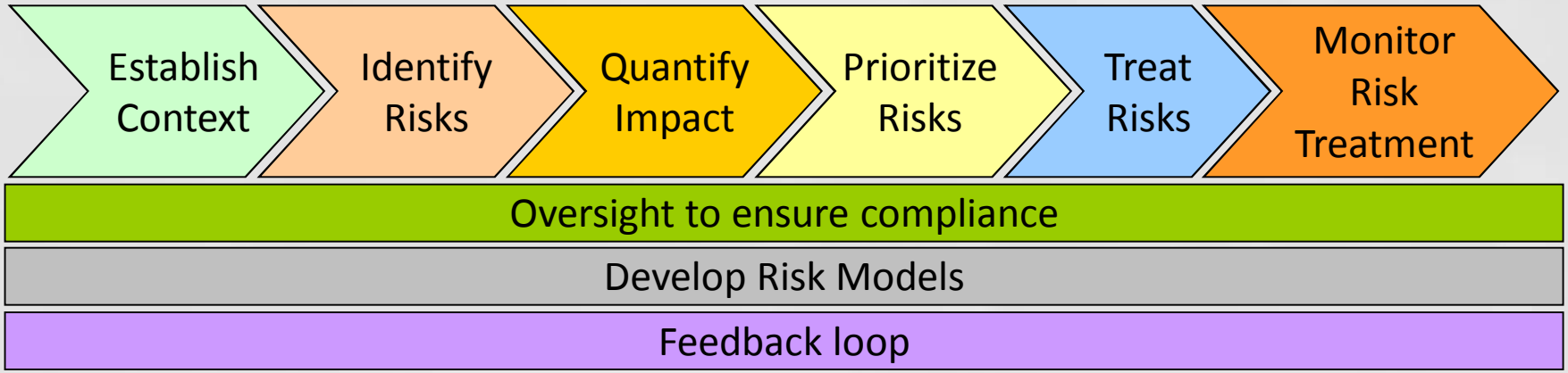
Work Breakdown Structure

Attribute	Definition	
WBS ID	2.1.3	
Control Code	9502-002G	
Name	Program Management Plan Evaluation	
Description	Evaluate Program Management Plan (PMP) in accordance with PMBOK	
Deliverables	PMP Evaluation Report Draft 1 Final PMP Evaluation Report	
Work Package(s)	PMP Evaluation Report Template Evaluation Plan Evaluation Schedule	Interview Notes Evaluation Checklists
Basis of Estimate (BOE)		
Activity List	Secure consensus on report format Prepare list of artifacts to review Prepare artifact evaluation checklists Prepare interview schedule Coordinate personal interviews Evaluate project management artifacts	Conduct Interviews Update evaluation checklists Prepare initial draft report Peer review draft report Prepare final evaluation report
Input(s)	Project Management Plan PMBOK, 4th Edition	
Dependencies		
Resource Requirements	Project Manager	

Work Breakdown Structure

- Mini Workshop #2
  - Construct WBS from sample Statement of Work (SOW)
  - Complete WBS dictionary Task 2 and Task 3 of the SOW

Practical Risk Management Approach



Practical Risk Management Approach

- Confine the scope of risk management to a specific project
- Limit context to project's budget, schedule, quality, and mission accomplishment.

Establish Context

Practical Risk Management Approach

- One of the greatest challenges to effective project risk management is the proper identification of risks
- Project risks frequently have a variety of symptoms, conditions, events, etc. which indicate that a risk is present
- Key Point - Recognize the difference between risks and conditions or events that can not be mitigated

Practical Risk Management Approach

- There are five basic questions that can be asked to help identify project risks:
  - Is there a schedule impact?
  - Is there a budget impact?
  - Is there an impact to quality?
  - Is there an impact to our ability to accomplish the mission?
  - Can impact be objectively quantified?

Practical Risk Management Approach

- Risk impact must be objectively quantified
  - three-week schedule delay
  - $50,000 budget overrun
  - 500 hours of rework
- Subjective quantification is extremely problematic
  - “Significant delays”
  - “reduced quality”
  - “Substantial cost overrun”

Quantify Impact

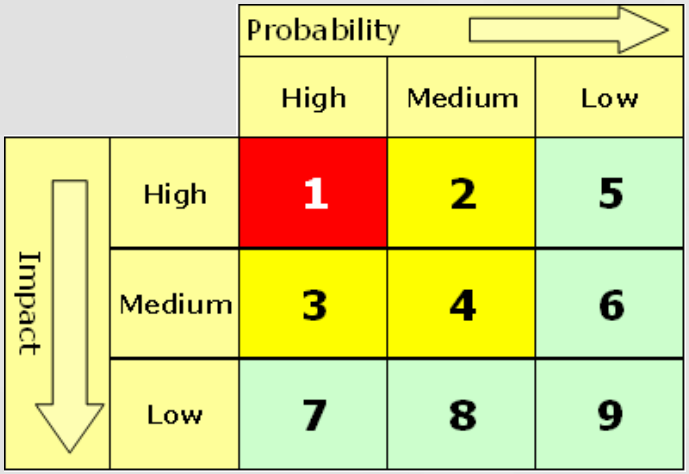
Practical Risk Management Approach

- Quantifiable impact is crucial when monitoring risks since it makes little sense to spend $100K to mitigate a risk that will cost $50K if the risk is realized
- It is possible that a risk can affect multiple aspects of the project;
  - schedule delay could also impact the budget
  - In order to effectively mitigate the risk it is important to understand the driver(s)
    - Time to market or budget?

Quantify Impact

Practical Risk Management Approach

- Prioritizing risks will yield the most value to the project team by focusing risk management effort on the high impact risks
- Prioritize risks based on impact to the project followed by probability of occurrence



Prioritize Risks

Practical Risk Management Approach

- Objective quantification of risk parameters must be established
- Impact parameters require a quantified value for each context

Context	Impact	Parameter
Schedule	High	> 6 Weeks
	Medium	2 – 5 Weeks
	Low	< 2 Weeks
Budget	High	> $100,000
	Medium	$50,000 - $99,999
	Low	< $50,000
Quality	High	> 1,000 Hrs Rework
	Medium	500 – 999 Hrs Rework
	Low	< 500 Hrs Rework
Mission	High	Failure chance >65%
	Medium	Failure chance 35%-65%
	Low	Failure chance < 35%

Practical Risk Management Approach

- Determine risk management strategy
  - Avoid
  - Transfer
  - Mitigate
  - Accept
- Develop a treatment plan

Treat Risks

Practical Risk Management Approach

- consider the following scenario:
  - A key deliverable on the critical path has been subcontracted to an organization that has a reputation for late delivery
  - What are the risks?

Practical Risk Management Approach

Risk	Resources Requirements	Proposed Action	Timing	Performance measures	Reporting and Monitoring
Schedule delay > 2 weeks due to late delivery by supplier	Contract Specialist (CS) Project Manager (PM)	Develop performance based contract with supplier(s)	Prior to project start		N/A
		Establish weekly milestones	Prior to project start		N/A
		Conduct weekly progress reviews	Weekly - ongoing		Weekly Progress Report
		Identify alternate supplier(s)	30 days prior to the trigger point		Project Schedule
		Establish a trigger point for engaging alternate supplier(s)	Prior to project start		Project Schedule
		Engage alternate supplier(s)	• Earned value is < 90% at the trigger point OR • Earned value is < 75% at weekly progress review	Earned value	In accordance w/Communication Plan

Treat Risks

Practical Risk Management Approach

- There are two categories of risk monitoring; tactical and strategic
- Tactical monitoring occurs day to day and is typically conducted by the project team
  - Tactical monitoring should evaluate actual progress against performance measures in the treatment plan
  - Trigger points should be monitored on a daily basis

Practical Risk Management Approach

- Strategic monitoring is typically conducted as part of management reviews, during internal or external audits, and at the end of projects.
  - Strategic monitoring is forward looking and focuses on long-term process improvement
  - An important aspect of strategic monitoring is post-project risk analysis
    - Risk analysis evaluates the results of risk treatment plans and their associated performance measures looking for patterns and anomalies

Practical Risk Management Approach

- For project risk management to be effective the process must be enforced at both the tactical and strategic level.
- Effective oversight of the tactical risk management process is a combination of Quality Assurance reviews and Management reviews.

Oversight to ensure compliance

Practical Risk Management Approach

- Oversight of the strategic risk management process requires rigorous process compliance
  - most effective in organizations that support formal Quality Management procedures
- Without adequate oversight, the effectiveness of organizational risk management can quickly deteriorate

Oversight to ensure compliance

Practical Risk Management Approach

- One of the most important outcomes of the risk analysis process are risk models.
- A risk model is simply a risk treatment plan that has been proven to be effective for a recurring risk.
- A risk model will contain proven mitigating strategies, resources, proposed actions, triggers, performance measures, and reporting information.

Practical Risk Management Approach

- The risk model should also include risk treatments that were applied but were found to be ineffective
- Risk models can be developed based on a variety of factors (e.g. methodology, project size, team size, technology stack)
- The real value of the risk model is that effective actions are validated and ineffective actions are documented so that subsequent project teams can focus on proven treatment plans

Practical Risk Management Approach

- An organization can derive tremendous value from project risk management with an active feedback loop
- An active feedback loop is characterized by processes that “push” information throughout the organization as risk models and lessons learned are develop or modified
- Wiki or other collaboration software are excellent tools for providing active feedback to project teams, especially distributed teams

Feedback loop

Practical Risk Management Approach

- Mini Workshop #3
  - Word Match

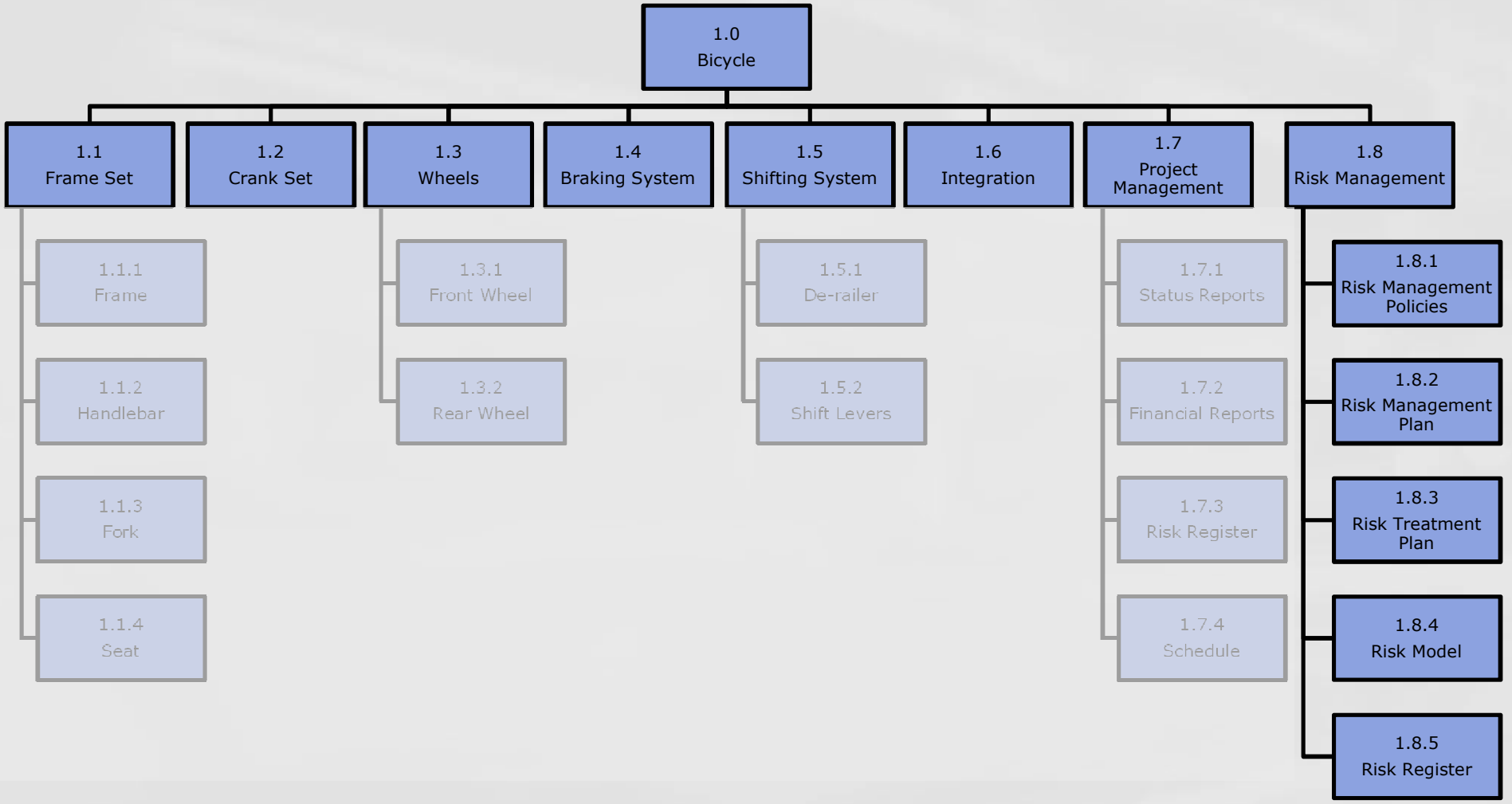
The Role of Quality

- Assure that a risk management process is defined
  - Preferably in accordance with an industry standard such as ANZ 4360 or ISO / EIC 16085 and aligned with the PMBOK
- Assure that the risk management process is executed as defined
- Assure there is adequate oversight for both tactical and strategic components of risk management

The Role of Quality

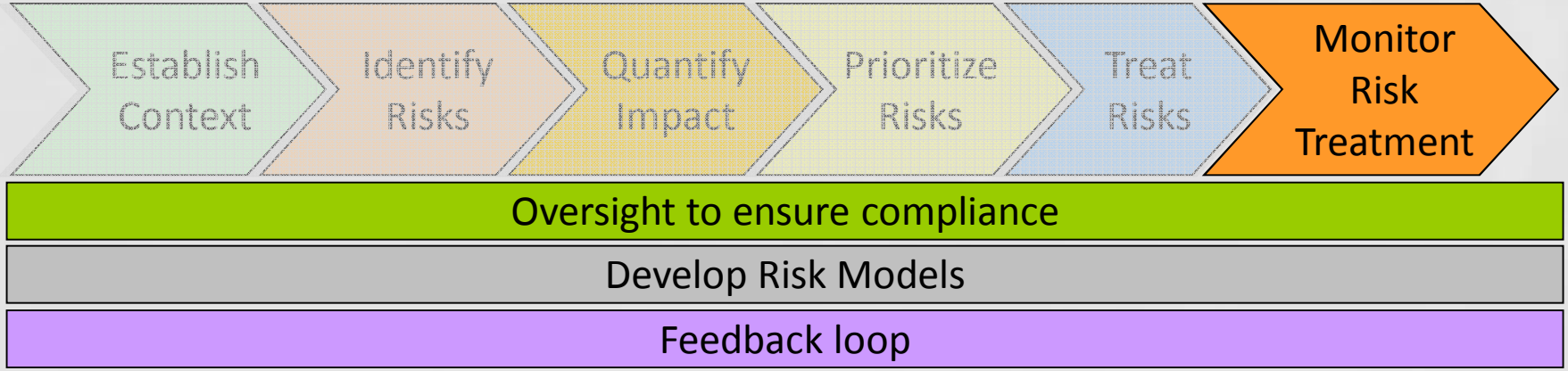
- Assure that risk management activities persist after the project is complete so that risk models can be developed, verified, validated, and fed back into the lifecycle processes
- Make sure that project schedules include risk management tasks and activities

Putting It All Together



Putting It All Together

ISO 16085



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Thank You

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