



PMI® AUTHORIZED PMP® EXAM PREP COURSE

May 2021 Release



WELCOME

Thank you for joining the PMI Authorized PMP Exam Prep course!

If you've earned your CAPM® certification with us, welcome back.

Or if you're coming from another project management background, certification, or work experience, we are pleased to welcome you to PMI's community of learning.

We are proud of our 50-year history of peer-to-peer learning and membership and wish you the best of luck as you undertake your PMP exam preparations.



Your Instructor

[Instructor name]

[Instructor Contact Information]

[x] years of



Student Introductions



You, Getting Certified

- Four-year degree
- 36 months leading projects
- 35 hours of project management education/training or CAPM® Certification

- OR -

- A high school diploma or an associate's degree (or global equivalent)
- 60 months leading projects
- 35 hours of project management education/training or CAPM® Certification



The project economy backs the most important work all over the world.



No matter where you are in the world, learning our core principles means you have a guided, lifetime practice in project management.

The New PMP® Exam

The new PMP exam includes content that spans the value delivery spectrum, including **predictive**, **agile**, and **hybrid** approaches. It's been updated to reflect the fuller complement of skills and approaches found in our dynamic and global profession.

Just like the sides of PMI's Talent Triangle®, we focus on three new performance domains in project management:

People, Process, and Business Environment



Learning Topics

The learning topics in this training come directly from the PMP exam content outline (ECO).

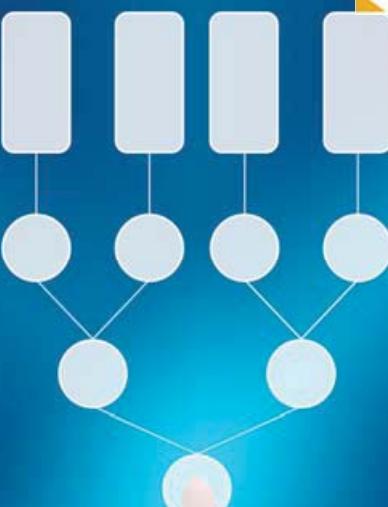
The ECO was updated by PMI membership and includes what they think you need to know to do the job. This encompasses experience and broader business concepts.

The ECO is the basis for the new PMP exam, which went live in January 2021.



The New PMP® Exam Format

- 180 questions
- 230 minutes to complete the exam with a total of two, 10-minute breaks for computer-based tests. Paper-based exams have no breaks.
- Questions are multiple-choice, multiple response, matching, hotspot, and even some fill-in-the-blank.



Contents



Lesson 1
Creating a
High-Performing
Team



Lesson 2
Starting the
Project



Lesson 3
Doing the Work



Lesson 4
Keep the Team
on Track



Lesson 5
Keeping the
Business in
Mind



Let's Get to Work!



LESSON 1

CREATING A HIGH-PERFORMING TEAM

- Build a Team
- Define Team Ground Rules
- Negotiate Project Agreements
- Empower Team Members and Stakeholders
- Train Team Members and Stakeholders
- Engage and Support Virtual Teams
- Build a Shared Understanding about a Project



Build a Team

TOPIC A

CREATING A HIGH-PERFORMING TEAM > BUILD A TEAM

Deliverables and Tools



Skills list
Technology
Resource Management Plan
Rates
Resource assignment



RACI matrix
Pre-assignment tools
Virtual teams

Project Resource Management includes the processes to identify, acquire and manage the **human resources** needed to successfully complete a project.



Project Team



DEFINITION

A set of individuals who support the project manager in performing the work of the project to achieve its objectives.

Project Teams

To assemble your high-performing project team:

- ✓ Estimate, acquire, and manage teams of people as well as human resources required outside of the team - special skills.
- ✓ Create an effective team environment with excellent communication and talent development capabilities.
- ✓ Track team performance, create and execute improvements based on feedback, resolve issues, and manage team personnel changes.



Project Team Member Requirements



Ensure relevant skill sets to perform work and produce the desired results.

Avoid single-points-of-failure e.g. a single resource has a required skill.



Leverage core competencies and skills of general specialists to support other areas of the project.



Adequate physical resources e.g. equipment

Other requirements e.g. access rights

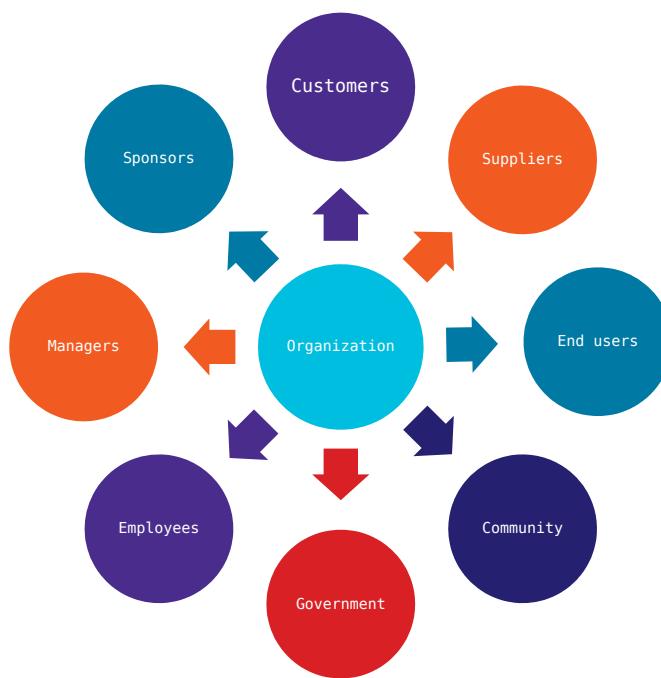
Stakeholder



DEFINITION

An individual, group, or organization that may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project, programs, or portfolio.

Project Stakeholders



Stakeholder Identification



Identify the People

- ✓ Usually done during project charter development; continues as needed.
- ✓ Analyze and document stakeholder interest, involvement, interdependencies, influence, and potential impact on project success.
- ✓ Look for additional stakeholders in change logs, issue logs, or requirement



Create the Register

- ✓ The stakeholder register may be affected by organizational environment factors.
- ✓ Project plans should describe stakeholders and the planned engagement model.
- ✓ Refer to stakeholder registers from previous projects.

21



Stakeholder Identification - Tools & Techniques

- ✓ Expert judgment
- ✓ Data gathering
 - Questionnaires and surveys
 - Brainstorming
- ✓ Data analysis
 - Stakeholder analysis
 - Document analysis
- ✓ Stakeholder mapping
 - Two-dimensional grids
 - Power/interest
 - Power/influence
 - Impact/influence
 - Stakeholder cube
 - Directions of influence
- ✓ Meetings

22

Stakeholder Register



DEFINITION

A list of individuals or organizations who are actively involved in the project, whose interests may be negatively or positively affected by the performance or completion of the project and whose needs or expectations need to be considered.

Stakeholder Register

STAKEHOLDER REGISTER

Name	Organization	Project Role	Major Requirements	Expectations	Influence	Areas of Interest	Internal/External	Supporter?
Linda Michaels	CEO	Sponsor	Budget, schedule, quality	Community involvement	Major	Community	Internal	Yes
Ron Gordon		Mortgage lenders		Growth	Major	Development	External	Yes
	Community		Neighborhood improvements		Minor	House	External	Yes
Andrews family		Homeowners		Engage family and friends				Yes
	Lumber warehouse	Vendor			Major	Locally sourced supplies		
		Project Manager		Project goes as planned	Major	All	Internal	Yes

RACI Chart



DEFINITION

A common type of responsibility assignment matrix (RAM) Responsible, Accountable, Consulted, and Informed statuses define the involvement of stakeholders in project activities.

RACI Chart - Example

	Project Manager	Engineering Manager	Quality Assurance Manager	Purchasing Manager	Manufacturing Manager
Create blueprints	A	R	C		C
Manufacture circuit board	I	A	C		R
Test circuit board	I	R	A		C
Order components	C	C	I	R	A
Assemble	I	C	C		R

R = Responsible A = Accountable C =
Consulted I = Informed

Team Skills Appraisal

Appraisals enable the team to **holistically identify its strengths and weaknesses, assess opportunities for improvement, build trust, and establish effective communication.**

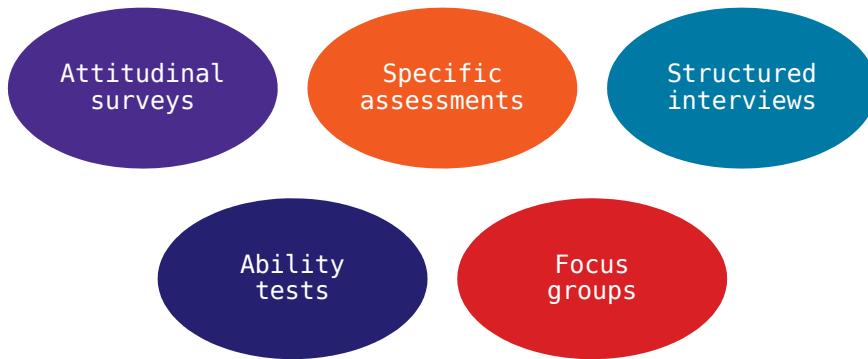
Appraisals might identify:

- ✓ Team preferences
- ✓ Aspirations
- ✓ Information processing and organization
- ✓ Decision making processes
- ✓ Interactions with other team members



Pre-Assignment Tools

Assess candidates before assigning and confirming team roles.



Diversity, Equity and Inclusion

Project teams are global and diverse in **culture, gender, physical ability, language, etc.**

Create an environment that **optimizes the team's diversity** and builds **climate of mutual trust**.

Team development objectives should:

- ✓ **Improve trust** to raise team morale, reduce conflict, and support teamwork.
- ✓ Create a **collaborative culture** to improve individual and team performance and facilitate cross-training and mentoring.



Resource Management Plan



DEFINITION

The project document that identifies resources and how to acquire, allocate, monitor, and control them.



Resource Management Plan



Roles and Responsibilities

- ✓ Role – A person's function in a project
- ✓ Authority - Rights to use resources, make decisions, accept deliverables.
- ✓ Responsibility - Assigned duties
- ✓ Competence - Skills and capacities required

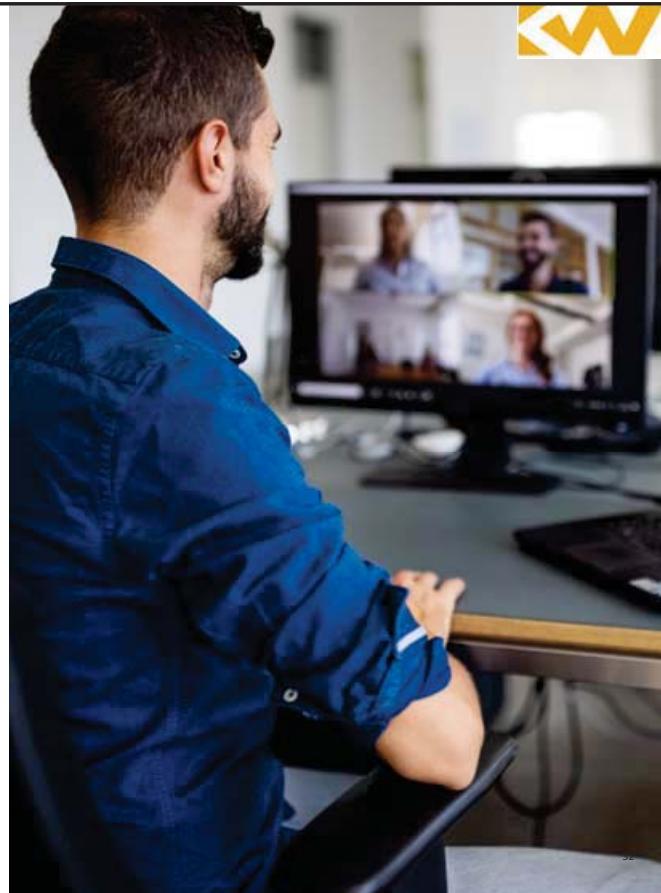


What's in the Plan

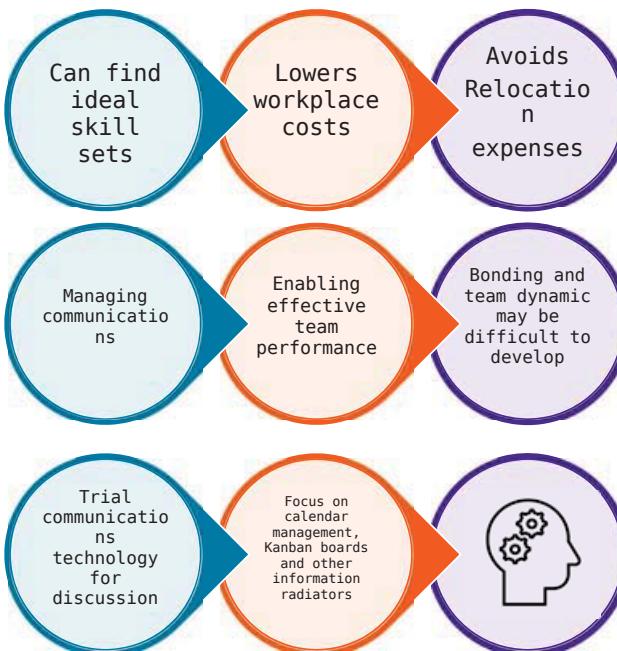
- ✓ Project Organization Chart – visualization of team and reporting relationships
- ✓ Project team resource management - Team resource guidance – How to define, staff, manage, and release.
- ✓ Training strategies and requirements
- ✓ Team development methods
- ✓ Resource controls – To manage physical resources
- ✓ Recognition Plan - To reward/recognize team members³¹

Virtual Teams

- ✓ Team members share goals but spend little or no time meeting face-to-face.
- ✓ Addressing their needs takes some different skills.



Virtual Team Considerations



Assign Project Responsibilities

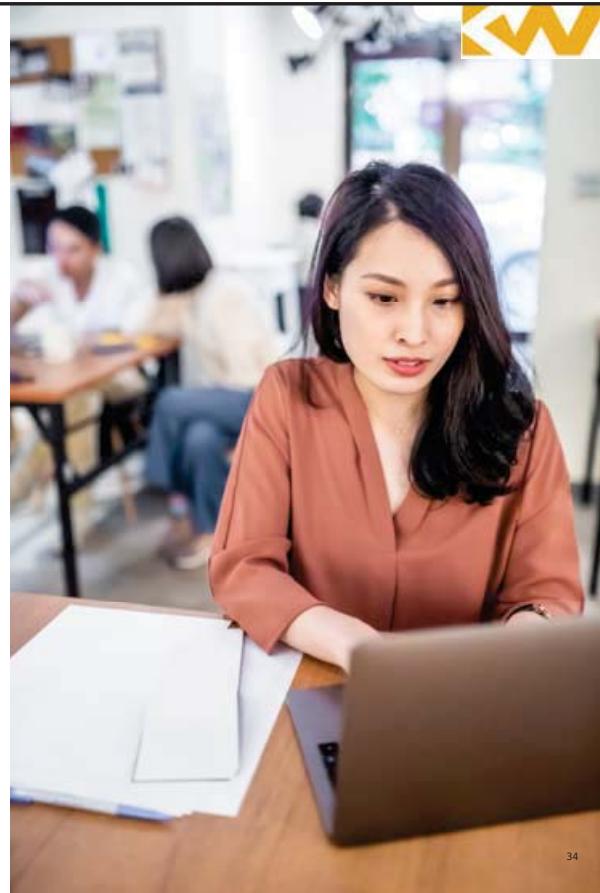
Tailor according to team, needs, project.

Consider **technical and “soft” factors**:

- Experience, knowledge, skills
- Attitude, global/regional representation

Agile - Self-organizing teams assess work requirements and determine who will do the work.

Traditional – You assign work to team members with a work breakdown structure (WBS).

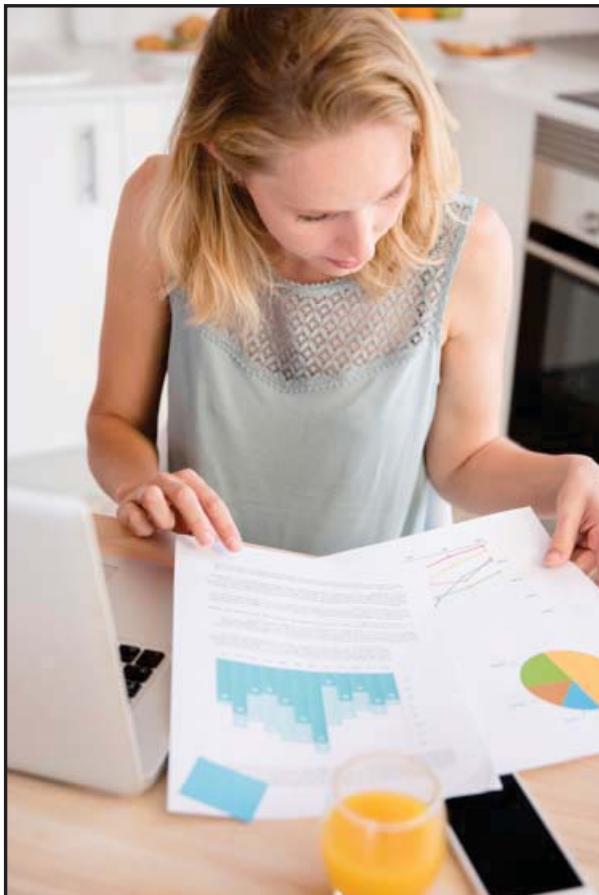


Rates

The project manager is responsible for considering resource cost factors.

Meet resource requirements cost-effectively and based on:

- ✓ Project needs
- ✓ Suitability of the Resource
 - Availability
 - Experience
 - Knowledge
 - Skills
 - Attitude
 - Regional or linguistic representation



Resource Assignment

Create a project management plan that includes:

- ✓ Team members assigned to the project
- ✓ Their roles and responsibilities
- ✓ Project team directory
- ✓ Project organization charts
- ✓ Project schedules

Nurturing Team Performance

Ensure the team has the **knowledge, skills, attributes, and experience** required to produce positive project outcomes.

Gain a better understanding of customer needs and team capabilities to **identify gaps in the team's skill set**.

Check for these gaps frequently and seek to close them. Try:

- ✓ New or better resources
- ✓ Training to enable the team to develop missing skills
- ✓ Additional customer engagement to gather data



Knowledge Transfer In and Between Teams



Facilitate collaboration and promote visibility of work.

Manage knowledge sharing among team members, especially on virtual teams.



Check the team charter for knowledge sharing methods, including:

- ✓ Frequency of updates
- ✓ Version control
- ✓ Supporting tools and agreed approach to



Use information radiators to provide seamless visibility into project status across the stakeholder community.





Define Team Ground Rules

TOPIC B



35

CREATING A HIGH-PERFORMING TEAM > DEFINE TEAM GROUND RULES

Deliverables and Tools



Team charter
Team norms



Negotiation skills
Conflict management
Brainstorming
Ethics



40

Team Norms

Establish expected team behaviors at the beginning of the project.

Enable teams to handle challenges as the project progresses.

Include guidelines and techniques for:

- ✓ Meetings
- ✓ Communications
- ✓ Conflict management
- ✓ Shared values
- ✓ Decision-making

Align with PMI's Code of Ethics and Professional Conduct



Code of
Ethics and Professional
Conduct



41

PMI
Code of
Ethics
and
Professio
nal
Conduct



Code of
Ethics and Professional
Conduct



42

Team Charter



DEFINITION

A document that enables the team to establish its values, agreements, and practices as it performs its work together.

Team Charter

Includes:

- ✓ Shared values
- ✓ Guidelines for communications and use of tools
- ✓ Decision-making guidelines
- ✓ Conflict resolution measures
- ✓ Meeting time, frequency, and channel
- ✓ Other team agreements e.g. shared hours, improvement activities

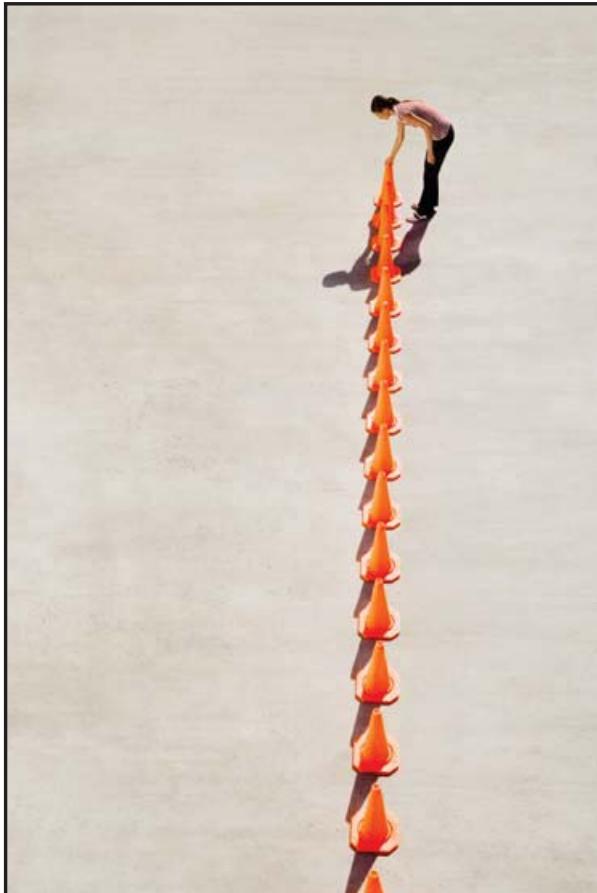


Ground Rules



DEFINITION

As defined in the team charter, clear expectations set, regarding the code of conduct for team members.



Ground Rules

Includes what's acceptable and unacceptable for team behavior

Benefits:

- ✓ Sets performance and communication expectations
- ✓ Decreases risk of confusion
- ✓ Improves team performance

Negotiation Skills

Includes internal and external conversations towards reaching agreements.

Determine reliable methods to ensure communication is aimed at reaching consensus. This keeps the team culture healthy.

Team members might negotiate:

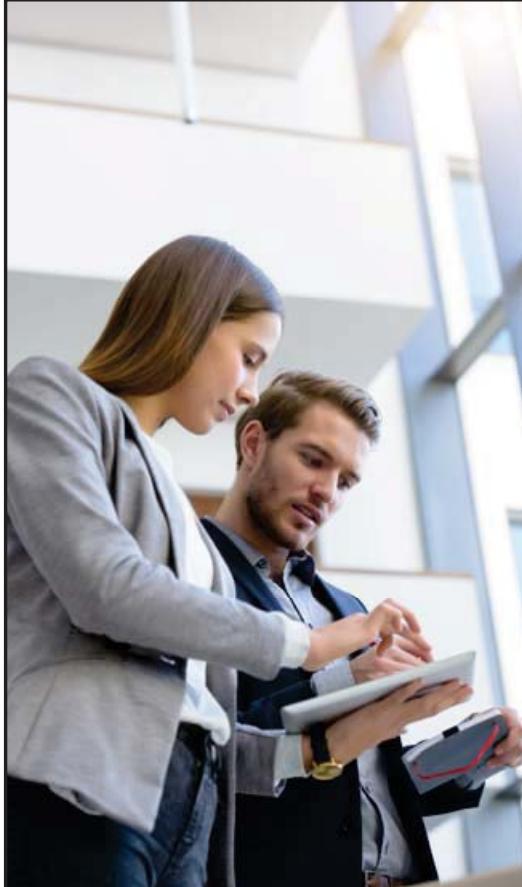
- ✓ Roles and responsibilities
- ✓ Priorities
- ✓ Assignments



47



Internal and External Team Member Communication



- ✓ Communicate **regularly**
- ✓ **Collaborate** between team and external teams or stakeholders
- ✓ **Manage expectations** effectively among stakeholders
- ✓ Include communication protocols in **Team Charter**:
 - **Internal**: team meetings, shared calendars, etc.
 - **External**: stakeholder feedback, dependency management, alignment with goals or expectations

48

Conflict Management

Apply strategies or resolution methods to deal with disagreements



Leads to improved understanding, performance, and productivity



Ineffective conflict management leads to:

- Destructive behavior
- Animosity
- Poor performance
- Reduced productivity



GUIDELINES

Manage and Rectify Ground Rule Violations

- Establish ground rules in the Team Charter. Focus on core values including accountability, shared expectations, and transparency
- Team and project manager respond to violations of the ground rules.
- For serious violations, you may need to remove or replace the offending team member.





Negotiate Project Agreements

TOPIC C



51

CREATING A HIGH-PERFORMING TEAM > NEGOTIATE PROJECT AGREEMENTS

Deliverables and Tools



Service Level Agreement
Performance report
Resource calendars
Go-Live Blackouts



Negotiation skills
Expert judgment
Lessons learned

Project Agreement Objectives

Reporting and verification criteria for objectives are an important part of the project agreement.

Traditional – Identify each deliverable and objective acceptance criteria for each.

Agile – Deliverables will vary as the product backlog is added to, reprioritized, and so forth.

Each story needs to have clearly defined acceptance criteria approved by the customer.

The project may also specify a **Definition of Done** for the project, releases, iterations, and user stories.



53

Agreements

Agreements define **initial intentions** for a project. These can be:

- ✓ Contracts - used for external customers
- ✓ Memorandums of understanding (MOUs)
- ✓ Service level agreements (SLA)
- ✓ Letters of agreement or intent
- ✓ Verbal agreements
- ✓ Email



Sample Service Level Agreement

Service Scope and Description Statement

The agreement covers the provision and support of a Service, which provides end user computer support. The DESKTOP COMPUTING SERVICE consists of the hardware, software, and supporting infrastructure for user personal computers running the Windows operating system.

Service Availability

Desktop Service is required along with Network/Intranet for access to other services. Required availability for these services is 99.5 percent uptime not counting planned maintenance times. The 99.5 percent availability metric will be measured by a rolling 6-month period.

Reliability

The service is guaranteed not to break more than three times per year. A break is defined as the loss of access to a vital business function.

Service Performance

Designed for high performance, the desktop should not keep the user waiting for response to an input for more than two minutes out of any five-minute window. Any failures must be reported to the Service Desk for incident resolution.

Change Management Procedures

Any proposed change by the Customer must be submitted through the Service Desk for review. A notice of acceptance/denial and reason for such must be within five business days of the next CAB meeting for Normal changes or three days for Standard changes. Emergency changes will be dealt with immediately by the Service Desk Manager.

Service Reviews

Reviews of the service will be conducted by the Service Level Management in conjunction with the Customer at least annually as well as after a major outage or change.

54

Always aim to reach an agreement during negotiations.



Negotiation Strategy

Procurement manager drives negotiations for the exact parameters of a contract.

Project manager and project teams engage in negotiations.

Agile - Exact deliverables will vary as the customer modifies, adds, and reprioritizes items in the product backlog.

Therefore, define clearly delineated ways to ensure agreed performance levels.

Traditional – An important objective clearly designates the project's intended deliverables and how they will be measured and compensated.



Negotiations

Documents used either in reaching an agreement or produced as the result of an agreement:

- ✓ A statement of work or major deliverables
- ✓ A schedule with milestones and dates
- ✓ Performance reporting expectations
- ✓ Pricing and payment terms
- ✓ Inspection, quality requirements, and acceptance criteria
- ✓ Warranty and future support
- ✓ Incentives or penalties
- ✓ Insurance and performance bonds
- ✓ Subcontractor approvals
- ✓ Terms and conditions
- ✓ Change request handling
- ✓ Termination clauses and dispute resolution



57

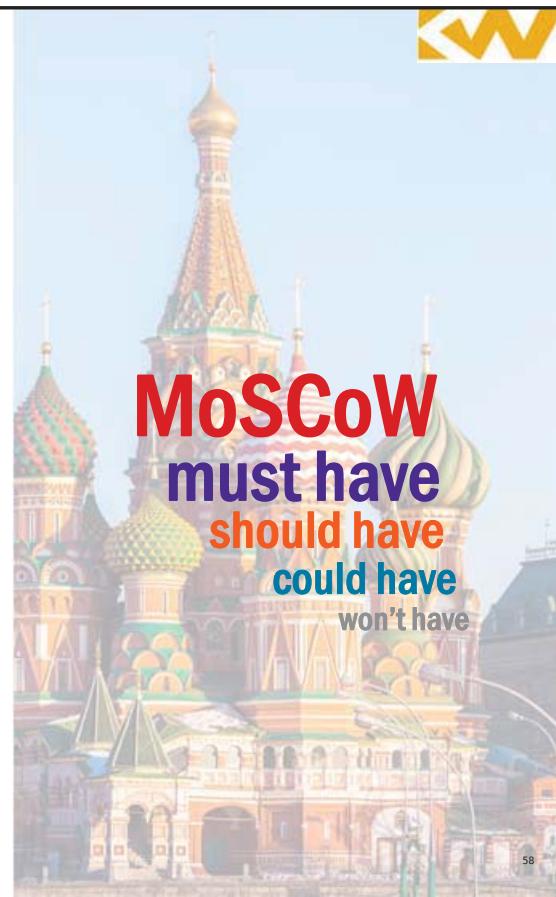


Prioritization Techniques to Determine Objectives

Use appropriate methods to learn the order of work that needs to be done.

These can include:

- ✓ Review product backlog
- ✓ Kano Model
- ✓ MoSCoW (MSCW) Analysis
- ✓ Paired Comparison Analysis
- ✓ 100 Points Method



58

Performance Reports



- ✓ Percentage of work completed
- ✓ Quality and technical performance metrics
- ✓ Start and finish of scheduled activities
- ✓ Change requests
- ✓ Defects
- ✓ Actual costs and durations



Work performance data is integrated and contextualized to:

- ✓ Generate decisions
- ✓ Raise issues, actions, and awareness



Agile projects, include:

- ✓ Completed and accepted stories
- ✓ Product backlog progress
- ✓ Comparison of stories delivered and iteration plans

Expert Judgment



DEFINITION

Judgment based upon expertise in an application area, knowledge area, discipline, industry, etc., as appropriate for the activity being performed. Such expertise may be provided by any group or person with specialized education, knowledge, skill, experience, or training.

Expert S

Experts who can provide judgment include:

- ✓ People from other areas of the organization
- ✓ Consultants
- ✓ Stakeholders
- ✓ Professional and technical associations



Resource Calendars



DEFINITION

Identify working days, shifts, and when specific resources are made available to the project.



Resource Calendars



Determine **available resources** (people, equipment, material, etc.) during a planned activity period.

Use when **estimating project activities**.

Identify key resource attributes (skills and experience levels) to ensure that **appropriate and required resources will be available** for different aspects of the project.

63



Lessons Learned Register



DEFINITION

A project document used to record knowledge gained during a project so that it can be used in the current project and entered in the lessons learned repository.

Lessons Learned

Identify specific improvements that will improve the team's overall efficiency and effectiveness.

Agile teams hold a **retrospective** at the end of each iteration to identify potential issues, identify potential solutions, and improve the processes the team uses to improve its overall performance.



Special Intervals

Projects may require scheduled “down” time from work for various reasons. Negotiate how and when these will take place according to project and team needs.

For example:

Black-Out times when deliverables are handed over for implementation.

- ✓ Suspends changes
- ✓ Reduces risks as the solution is released to customers
- ✓ May be negotiated in advance based on the overall project schedule and timeline.

“**Go Live**” occurs at the end of the project timeline.

Agile – Uses iterations, or numerous releases of aspects of the solution over the project's timeline, and black-out times, if needed, will be negotiated as the project approaches a release threshold.⁶⁷



Empower Team Members and Stakeholders

TOPIC D

Deliverables and Tools



Decisions
Estimates



Team decision-making tools
Brainstorming
Fist of Five
Roman voting
Polling
Planning poker
Dot voting
Retrospective



69

Team Strengths

When forming teams, it's critical to understand the skills and competencies needed to perform project work and produce deliverables.

Identify team strengths and weaknesses to **organize around team strengths**.

As teams progress, leverage team members' skills to improve team performance.



70

Team Decision-Making Tools



Deciding how you will work together is important. While the Team Charter addresses decision-making and conflict resolution criteria, the **team will establish their own norms**.

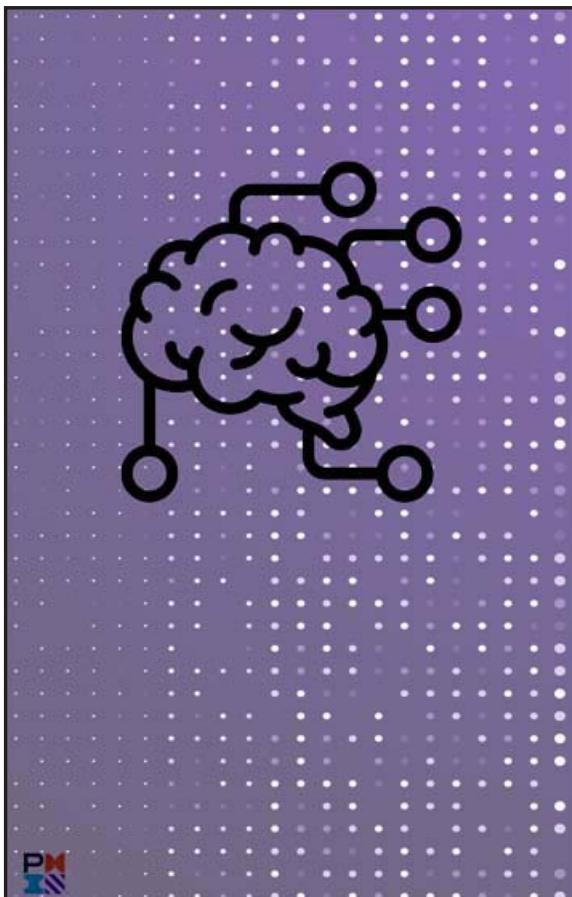
For example, seeking consensus may be highly desirable, but decide how to respond when consensus can't be reached.

The team can decide in advance to take the highest estimate in case of persistent disagreements.

Any project team should establish its own **Way of Working (WoW)**.

71

Brainstorming



An **ideation technique** for teams.

A facilitator works with the team to identify potential solutions to a given problem.

Team performs various types of analysis to select the most appropriate alternatives.

72

Estimates

People doing the work should be estimating tasks because they know:

- ✓ the risks
- ✓ the level of effort
- ✓ the potential pitfalls

Traditional - Use hours of effort.

- ✓ Three-point estimating asks the estimators to provide the most likely (t_M); optimistic (t_O); and pessimistic (t_P) estimates then divide by three:

$$t_E = (t_O + t_M + t_P) / 3$$

- ✓ Other methods include analogous, parametric, bottom-up estimating

Agile - Avoid using absolute time estimates.

Story Point technique uses points, not time units, to estimate the difficulty of implementing a user story. It's an abstract measure of effort required to implement work.



73

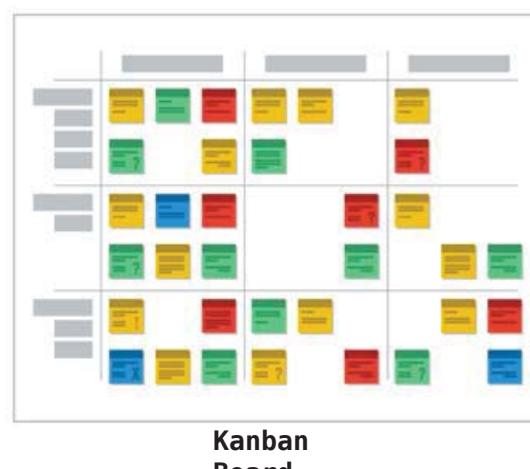
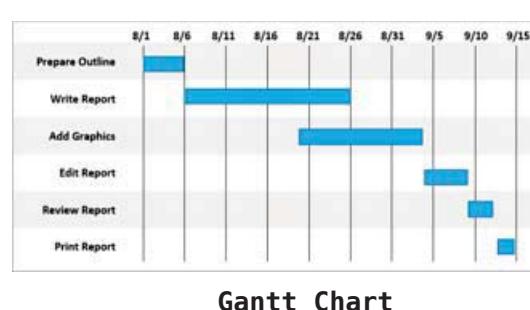
Team Task Accountability

Encourage team members to self-organize in determining:

- ✓ What work needs to be done
- ✓ How to perform the work
- ✓ Who should perform it

Use Gantt charts and Kanban boards to promote visibility and collaboration.

Agile - Team commits to performing work in an iteration.



74



Retrospective

- ✓ A regular check on the effectiveness of quality processes
- ✓ Look for the root cause of issues then suggest trials of new approaches to improve quality.
- ✓ Evaluate any trial processes to determine if they are working and should be continued, need adjusting or discontinued.



Retrospective



Set the Stage

Check-in activities to engage the team



Gather and Share Data

- ✓ Team Performance metrics
- ✓ Earned Value Analysis



Generate Insights

- ✓ What's working?
- ✓ Where are challenges?
- ✓ Problem analysis



Make Decisions

Agree on a few improvements or changes to try in the subsequent iteration



Close

- ✓ New information
- ✓ Appreciation
- ✓ Thanks



GUIDELINES

Evaluate Demonstration of Task Accountability

- Determine how to track and manage task accountability.
- Use a Work Breakdown Structure (WBS) to identify the tasks needed to produce the deliverables.
- Identify, track, and manage relevant tasks and assignees with a WBS dictionary (or work package).
- Agile – The team handles task identification and tracking as part of iteration planning.



77

**GUIDELINES**

Determine and Bestow Levels of Decision-Making Authority

- Team members should identify, plan, and manage tasks
- Teams performing work should also perform estimates for the work
- Empower teams to drive their own improvement



78





Train Team Members and Stakeholders

TOPIC E



79

CREATING A HIGH-PERFORMING TEAM > TRAIN TEAM MEMBERS AND STAKEHOLDERS

Deliverables and Tools



Training and mentoring plan
Training cost estimates
Training calendar
Training assessment
Certifications

Training gap analysis
Training
Pairing and mentoring

Training and Coaching Plan



81

Training and Coachi

Training focuses on building individual skills for use in the present.

Coaching helps develop well-rounded individuals through long-term professional relationships between novice and experienced employees.



82

Training and Coaching Plan

 Schedule training close to the time of solution implementation. This is critical to avoid delaying the overall solution.

 Perform a gap analysis to identify required knowledge, skills, or attributes.

 Consider upskilling or certification for team members. This ultimately benefits the project.

 Plan for a suitable diversity of training and coaching offerings.

T-Shaped Skills

Agile teams invest in becoming more cross-functional.

Leveraging all team members to help accomplish the team goals improves:

- ✓ The team's efficiency
- ✓ The likelihood of achieving objectives

Breadth of knowledge

Depth of knowledge



Required Competencies



- ✓ Identify required competencies prior to developing and executing a training plan.
- ✓ Competencies include knowledge, skills, and other attributes.
- ✓ Stakeholders have unique training needs.
- ✓ Train team members on the customer's business, culture, desired outcomes, and project context.

85

Elements of Training

Provided to teams, small groups, and individuals

Covers management, technical, or administrative topics

Delivery models:

- ✓ Instructor-led classroom
- ✓ Virtual classroom
- ✓ Self-paced e-learning
- ✓ Document reviews
- ✓ Interactive simulations
- ✓ On-the-job training



86

Training Options

Options	Description
Virtual Instructor-led training	<ul style="list-style-type: none"> • Live, online, instructor-led training through a virtual meeting or virtual training environment. • Simulated hands-on labs are possible.
Self-paced eLearning	<ul style="list-style-type: none"> • Content available to students online. This can include rich-media video, simulated lab exercises, etc. • This solution is scalable to a large number of students.
Document reviews	<ul style="list-style-type: none"> • For simple knowledge transfer, sharing relevant documents may be sufficient.

Training Cost and Schedule

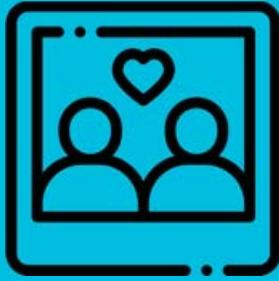
Consider the costs of training the project team and customer stakeholders as **part of the project budget**.

Use a training calendar to:

- ✓ Publish and support a specific calendar of training dates and locations.
- ✓ Publish schedule to customer stakeholders.
- ✓ Create a mechanism for registration and sending confirmation messages.
- ✓ Provide class rosters and a way to capture signatures of attendees.
- ✓ Manage the training schedule to avoid delaying the



Pairing and Coaching



Pairing customer stakeholders together reinforces the learning through collaboration.

Coaching enables an experienced team member to coach a less-experienced team member:



- ✓ Fosters team building and a collaborative environment.
- ✓ Relationships can be informal or ad-hoc, created by the individuals themselves or formally established by the organization.

89

Certifications

Demonstrate that knowledge and skills have been gained during training.

Industry credentials are portable and valuable to individuals and future employers.



PMP

CAPM

PgMP

PMI-ACP

Baseline and Post-Training Assessments

Baselining is a technique for measuring the efficacy of training.

- ✓ Attendees complete a pre-assessment **before** training.
- ✓ **After** training, use an assessment to demonstrate the newly acquired levels of competence.



91

GUIDELINES

Ensure Training Occurs

- Create awareness among stakeholders about available training.
- Invite people to attend training.
- Engage with customer to ensure commitment to employee training programs on the solution.
- Include confirmation of registration, a notification, and reminder before the training.
- Use rosters and capture signatures to confirm attendance and participation.



92



Engage and Support Virtual Teams

TOPIC F



93

CREATING A HIGH-PERFORMING TEAM > ENGAGE AND SUPPORT VIRTUAL TEAMS

Deliverables and Tools



Collaboration technology
Engagement assessments
Project or Resource
Calendar



Communication
Communication plan
Variance analysis
PM Powers

Collaboration Technology

Enables teams to plan, collaborate, and communicate.

Not a substitute for team planning activities.

Consider transparency requirements when selecting collaboration technology.

Collaboration tools might include:

- ✓ Shared task boards - To promote visibility
- ✓ Messaging and chat boards - To enable communication
- ✓ Knowledge repositories - To store shared documents
- ✓ Video-conferencing tools - For face-to-face communication



Virtual Team Member Needs

Facilitate and ensure collaboration as a priority.

Basic needs of a virtual team:

- ✓ Shared goals
- ✓ Clear purpose
- ✓ Clarity on roles and expectations

Virtual Team Member Engagement

Manage engagement by focusing on:

- ✓ Team dynamics
- ✓ Transparency
- ✓ Accountability
- ✓ Attention to effective communication

Use videoconferencing tools to facilitate active participation and the ability to assess body language and tone.

Enable visibility of work and work status with tools e.g. Kanban-style boards.



Communication

Effective communication is the key to successful teams.

Include communication expectations and details in the **team charter**.

Use **retrospectives** to learn ways of improving communication, collaboration, and use of visibility tools.



Engagement Assessments

Use Stakeholder Engagement Assessment Matrix - Compares current and desired stakeholder engagement levels.



Communications Plan

Create the initial team communications plan.

Components include:

- ✓ Team meeting times
- ✓ Tools to track work status
- ✓ Frequency of work status updates
- ✓ Shared team hours
- ✓ Preferred communication approaches

Encourage the team to adopt its own practices and drive iterative improvements to communication approaches.

Aim for effective collaboration and broad, accurate visibility across stakeholders.

GUIDELINES

Implement Options for Virtual Team Member Engagement

- Focus on collaboration and team norms before focusing on tools.
- Recognize that team formation in a virtual environment is difficult, so reinforce the teams' mutual commitments, achievements, and opportunities.
- Virtual teams require a significant amount of feedback and reinforcement of team goals and objectives.
- Provide opportunities for members of a virtual team to meet in person to build relationships that nurture their shared commitment to project goals.



101



Calendar Tools

Shared calendars help virtual teams plan meetings, coordinate feedback, and improve visibility to goals and activity status.

Timeboxed meetings:

- ✓ Improve focus
- ✓ Encourage team to set clear agendas and objectives
- ✓ Help keep the work on track



102

Variance Analysis

As the team works, produce variance analyses, such as:

- ✓ Accuracy of team estimates
- ✓ Delivery in a sprint or by an established milestone
- ✓ Team performance against targets

Results of a variance analysis may be shared as part of a retrospective to serve as:

- ✓ A basis for problem solving
- ✓ Identification of lessons learned
- ✓ Proposed improvement experiments for subsequent iterations



Virtual Team Best Practices

Manage inherent risk of individual team members becoming isolated.

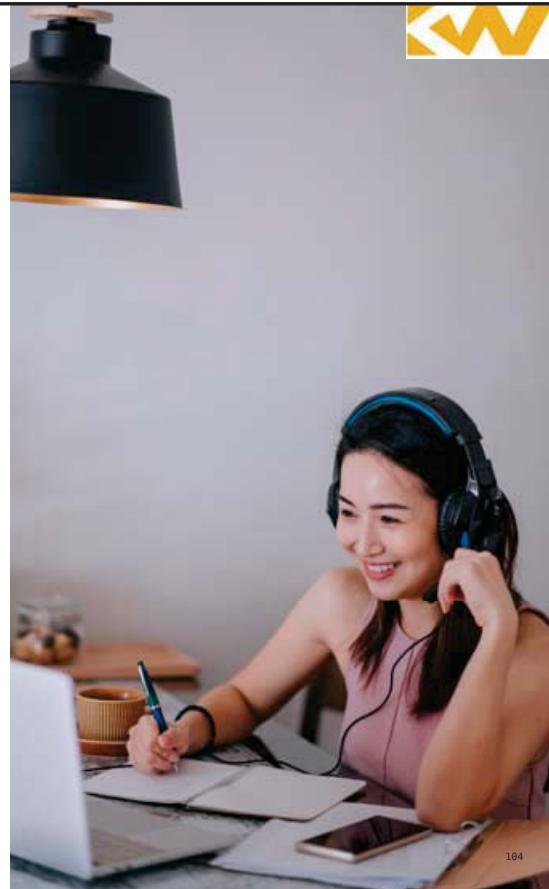
Focus on shared commitments vs. individual accomplishments for tasks.

Instill a sense of shared commitments in the team:

- ✓ Start with the team charter
- ✓ Then adopt behaviors to reinforce collaboration and promote visibility

Prioritize team goals over individual performance.

Enable teams to self-organize and be accountable for deliverables.





Build a Shared Understanding About a Project

TOPIC G



105

CREATING A HIGH-PERFORMING TEAM > BUILD A SHARED UNDERSTANDING
ABOUT A PROJECT

Deliverables and Tools



Vision
XP Metaphor
Product box exercise



Charter
Project Plan
Kick-off meeting
Brainstorming
T-Shaped Skills

Project Vision

At the start of a project, you need a **clear vision of the desired objectives**. You also need to understand and appreciate how the **project vision aligns with the organization's strategic goals**.

You are the steward of this vision, and it's up to you as the project manager to ensure the project delivers.

A vision statement might include:

- ✓ Product or solution description
- ✓ Intended users or consumers of the solution
- ✓ Key desired objectives
- ✓ Differentiators from competitive approaches
- ✓ Key features and benefits



107

Project Charter



DEFINITION

A document issued by the project initiator or sponsor that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities.



Project Charter Contents



- ✓ **Assigned project manager and responsibility / authority level**
- ✓ **Name and authority of project sponsor**
- ✓ **Other optional content:**
 - Measurable project objectives and related success criteria
 - High-level requirements
 - High-level project description, boundaries, and key deliverables
 - Overall project risk
 - Summary of milestone schedules
 - Pre-approved financial resources
 - Key stakeholders register
 - Project approval requirements
 - Project exit criteria

109

Project Overview Statement

Communicates enterprise-wide the **intent and vision** of the project.

Written with **brevity and clarity**.

Captures the project's **objective, problem or opportunity, and criteria for success**.

Authorization via the project charter or **approved project overview statement** enables **kickoff activities** of project planning.



How to Run the Project

After you have captured the project vision and understand the types and conditions around the deliverables, **you need to decide** how you will run the project.

Choose from **traditional, agile, and hybrid** approaches and methods.



Kickoff Meeting



Meeting goals:

- ✓ Establish project context
- ✓ Assist in team formation
- ✓ Ensure team alignment to the overall project vision

Activities during kickoff may include:

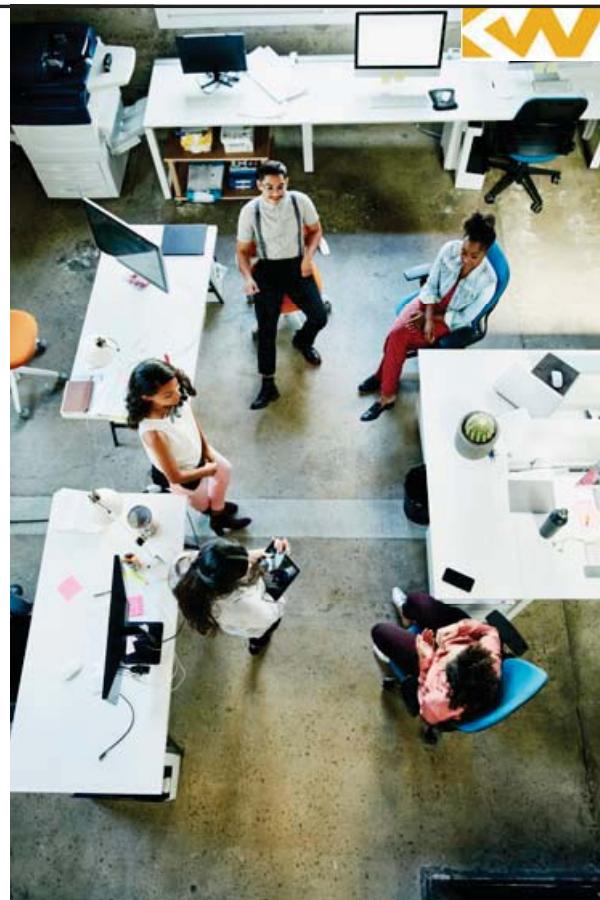
- ✓ Defining a vision statement
- ✓ Defining a team charter
- ✓ Assisting the customer/Product Owner with:
 - User story writing
 - Estimation of effort
 - Prioritization planning
 - Initial product backlog

Iteration Planning

Iteration planning is a collaborative agile ceremony, sometimes called **Sprint planning**, for the team and the customer representative (or Product Owner) to do the following:

- ✓ Review the highest prioritized user stories, or key outcomes.
- ✓ Ask questions.
- ✓ Agree on forecasts for story completion in the current iteration.

After agreement, the team determines the activities required to deliver iteration objectives.



Overview - Agile Ceremonies



In a **sprint planning meeting**, the team collaborates to plan work for the current sprint.

A **sprint** is a timeboxed iteration in **Scrum**.

Scrum is an **agile framework** for developing and sustaining complex products, with specific roles, events, and artifacts.



More Agile Ceremonies



Hold daily standups—short (10-15 minute) daily meetings—for the team to reaffirm commitment to objectives for the iteration, identify potential blockers, and coordinate the day's work.

In a **Sprint Review** at the end of each iteration, the Product Owner and other customer stakeholders review progress and receive feedback for that iteration.

A Scrum Master facilitates a **Sprint Retrospective** for the team to identify improvements. They review the team's processes and practices and identify ways to improve performance and collaboration.



Task Boards

- ✓ Visualize work and enable the team and stakeholders to track progress as work is performed.
- ✓ Promote visibility and maximize efficiency and accountability.
- ✓ Examples: Kanban boards, to-do lists, procedure checklists, and Scrum boards.

To Do	Work in Progress (WIP)	Done
Item A Estimate: 4	Item C Estimate: 6	Item B Estimate: 8 Actual: 8
Item D Estimate: 2	Item F Estimate: 16	
Item E Estimate: 8	Item J Estimate: 1 Unplanned	
Item G Estimate: 20		



Consensus



DEFINITION

Consensus is a collaborative process to reach a decision that everyone can support.

Reach Consensus

Method	Best for	How It Works
Fist of Five	Expression of range of agreement	Closed fist = complete disagreement Fist of 5 – complete agreement
Roman Voting	Simple yes or no	Thumbs up or down (sometimes sideways for neutral)
Polling	Consider independent points of view	Hear opinions and then vote
Dot Voting	Select several options from a list	Distribute dots equally, then each person allocates dots according to highest preference

Estimation Techniques

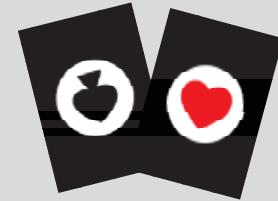
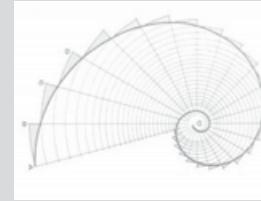
Planning poker estimates effort or relative size of development effort. Use a deck of cards with modified Fibonacci numbers to vote on user stories. Also called **Scrum poker**.

Story Pointing

Use a relative measure e.g. numbers in the Fibonacci sequence—for the level of difficulty or complexity of a feature. Individuals assign story points.



Use common t-shirt sizes to assign values to user stories.



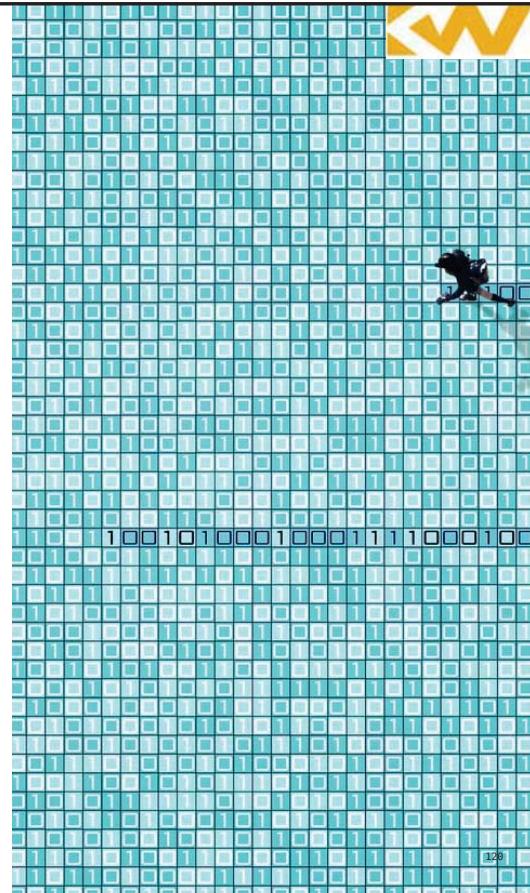
119

XP Metaphor

Metaphor is an Extreme Programming (XP) technique that **describes a common vision** of how a program works.

Metaphors should be simple and non-technical.

Enables the team to understand the overarching approach that is being taken to provide a capability or solve a problem.



Product Box –

Collaboration Game

Technique used to explain an overarching solution.

Stakeholders try to **describe aspects of a solution** in the same way a marketer might describe **product features** and **benefits** on a box.

Helps with understanding:

- ✓ Different types of users of a solution
- ✓ Their priorities and likes/dislikes
- ✓ Key aspects of a solution that drive the most critical value aspects

121

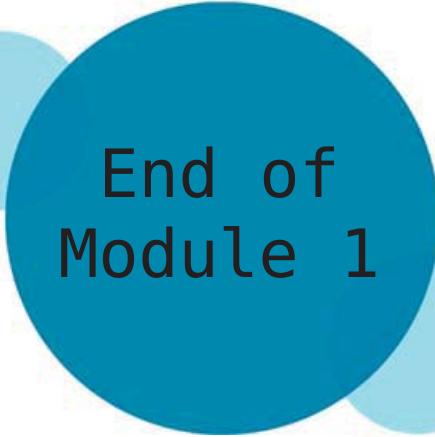


GUIDELINES

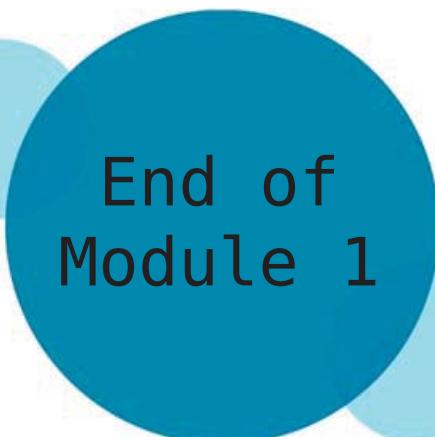
Reach Consensus and Support the Outcome of the Parties' Agreement

- Team charter can specify how team chooses to handle certain scenarios and disagreements when they arise:
e.g. if team members disagree about the number of story points to estimate for a user story, the team charter may designate use of the higher estimate or that majority vote rules.
- Seek consensus among the team where possible and recognize that sometimes it will not be possible.





End of
Module 1



End of
Module 1



LESSON 2

STARTING THE PROJECT

- Determine Appropriate Project Methodology/
Methods and Practices
- Plan and Manage Scope
- Plan and Manage Schedule
- Plan and Manage Budget and Resources
- Plan and Manage Quality of Products and
Deliverables
- Integrate Project Planning Activities
- Plan and Manage Procurement
- Establish Project Governance
Structure
- Plan and Manage Project/Phase
Closure



Determine Appropriate
Project Methodology/Methods
and Practices

TOPIC A

Deliverables and Tools



Surveys
Project business case/needs document
Project Overview Statement
Project Implementation Plan
Agile practice guidelines



Expert judgement
Meetings
Focus groups
Workshops
SMART objectives
Knowledge of classic PM and agile practice
Project Integration



127

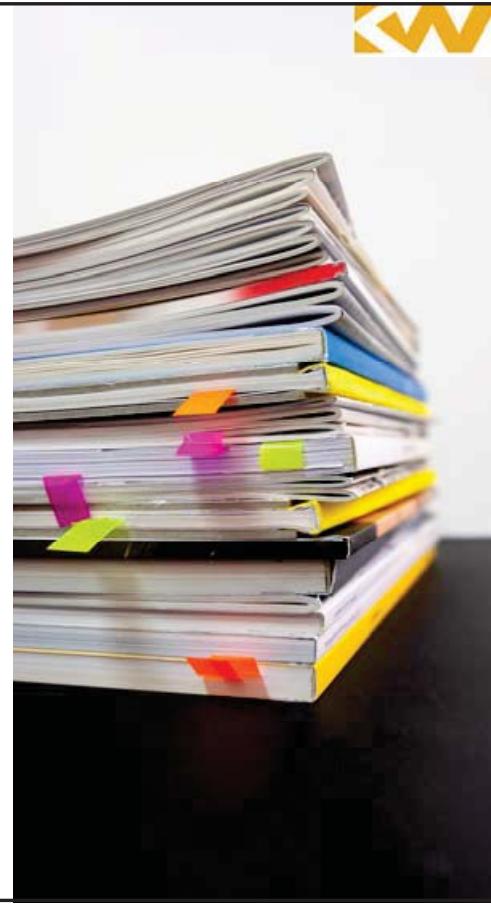
Business Case and Business Needs Documents

Business case:

- ✓ Documented economic feasibility study
- ✓ Establishes benefits of project components
- ✓ Provides a basis for authorization of further project activities

Business needs documents:

- ✓ Provide high-level deliverables
- ✓ Prerequisite of formal business case
- ✓ Describe requirements - what needs creating and / or performing



Project Implementation Plan



Consider all stakeholders, schedules, risks, budgets, and quality standards.

Identify deliverables - due at the end of the project.

Identify project outputs - delivered throughout the project.

When delivering outputs, are we:

- ✓ Implementing them in a new or existing business environment?
- ✓ Transitioning them into a live environment?
- ✓ Decommissioning or removing old systems, processes, or materials?
- ✓ Ensuring training and knowledge transfer is complete / satisfactory?

129

Rolling Wave Planning



DEFINITION

An iterative planning technique in which the work to be accomplished in the near term is planned in detail, while work further in the future is planned at a higher level.

Rolling Wave Planning

- ✓ Used in agile or predictive approaches
- ✓ A form of progressive elaboration applied to work packages, planning packages, and release planning
- ✓ Decompose work down to the known level of detail during strategic planning
- ✓ Decompose work packages into activities as work progresses



Progressive Elaboration



DEFINITION

The iterative process of increasing the level of detail in a project management plan as greater amounts of information and more accurate estimates become available.



Overview: Project Management Methodologies, Methods, and Practices



Agile

- Team works collaboratively with the customer to determine the project needs.
- The coordination of the customer and the team drives the project forward.

Predictive / Plan-Driven

- Project needs, requirements, and constraints are understood, and plans are developed accordingly.
- Plans drive the project forward.

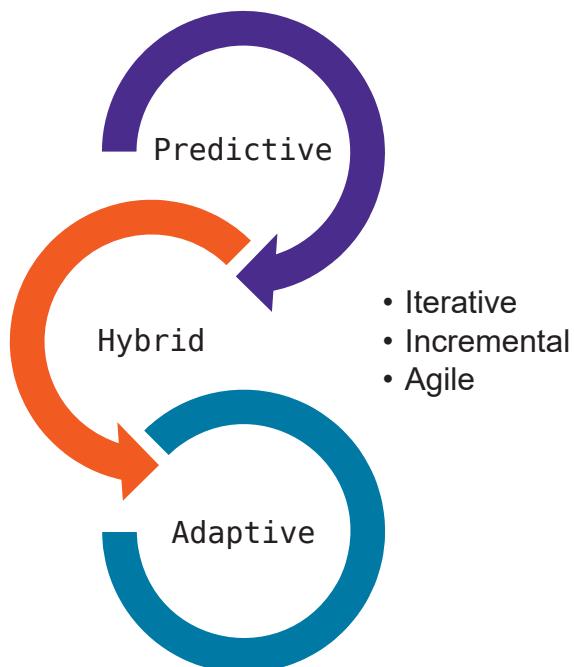
Hybrid

- Combines strategies from agile or predictive as required.
- Can switch approaches based on need, changing work requirements, or circumstances.



133

Types of Life Cycles



Predictive Life Cycle



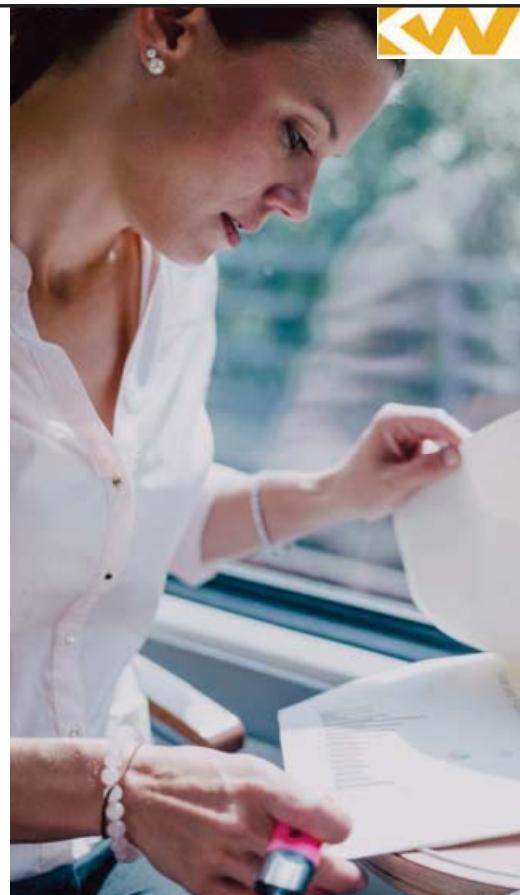
DEFINITION

Determine project scope, time, and cost in the early phases of this life cycle.

Predictive Life Cycle

Also known as **Traditional** or **Waterfall** approach:

- ✓ Requirements are typically fixed, but can be changed using the change control process
- ✓ Activities and work culminate in final output, always a deliverable





Adaptive and Hybrid Life Cycles

Use these methods in dynamic and complex environments, where change is a constant.

Let's learn more about these methods next.

137

Hybrid Methods

Combine predictive and adaptive approaches to offer flexibility to teams.

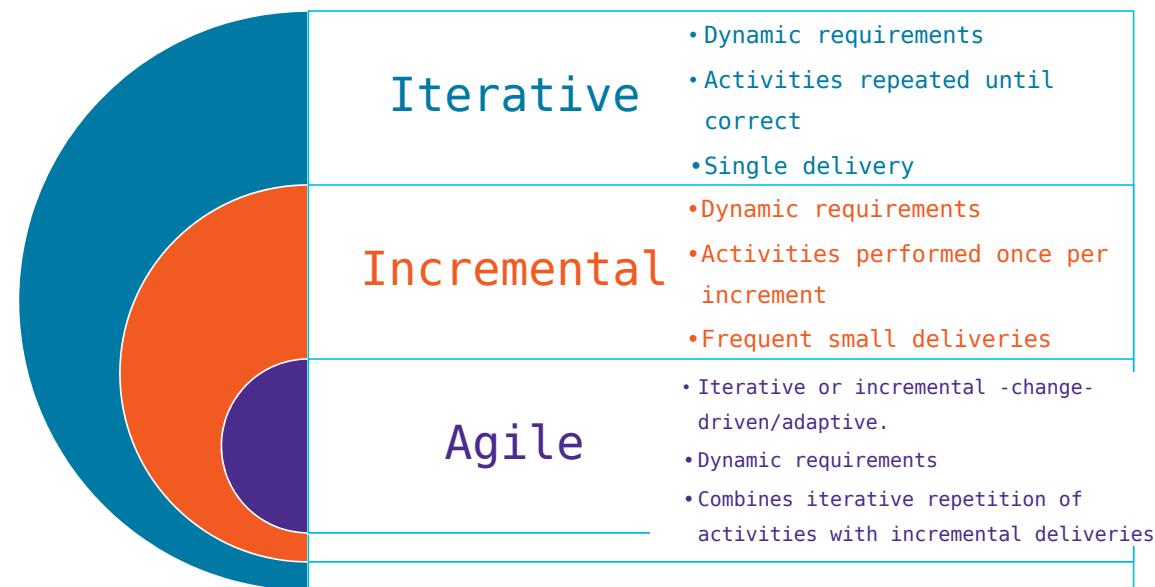
Great for projects:

- ✓ Seeking or willing to learn new methods or techniques.
- ✓ With a mix of resources and experience levels
- ✓ With shorter, iterative time frames.
- ✓ With high stakeholder involvement
- ✓ With in-depth requirements



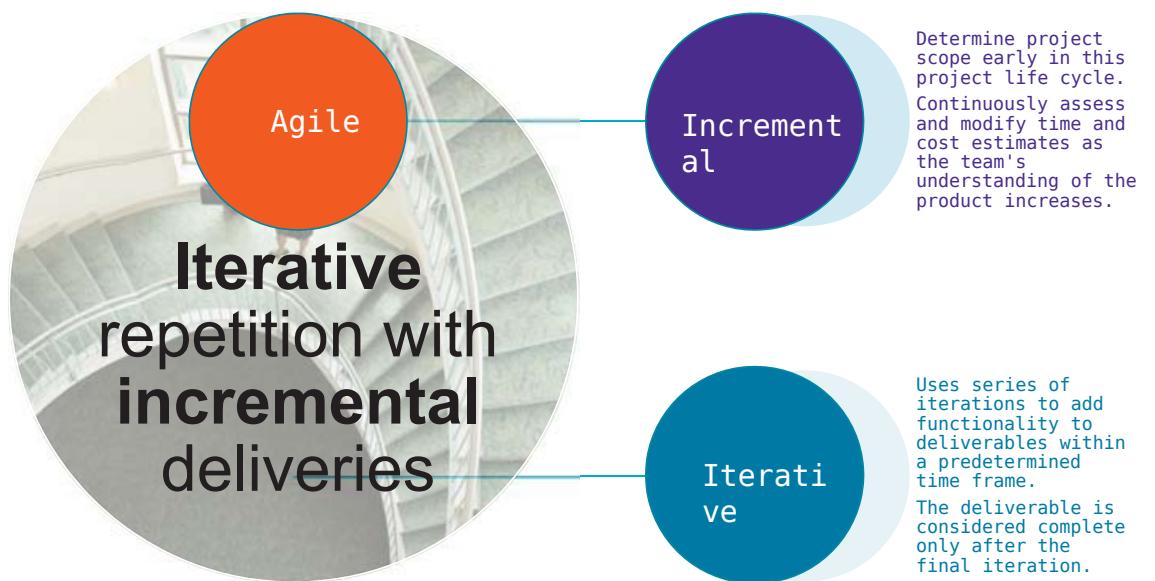
138

Adaptive Life Cycles



139

Adaptive Life Cycles



140

Typical Use Cases

Methodology	Typical Use Cases
Agile	<ul style="list-style-type: none"> • Software projects • Intellectual property projects • Research projects
Predictive / Plan Driven	<ul style="list-style-type: none"> • Construction projects • Projects with many physical assets • "Repeats" of similar, completed projects
Iterative	Projects where learning and correction is expected to eventually reach the ideal solution.
Incremental	Customers or business wants or expects to see outputs or partial outputs early and often.
Hybrid	<ul style="list-style-type: none"> • Mix of resources and experience levels • Those seeking or willing to learn new methods or techniques.



Plan and Manage Scope

TOPIC B

Deliverables and Tools



Requirements Documentation
Work performance reports
Requirements Traceability Matrix



Agile estimating
Product backlog
Change requests
Product backlog
Scope management plan and Requirements management plan



143

Scope Management Plan



DEFINITION

A component of the project or program management plan that describes how the scope will be defined, developed, monitored, controlled, and validated.



144

Scope Management Plan

- ✓ Should include processes to prepare a project scope statement
- ✓ Enables the creation of the WBS from the detailed project scope statement
- ✓ Establishes how the scope baseline will be approved and maintained
- ✓ Specifies how formal acceptance of the completed project deliverables will be obtained.
- ✓ Can be formal or informal, broadly framed or highly detailed.



145

SCOPE MANAGEMENT PLAN	
Project Title:	122 East Main Street
Date:	
Scope Statement Development	
<p>The Scope Statement for this project will be prepared by the project manager, with assistance from other Building with Heart staff who have worked on previous home-building projects.</p>	
WBS Structure	
<p>The Work Breakdown Structure will consist of four levels, with the project at the top level. Phases will be used for major (Level 1) deliverables (e.g., foundation, framing, interior walls, plumbing, etc.). Each phase will be decomposed into appropriately-sized sub-deliverables (e.g., first-floor framing, second-floor framing). Finally, each sub-deliverable will be decomposed into work packages. Schedule and cost estimates will be prepared for each work package, and will be rolled up to the project level.</p>	
WBS Dictionary	
<p>Each element in the WBS will include sufficient information to enable the management of that element. The WBS Dictionary will include, but not be limited to the following: start and finish dates; resource names; durations; constraints; assumptions; and predecessor and successor elements.</p>	
Scope Baseline Maintenance and Scope Changes	
<p>The scope baseline will consist of the Scope Statement, WBS, and WBS dictionary. The initial scope baseline will be approved by the project sponsor. All changes to the scope baseline will follow the procedures outlined in the Integrated Change Control Process, and all changes will be documented and approved accordingly.</p>	
Deliverable Acceptance	
<p>Each Level 1 (Phase) deliverable will be approved by the project sponsor or his/her designee. The final deliverable, the finished home, will be approved by the Greene City Buildings Department inspector and will conform to all applicable building codes and regulations.</p>	
Scope and Requirements Integration	
<p>Before any design or other work has been started, a Requirements Document will be prepared.</p>	

Scope Management Tools and Techniques

Expert judgment

- ⑩ Internal and external experts

Alternatives analysis

- ⑩ Used to evaluate identified options in order to select the options or approaches to use to execute and perform the work of the project.

Meetings

- ⑩ Team members help create the scope management plan



146

Project Requirements



DEFINITION

The actions, processes, or other conditions the project needs to meet e.g. milestone dates, contractual obligations, constraints, etc.

Product Requirements

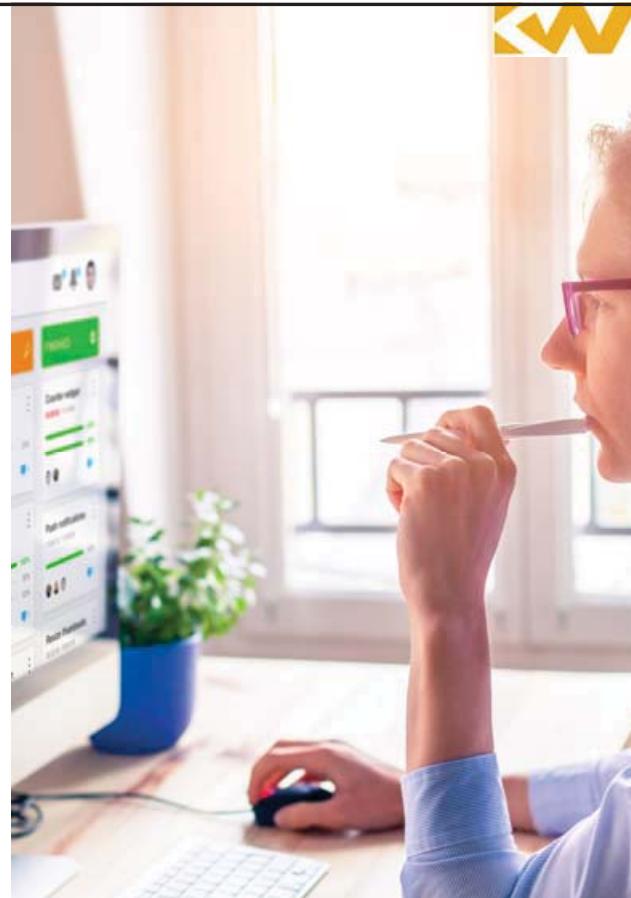


DEFINITION

The agreed-upon conditions or capabilities of a product, service, or outcome that the project is designed to satisfy.

Project and Product Requirements

- ✓ High-level requirements might be documented in the project charter.
- ✓ Verify that all requirements are determined and documented.
- ✓ Provide the foundation for building the WBS.



Project Scope



DEFINITION

The work performed to deliver a product, service, or result with the specified features and functions. “Project scope” may include product scope.



Product Scope



DEFINITION

The features and functions that characterize a product, service, or result.

Project and Product Scope

- ✓ **Predictive** - The scope baseline for the project is the approved version of the project scope statement, work breakdown structure (WBS), and associated WBS dictionary.
- ✓ **Agile** - Backlogs (including product requirements and user stories) reflect current project needs.
- ✓ **Measure completion of project scope** against the project management plan.
- ✓ **Measure completion of the product scope** against product requirements.

Tolerances

Tolerance levels enable you to effectively manage an issue without needing to escalate it every time.

Areas of tolerance might include:

- ✓ Budget
- ✓ Schedule
- ✓ Quality
- ✓ Accepted or baselined requirements, including:
 - Solution – functional/non-functional
 - Business and Stakeholder
 - Quality



Enterprise Environmental Factors (EEFs)



DEFINITION

Conditions (internal or external) not under the control of the project team, that influence, constrain, or direct the project at organizational, portfolio, program, or project level.



Organizational Process Assets (OPAs)

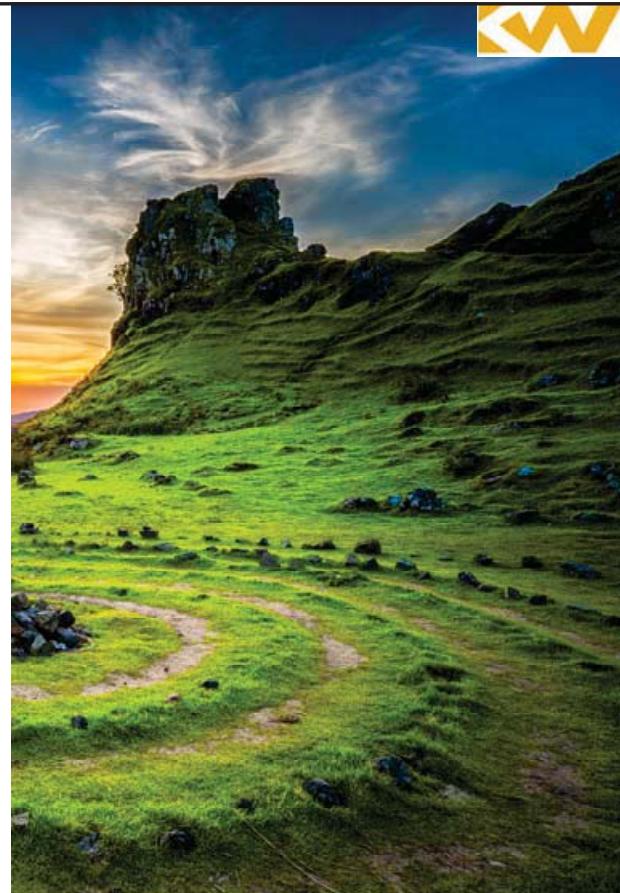


DEFINITION

Plans, processes, policies, procedures, and knowledge bases specific to and used by the performing organization. These assets influence the management of the project.

EEFs and OPAs

- ✓ Projects exist and operate in environments that may influence them, favourably or unfavourably.
- ✓ EEFs and OPAs are two major categories of project influences.



Enterprise Environmental Factors (EEFs)



Internal	External
<ul style="list-style-type: none">✓ Organizational culture, structure, and governance✓ Geographic distribution of facilities and resources✓ Infrastructure✓ Resource availability✓ Employee capability	<ul style="list-style-type: none">✓ Marketplace conditions✓ Social and cultural influences and issues✓ Legal restrictions✓ Commercial databases✓ Academic research✓ Government or industry standards✓ Financial considerations✓ Physical environmental elements

157

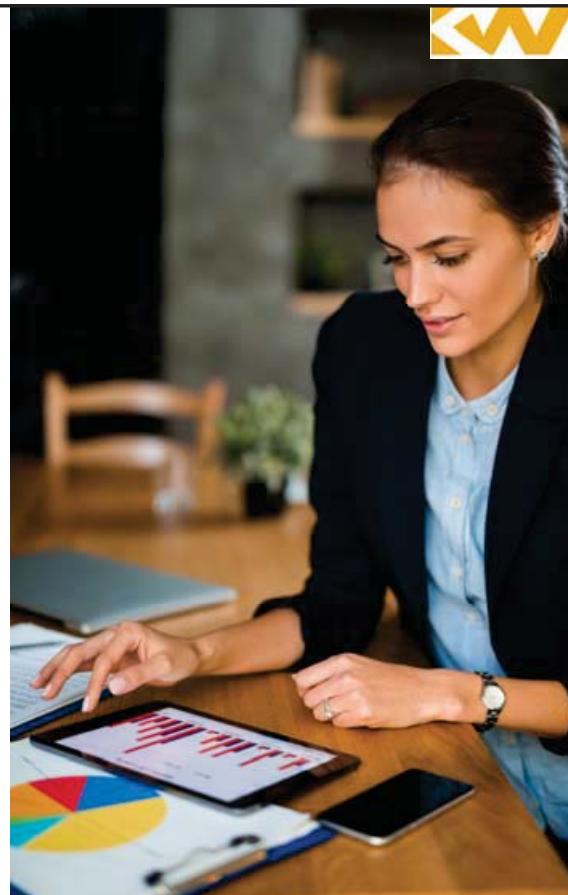
Organizational Process Assets (OPAs)

Processes, policies, and procedures are:

- ✓ Established by the project management office (PMO) or another function outside of the project.
- ✓ Not updated as part of project work
- ✓ Templates, lifecycles, and checklists can be tailored, but not updated, for a project.

Organizational knowledge bases are:

- ✓ Updated throughout the project with project information
- ✓ Updated information such as financial performance, lessons learned, performance metrics and issues, and defects.



Document Analysis



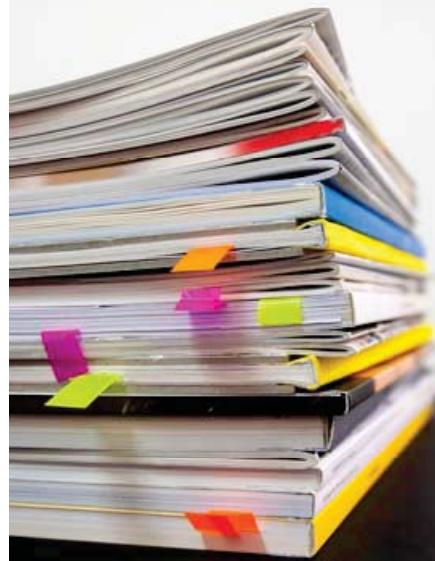
DEFINITION

A technique used to gain project requirements from current documentation evaluation.

Document Analysis

Derive new project requirements from existing documents such as:

- ✓ Business plans
- ✓ Service agreements
- ✓ Marketing materials
- ✓ Current process diagrams
- ✓ Application software documentation



Focus Groups



DEFINITION

An elicitation technique that brings together prequalified stakeholders and subject matter experts to learn about their expectations and attitudes about a proposed product, service, or result.

Focus Groups

- ✓ Loosely structured, information-sharing sessions
- ✓ Moderator-guided, interactive
- ✓ Includes stakeholders and SMEs
- ✓ Qualitative research



Questionnaires and Surveys



DEFINITION

Written format of questions designed to quickly capture information from many respondents.

Questionnaires and Surveys



- Often used data gathering technique:
- With varied audiences
 - When a quick turnaround is needed
 - When respondents are geographically dispersed
 - Where statistical analysis could be appropriate.

Benchmarking



DEFINITION

The comparison of actual or planned products, processes, and practices to those of comparable organizations to identify best practices, generate ideas for improvement, and provide a basis for measuring performance.

Benchmarking

- ✓ **Evaluates and compares a business' or project's practices with others.**
- ✓ **Identifies best practices** in order to meet or exceed them.



Interviews



DEFINITION

A formal or informal approach to elicit information from stakeholders by talking with them directly.



167

Interviews

- ✓ Helps to identify a stakeholder's requirements, goals, or expectations for a project.
- ✓ Use to identify/define features and functions of desired project's deliverables.



Group Decision-Making Techniques

Voting

Collective decision-making and assessment
Determines several alternatives, with future actions as the expected outcome
Use to generate, classify, and prioritize product requirements

Autocratic decision making

One team member makes the decision for the group.

Multicriteria decision analysis

Method - Establish criteria in decision matrix e.g. risk levels, uncertainty, and valuation
Uses a systematic, analytical approach
Evaluate and rank many ideas

Types of Voting

Unanimity

Everyone agrees on a single course of action.

Useful in project teams with great cohesion.

Example: Delphi technique

Majority

Decision reached with > 50% of group support

Tip: Create groups of an uneven number of participants to ensure decisions are made and tie votes avoided.

Plurality

Decision reached with largest block in a group deciding, even if majority is not achieved.

Use this method when more than 2 options are nominated.

Agile Methods

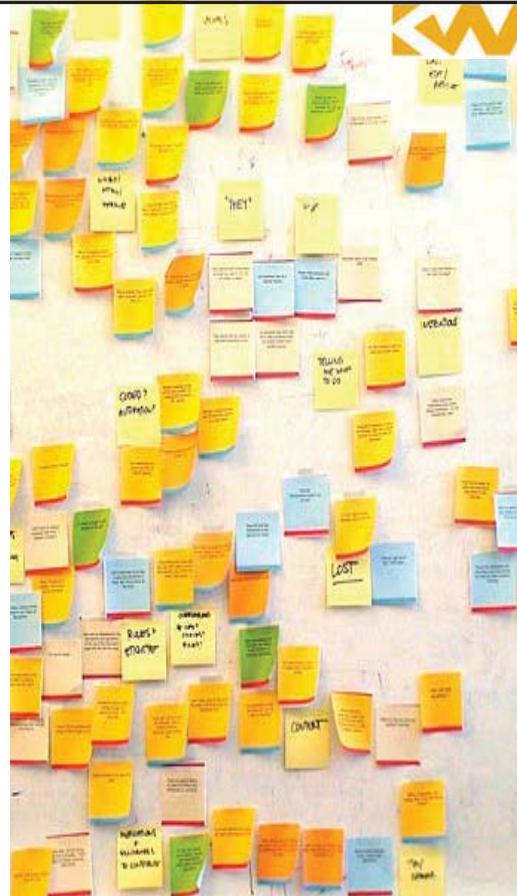
Thumbs up/down/sideways
Fist of Five



Data Representation

Tailor to project context and decision-making criteria.

- ✓ **Mind Mapping** – Consolidate ideas created through individual brainstorming sessions into a single map to reflect commonality and differences in understanding and to generate new ideas
- ✓ **Affinity Diagram** – Allows large numbers of ideas to be classified into groups for review and analysis



Observations



DEFINITION

A technique used to gain knowledge of a specific job role, task, or function in order to understand and determine project requirements.



Facilitated Workshops



DEFINITION

Organized working sessions led by qualified facilitators to determine project requirements and to get all stakeholders together to agree on project outcomes.

Context Diagrams

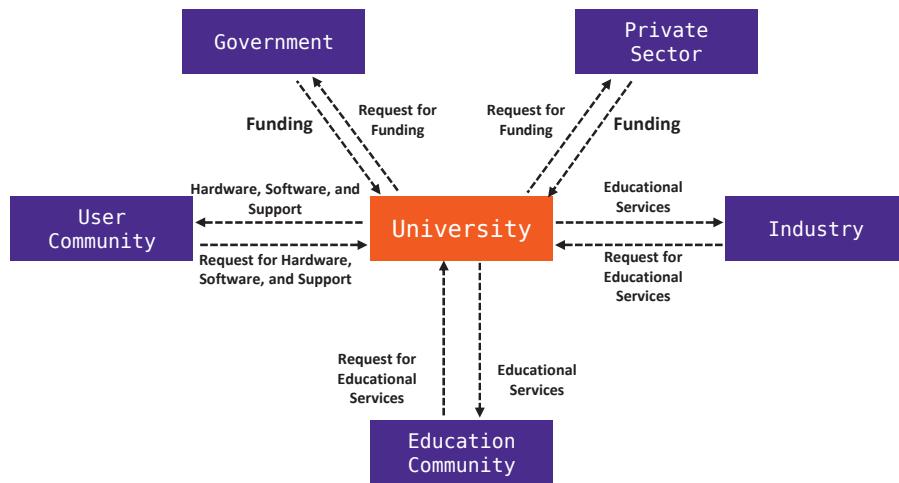


DEFINITION

Visual depiction of product scope, showing a business system (process, equipment, computer system, etc.) and how people and other systems interact with it.

Context Diagrams

Business Context Diagram Sample



Storyboarding



DEFINITION

A prototyping method using visuals or images to illustrate a process or represent a project outcome.

Prototyping



DEFINITION

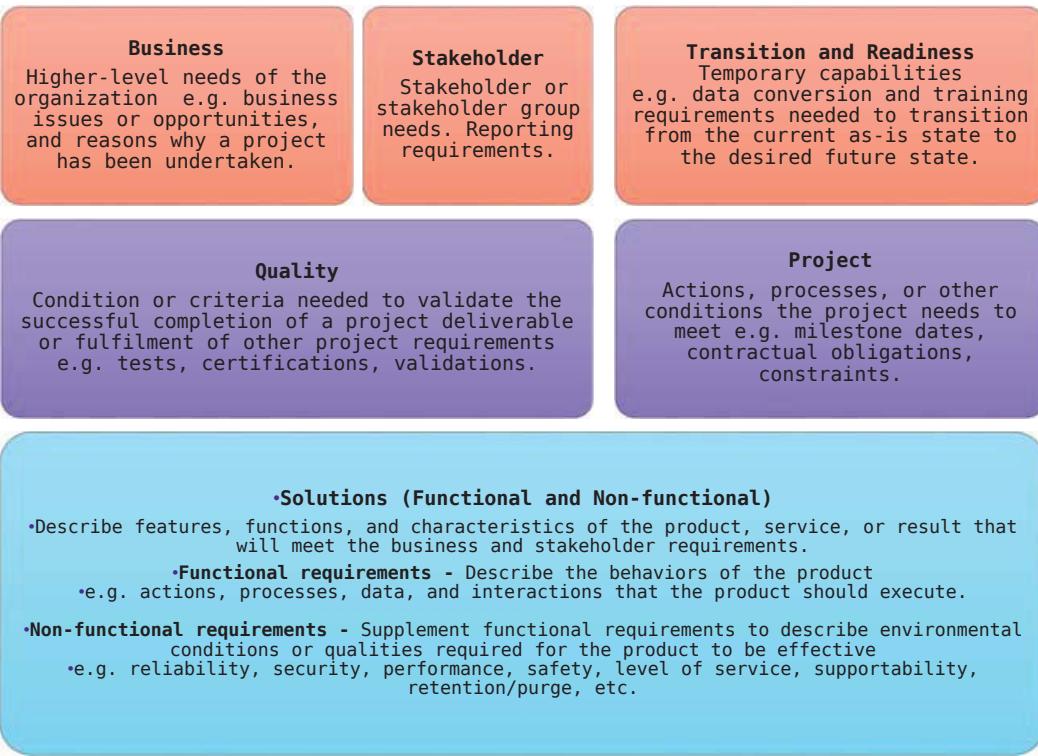
Assists in the process of obtaining early feedback on requirements by providing a working model of the expected product before building.

Requirements Documentation

- ✓ Describes how individual requirements meet project business need.
- ✓ Starts at a high level before providing details.
- ✓ Requirements need to be unambiguous (measurable and testable), traceable, complete, consistent, and acceptable to key stakeholders.
- ✓ Format can be simple (document listing all requirements, categorized by stakeholder and priority) or more elaborate (executive summary, detailed descriptions, attachments).



Types of Requirements



179

Nonfunctional Requirements

Type	Considerations
Availability	<ul style="list-style-type: none"> How and when is the service available? If the service were to become unavailable, how quickly can it be restored to working?
Capacity	<ul style="list-style-type: none"> What level of service performance, speed, and throughput is required? Given the number of stakeholders using the service, is there enough supply to meet demand?
Continuity	<ul style="list-style-type: none"> If there were a disaster of some kind, how quickly could the service be recovered to support operations.
Security	<ul style="list-style-type: none"> How well is the service and its information protected from security risks and threats? How do you guarantee the confidentiality, integrity, and availability of the information?

180

Requirements Management Plan

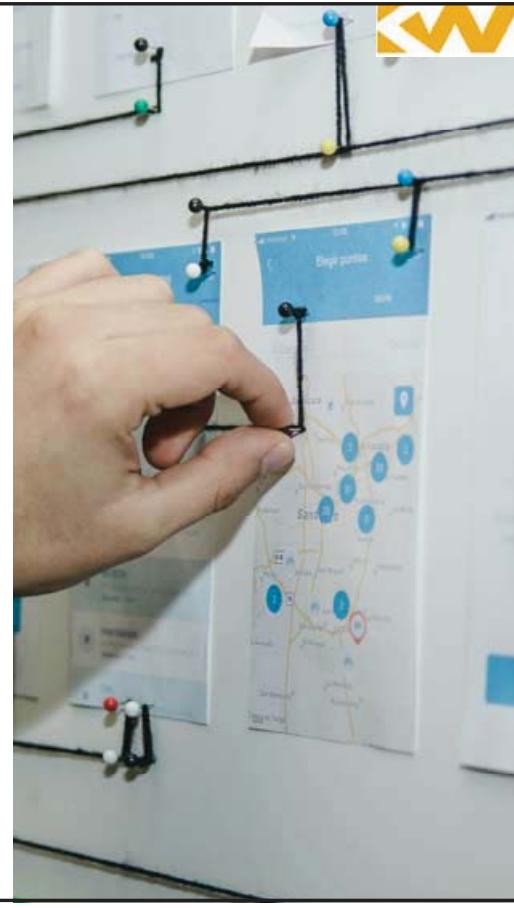


DEFINITION

A component of the project or program management plan that describes how requirements will be analyzed, documented, and managed.

Requirements Management Plan

- ✓ Planning, tracking, and reporting information for requirements activities.
- ✓ Configuration management activities:
 - Version control rules
 - Impact analysis
 - Tracing, tracking, and reporting
- ✓ Required authorization levels for change approval
- ✓ Prioritization criteria / process
- ✓ Product metrics and accompanying rationale
- ✓ Traceability structure



Requirements Traceability Matrix



DEFINITION

Links product requirements from their origin to the deliverables that satisfy them.

Requirements Traceability Matrix

Requirements Traceability Matrix								
Project Name:								
Cost Center:								
Project Description:								
ID	Associate ID	Requirements Description	Business Needs, Opportunities, Goals, Objectives	Project Objectives	WBS Deliverables	Product Design	Product Development	Test Cases
001	1.0							
	1.1							
	1.2							
	1.2.1							
002	2.0							
	2.1							
	2.1.1							
003	3.0							
	3.1							
	3.2							
004	4.0							
005	5.0							

GUIDELINES

Collecting Project Requirements

- Review:
 - Scope management plan
 - Requirements management plan
 - Stakeholder engagement plan
 - Project charter
 - Stakeholder register
- Use tools and techniques such as interviews, focus groups, facilitated workshops, group creativity techniques.



185



Project Scope Statement



DEFINITION

The description of the project scope, major deliverables, assumptions, and constraints.



186

Project Scope Statement

Project Scope Statement

Project Name: _____ Date: _____

Project Manager: _____

Prepared By

Document Owner(s) <Name>	Project/Organization Role Project Manager
-----------------------------	--

Version History

Version	Date	Author	Change Description
1.0	<Today's Date>	<Name>	Created document

Project Description:

A building project conducted by *My Organization* that will construct a single-family home for the Andrews family. The building site is located at 234 West Adams Street. The project manager will provide consistent project status reports to senior management as well as the project sponsor.

Acceptance Criteria:



187

Scope Tools and Techniques

Expert Judgment

Judgment provided by a group or person, based upon expertise in an application area, Knowledge Area, discipline, industry, etc.

Facilitation

Effective guidance of a group to a successful decision, solution, or conclusion.

Product Analysis

Defines products and services. Includes asking questions about a product/service, forming answers to describe the use, characteristics, and other relevant aspects of what is going to be delivered

Multi-criteria decision analysis

Technique of organizing decision factors in a matrix to evaluate options

Alternatives analysis

Evaluation of choices available to reach an objective.



188

Product Analysis



DEFINITION

A tool to define scope by asking questions about a product and forming answers to describe the use, characteristics, and other relevant aspects of the product.

Product Analysis

Product Breakdown
Splinter a product and its work requirements into components to achieve a clear understanding of work

Requirements Analysis
Process of identifying, validating, and documenting specifications for projects

Value Analysis
Systematic, interdisciplinary examination of factors affecting the cost of a product or service towards achieving the purpose at lowest cost and required standards of quality and reliability

Value Engineering
Structured technique to optimize value in a project

Systems Engineering
Design, integration, and management of complex systems over their life cycles

Systems Analysis
Process of studying a product /service to identify its goals and purposes and create systems / procedures to achieve them efficiently

GUIDELINES

Develop a Project Scope Statement

- Review:
 - Scope management plan (developing, monitoring, and controlling project scope activities)
 - Project charter (high-level project description and product characteristic and project approval requirements)
- Requirements documentation
- OPAs – templates, processes, and procedures
- Use tools and techniques to define the project scope (expert judgment, product analysis, alternatives generation, and facilitated workshops).
- Document the project scope statement and update project documents.



191



Work Breakdown Structure



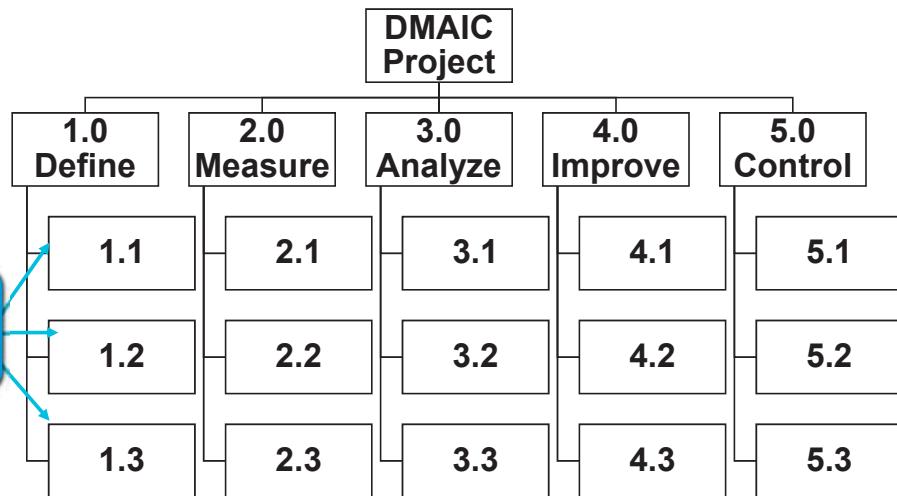
DEFINITION

A hierarchical decomposition of a project's total scope of work to accomplish project objectives and create the required deliverables.



192

Work Breakdown Structure



Code of Accounts



DEFINITION

Numbering system that uniquely identifies each component of the WBS.

WBS Dictionary



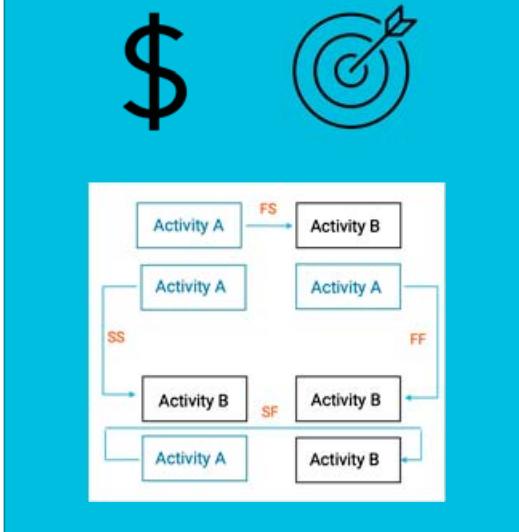
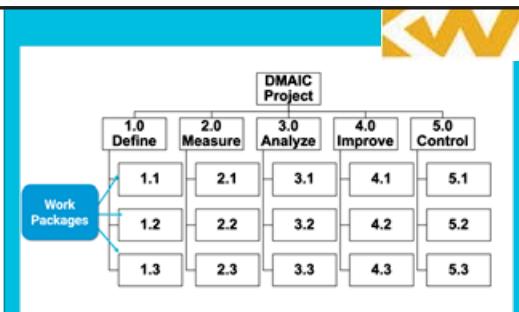
DEFINITION

Provides detailed deliverable, activity, and scheduling information about each component in the WBS.

WBS Dictionary

Can include:

- ✓ Code of account identifier
- ✓ Description of work
- ✓ Assumptions and constraints
- ✓ Responsible organization
- ✓ Schedule milestones
- ✓ Associated schedule activities
- ✓ Resources required to complete the work
- ✓ Cost estimations
- ✓ Quality requirements
- ✓ Acceptance criteria
- ✓ Technical references
- ✓ Agreement information



Decomposition



DEFINITION

A technique of dividing and subdividing the project scope and deliverables into smaller, more manageable parts.

Decomposition - Example

- 1.0 Value Management System Project
 - 1.1 Needs Assessment
 - 1.1.1 Current System Audit
 - 1.1.1.1 Components Identification
 - 1.1.1.2 Components Analysis
 - 1.1.2 Requirements Determination
 - 1.1.2.1 Gap Assessment
 - 1.1.2.2 Requirements Changes Identification
 - 1.1.3 Alternatives Development
 - 1.1.3.1 Alternatives Identification
 - 1.1.3.2 Alternatives Analysis
 - 1.1.4 Systems Requirements Development
 - 1.2 Standards Development
 - 1.3 Systems Engineering
 - 1.4 Project Management

Control Accounts, Work and Planning Packages

Let's explore the units of work in a project WBS.



Control Account



DEFINITION

A management control point where scope, budget, actual cost, and schedule are integrated and compared to earned value for performance measurement.



Planning Package



DEFINITION

A WBS component below the control account with known work content but without detailed schedule activities.

Work package



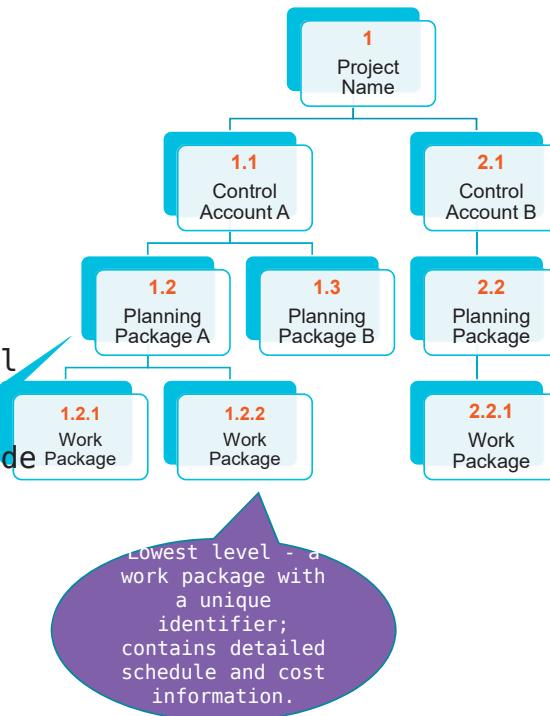
DEFINITION

The work defined at the lowest level of the WBS for which cost and duration are estimated and managed.

Planning Work Using a WBS



- ✓ A control account has two or more work packages.
- ✓ A planning package may or may not be used.
- ✓ Each work package is part of a single control account.
- ✓ **Identifiers** provide a structure for hierarchical summation of costs, schedule, and resource information and form a code of accounts.



203

Scope Baseline



DEFINITION

Approved version of a scope statement, WBS, and its associated WBS dictionary, that can be changed using formal change control procedures and is used as a basis for comparison to actual results.



204



Scope Baseline

Components include:

- ✓ Project scope statement
- ✓ WBS
- ✓ Work packages
- ✓ Planning package
- ✓ WBS dictionary

205

GUIDELINES

Create a WBS

- Review:
 - Scope management plan
 - Project scope statement
 - Requirements documentation
- EEFs and OPAs
- Use tools and techniques e.g. decomposition
- Use expert judgment
- Include notes on work products that might be delivered incrementally
- Document the scope baseline



Product and Iteration Backlogs

Product backlog

- ✓ Change throughout the project.
- ✓ Groom and refine the product backlog continually; weekly or monthly intervals are typical.
- ✓ Remove product backlog items (PBIs) as work is completed.
 - Edit and clarify PBIs as more becomes known or as product requirements change.
 - Add PBIs when more work must be done.

A product backlog is a list of the expected work to deliver the product.

Iteration backlog

- ✓ Teams must estimate effort and understand business priorities.

Iteration backlogs include items from the product backlog that can conceivably be completed within the time period based on the team's capacity.



207

User Stories

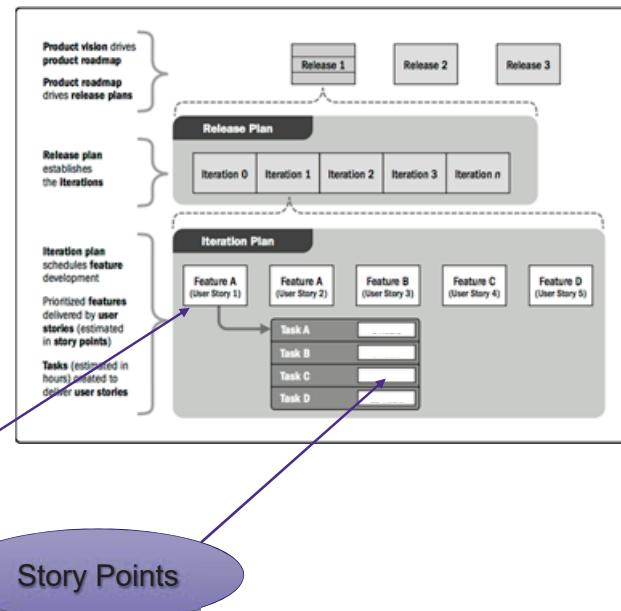


DEFINITION

Short descriptions of required functionality; told from user's point of view

User Stories

- ✓ Help teams focus on that value provided to the user.
- ✓ Suggest who will benefit from the work and how.
- ✓ Driven by description instead of technical specifications to give holistic view



Tools and Techniques for Verifying Scope

Tool and Technique	Description
Definition of Done	Checklist of required criteria for a deliverable to be considered ready for customer use.
Definition of Ready	Checklist for a user-centric requirement with all required information to begin work.
Acceptance Criteria	A set of conditions to meet before acceptance of deliverables.
Iteration Reviews	Interval at or near the conclusion of a timeboxed iteration when the project team shares and demonstrates the work produced during the iteration with stakeholders.
Variance Analysis	A technique for determining the cause and degree of difference between the baseline and actual performance.
Trend Analysis	An analytical technique that uses mathematical models to forecast future outcomes based on historical results.



Plan and Manage Schedule

TOPIC C



211

STARTING THE PROJECT > PLAN AND MANAGE SCHEDULE

Deliverables and Tools



Activity cost estimates

Activity duration
estimates

Task estimates

Story estimates

Feature estimates

Updated documentsBacklog

Velocity data

Project schedule

Release plan

Product Roadmaps

Earned Value

Updated schedule

Updated release plan

Updated product backlog

Network diagram

Planning meetings

Negotiations



212

STARTING THE PROJECT > PLAN AND MANAGE SCHEDULE

Tools, Activities & Processes



Top-Down Estimating:
Expert, Analogous,
Parametric

Bottom Up Estimating:
Roll up WBS packages

T-Shirt sizing

Estimating using
Fibonacci sequences

Story points

Relative estimating

Affinity estimates

PMTS

Process assets
Backlog management
Release planning
Iteration planning
Burndown / Burnup charts
Cumulative flow diagrams
Throughput analysis
Velocity analysis
Retrospectives
Review work produced
Backlog reprioritization
Scaling projects
Meetings
Procurement negotiations

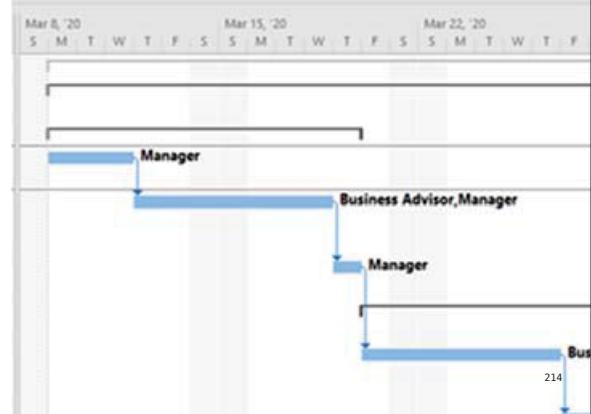
213



Project Schedule

- ✓ Includes start and finish activities
- ✓ Uses specific dates and in a certain sequence
- ✓ Sets dates for project milestones
- ✓ Coordinates activities to ensure on-time project completion
- ✓ Tracks schedule performance and provides visibility of project status to upper management and project stakeholders

	Task Name	Duration	Start	Finish
0	* New Business	149 days	Mon 3/9/20	Thu 10/1/20
1	* Phase 1 - Strategic Plan	48 days	Mon 3/9/20	Wed 5/13/20
2	* Self-Assessment	9 days	Mon 3/9/20	Thu 3/19/20
3	Define business vision	3 days	Mon 3/9/20	Wed 3/11/20
4	Identify available skills, information and support	5 days	Thu 3/12/20	Wed 3/18/20
5	Decide whether to proceed	1 day	Thu 3/19/20	Thu 3/19/20
6	* Define the Opportunity	14 days	Fri 3/20/20	Wed 4/8/20
7	Research the market and competition	5 days	Fri 3/20/20	Thu 3/26/20
8	Interview owners	3 days	Fri 3/27/20	Tue 3/31/20

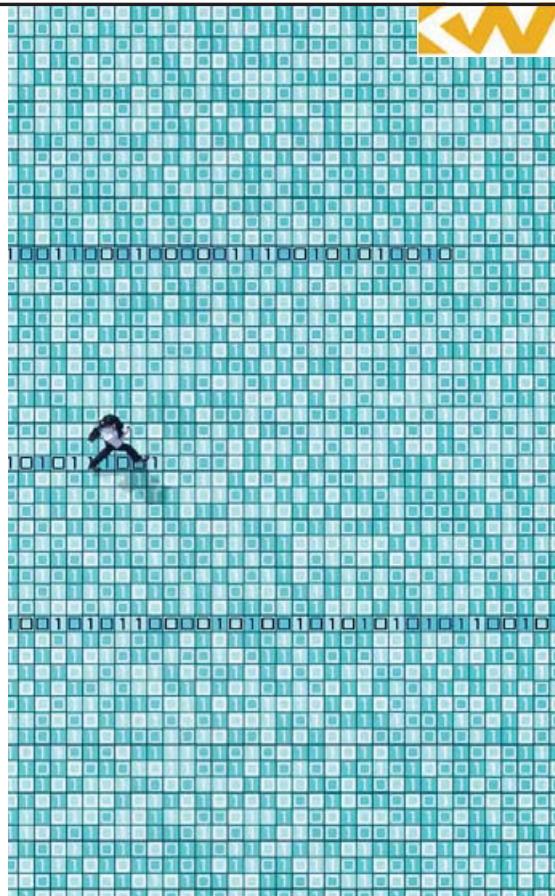


Benchmarks and Historical Data

Benchmarking is the comparison of a project schedule to another, similar product/service schedule to provide a good “starting point” for estimation before detailed analysis.

Benchmarks can be useful in the initial stage of scheduling to help assess the feasibility of a project.

Historical data can come from other projects completed within an organization for which detailed information is available.



Schedule Management Plan



DEFINITION

A component of the project or program management plan that establishes the criteria and activities for developing, monitoring, and controlling the schedule.



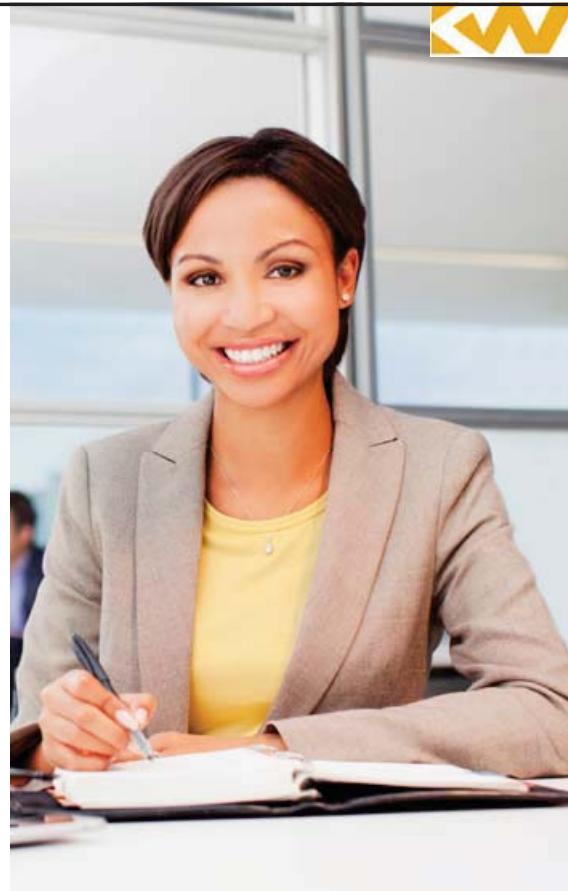
Schedule Management Plan

Describes how activities will be defined and progressively elaborated.

Identifies a scheduling method and scheduling tool to be used.

Determines the format of the schedule.

Establishes criteria for developing and controlling the project schedule.



Components of the Schedule Management Plan

Accuracy of activity duration estimates

Project schedule model used

Organizational procedure links used with the WBS

Units of measure to be used

Rules of performance measurements to be used

Process descriptions to explain how schedule management processes are to be documented throughout the project.

Reporting formats to be used

Control thresholds to be used for monitoring schedule performance



Schedule Management Considerations for Agile/ Adaptive Environments

Consider developing project roadmap.

Schedule individual activities iteratively.

Choose an iterative approach:

- ✓ Iterative scheduling with backlog
- ✓ On-demand scheduling



Iterative Scheduling with Backlog



Delivers business value early and incrementally

Allows changes during entire project

Does not work well with projects featuring complex dependency relationships



Iterative Scheduling with a Backlog Process

- ✓ Use progressive elaboration (rolling wave) to schedule activities
- ✓ Use a specific time window e.g. two weeks
- ✓ Define requirements in user stories
- ✓ Prioritize stories
- ✓ Select based on priority and time box
- ✓ Add remaining stories to backlog
- ✓ Construct later based on their priority



On-Demand Scheduling

- ✓ Does not use traditional schedules
- ✓ Team members “pull” work from a queue when available
- ✓ Based on Kanban and Lean methodologies
- ✓ Provides incremental business value
- ✓ Levels out work of team members
- ✓ Works best when activities can be divided into equal amounts
- ✓ Does not work well with projects comprised of complex dependency relationships



GUIDELINES

Develop a Schedule Management Plan

- Review the following:
 - Project management plan (for information to develop the schedule)
 - Project charter (for a summary, high-level milestone schedule)
 - EEFs
 - OPAs
- Use tools and techniques such as expert judgment and historical information.
- Use meetings to develop the schedule management plan.
- Document the schedule management plan for the project.



223



Project Activity

**DEFINITION**

A distinct, scheduled portion of work performed during a project.



224

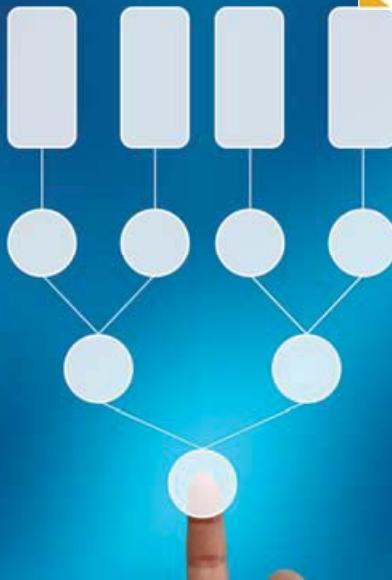
Project Activities

An **activity** is a component of a decomposed work package.

- Activities are not the same as work packages or 'tasks'.

A **work package** is the lowest level of the WBS.

A **task** refers to project management software.



Feature



DEFINITION

A set of related requirements that allows the user to satisfy a business objective or need.



Epic



DEFINITION

A very large collection of user stories. Epics can be spread across many sprints.

Features and Epics

- ✓ Usually described as a short phrase. This term groups related functionality together to deliver business value.
- ✓ Includes activities and efforts such as documentation, bug fixes, testing, and quality/defect repairs.
- ✓ Delivers the capability that can be estimated, tracked, and managed as a set.
- ✓ Epics are responsible for producing a major deliverable, which may include various Agile features, for example.





Working with Features



- ✓ Scheduling aligned to features ensures associated work is coordinated.
- ✓ Estimating features offers visibility to when blocks of functionality can be released to the business and end users.
- ✓ Progress can be measured by drawing a ratio of accepted to remaining features.

229

Milestones



DEFINITION

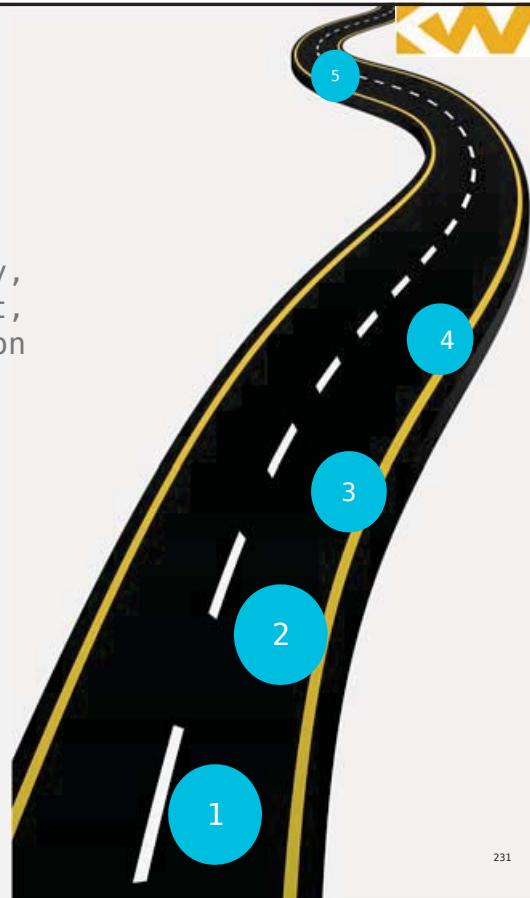
A significant point or event in a project, program, or portfolio.



Milestones

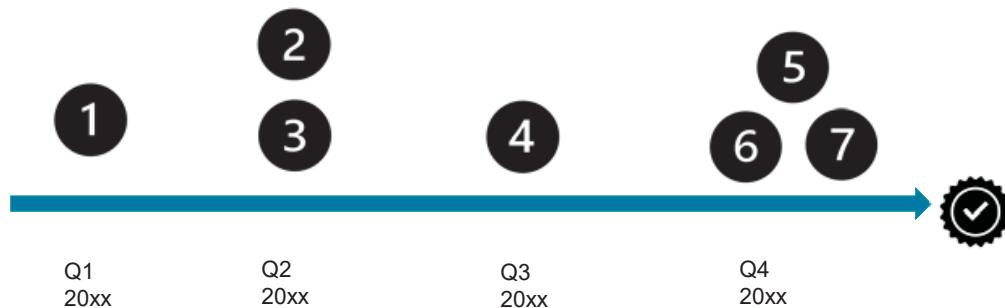
A **milestone list** identifies all project milestones and indicates whether the milestone is mandatory, such as those required by contract, or optional, such as those based on historical information.

Milestones have zero duration because they represent a significant point or event.



Milestone Chart

- ✓ Provides the summary level view of a project's milestones.
- ✓ Uses icons or symbols.
- ✓ Useful for upper management who only require an overview.



GUIDELINES

Estimating Project Activities

- Review:
 - Schedule management plan
 - Scope baseline for WBS, deliverables, assumptions, and constraints
 - EEFs
 - OPAs
- Analyze and decompose each work package of the WBS into activities that will be required to produce the deliverable.
- Consult SMEs about unfamiliar material.
- Evaluate all constraints and assumptions for their possible impact on activity definition.
- After decomposing each work package into activities, evaluate the activity list.



233



Activity Dependency



DEFINITION

A logical relationship that exists between two project activities.



234

Activity Dependency

Relationship indicates whether the start of an activity is **contingent on an event or input from outside the activity**.

Activity dependencies determine the precedence relationships.

Example activity: Designing Room Layouts



- Architect needs to assess the functionality of a room design.
- Assessment **cannot start until** workers finish framing the walls, windows, and roof.
- **After** structure is in place, **then** architect can reassess design plans to determine if modifications are

235

Types of Activity Dependencies

Mandatory

- A relationship that is contractually required or inherent in the nature of the work.

Discretionary

- A relationship that is established based on knowledge of best practices within a particular application area or an aspect of the project where a specific sequence is desired.

External

- A relationship between project activities and non-project activities.

Internal

- Contingent on inputs within the project team's control.



Precedence Relationships

Precedence relationships express a logical dependency in precedence diagramming methods.

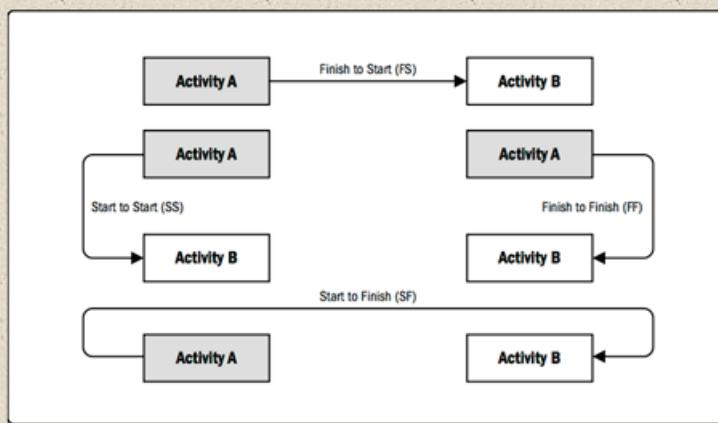
It is a logical relationship between activities that describes what the activity sequence should look like.

Precedence relationships are always assigned to activities based on the dependencies of each activity:

- ✓ Predecessor activity drives the relationship; most often, it occurs first.
- ✓ Successor activity is driven by the relationship.



Types of Precedence Relationships



GUIDELINES

Sequence Project Activities

- Review:
 - Schedule management plan (for information on the scheduling method and tool, and information on how activities may be sequenced)
 - Activity list for all project schedule activities
 - Activity attributes for each activity
 - Milestone list for the dates for specific schedule milestone events
 - Project scope statement
 - EEFs
 - OPAs
- Use tools and techniques such as the precedence diagramming method (PDM), dependency determination, and leads and lags to develop the project schedule network diagram.
- Document the project schedule network diagram and update any project documents, as needed.



239

Activity Duration Estimates



Activity duration estimate

The quantitative assessment of the likely number of time periods that are required to complete an activity.



Elapsed time

The actual calendar time required for an activity from start to finish.



Effort

The number of labor units required to complete a scheduled activity or WBS component, often expressed in hours, days, or weeks. Contrast with duration.

GUIDELINES

Estimate Activity Durations

- Involve the work package owners or those familiar with the work of the activity.
- Consult lessons learned and historical information.
- Review the schedule management plan.
- Determine how you want to quantify the work that needs to be done.
- Consider resource requirements and capabilities.
- Review the resource requirements for each activity.
- Check the resource calendars for resource availability.
- Consider interactions with other projects or operations.
- Review the project scope statement for assumptions and constraints.
- Review the risk register for risks that may affect resource estimation.
- Review the resource breakdown structure.
- Document the activity duration estimates.



241

Schedule Presentation Formats

Select the type of schedule to suit your project.

- ✓ Gantt Chart
- ✓ Milestone Chart
- ✓ Project Schedule Network Diagram with Dates
- ✓ Roadmap
- ✓ Task board
- ✓ Kanban board
- ✓ Burndown chart



Gantt Chart



DEFINITION

A bar chart of schedule information where activities are listed on the vertical axis, dates are shown on the horizontal axis, and the activity durations are shown as horizontal bars placed according to start and finish dates.

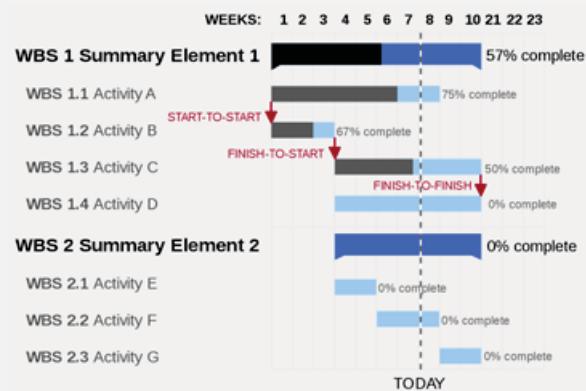


243

Gantt Chart

Useful for:

- ✓ Start and end dates, duration, and order
- ✓ Precedence relationships
- ✓ Percentage completion and actual progress
- ✓ Presentation of project status to the team and management



244

Project Schedule

Network Diagram with Dates and Dependencies

Project schedule can be shown with or without dependencies.

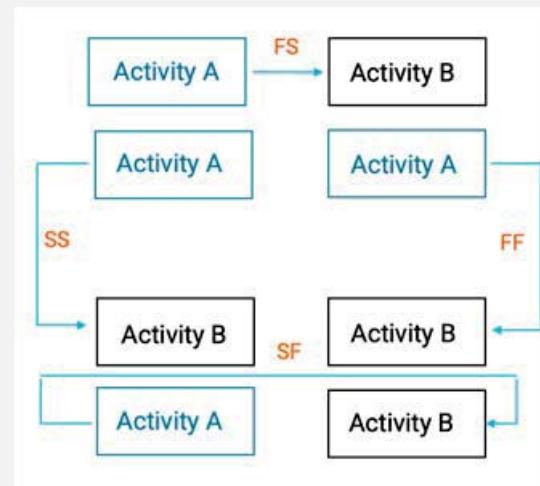
Network diagrams have clear advantages, they assign start and finish dates to activities and show the interrelationship of activities with arrows.

Further benefits:

- ✓ **Clear visual** of project progress, workflow, and interdependencies of activities.
- ✓ **Justification** of time estimate for the project.
- ✓ **Planning** and **organizational** aid.
- ✓ **Schedule compression opportunities** are more easily identifiable.



245



Critical Path Method



DEFINITION

Estimates the minimum project duration and determines the amount of schedule flexibility on the logical network paths within the schedule model.



246

Critical Path Activity

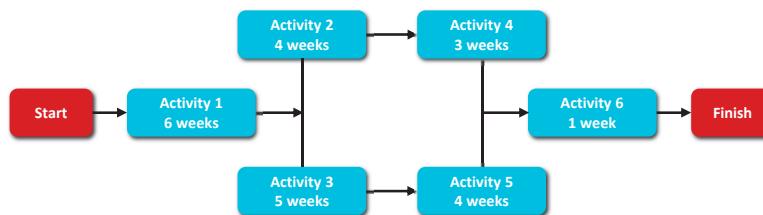


DEFINITION

Any activity on the critical path in a project schedule.

Use the Critical Path Method

- Sequence activities to represent the longest path through a project
- Goal is to determine the shortest possible project duration.
- Use early start (ES); early finish (EF); late start (LS); and late finish (LF) dates for all activities.
- Do not factor in resource limitation.



$$1[6w] + 2[4w] + 4[3w] + 6[1w] = 14 \text{ weeks}$$

$$1[6w] + 3[5w] + 5[4w] + 6[1w] = 16 \text{ weeks}$$

Critical Path

About Float

Float is the amount of time an activity can be delayed from its early start date without delaying the project finish date or consecutive activities.

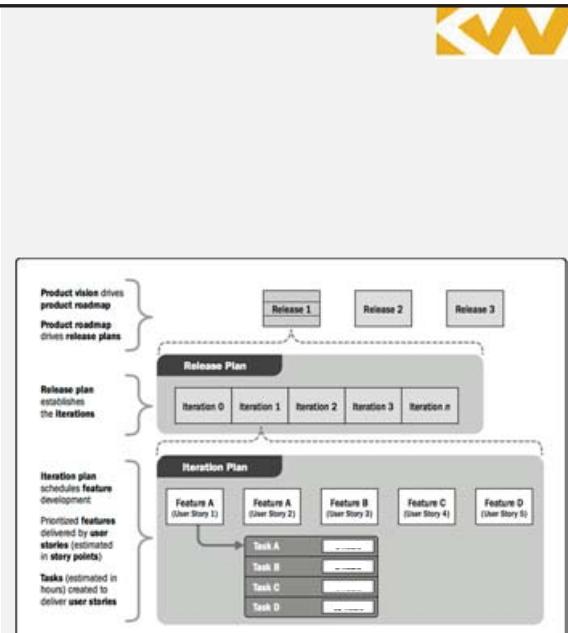
Total float is the amount of time that a schedule activity can be delayed or extended from its early start date without delaying the project finish date or violating a schedule constraint.

Free float is the amount of time that a scheduled activity can be delayed without delaying the early start date of any successor or violating a schedule constraint.

249

Agile Release Planning

- ✓ High-level summary timeline of the release schedule based on product roadmap and vision for the product's evolution.
- ✓ Determines the number of iterations or sprints in the release
- ✓ Allows product owner and team to decide:
 - how much needs to be developed
 - how long it will take to have a releasable product based on business goals, dependencies, and impediments.



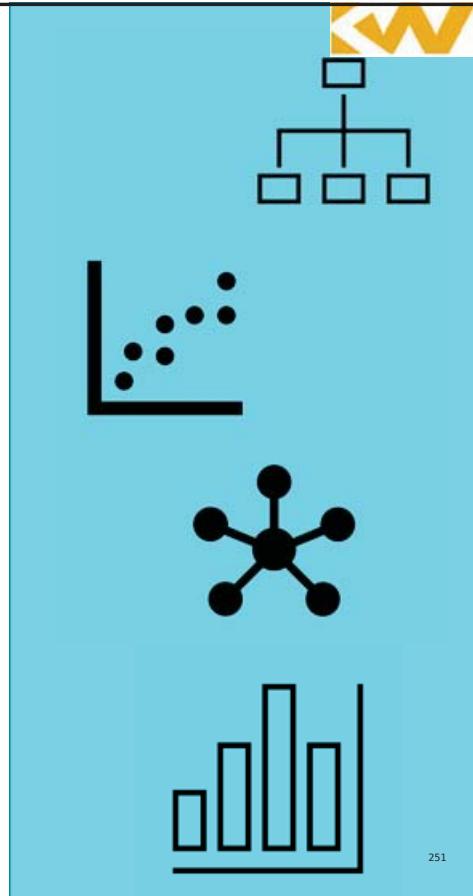
Ongoing Progress Based on Methodology

Traditional - Measure project progress according to schedule by:

- ✓ Monitoring project status to update the schedule.
- ✓ Managing changes to schedule baseline.

Agile - Evaluate progress by:

- ✓ Comparing the total amount of work delivered and accepted to the amount estimated for the current time period.
- ✓ Reviewing completed work in regular Sprint demos.
- ✓ Conducting scheduled reviews to record lessons learned (or retrospectives).
- ✓ Determining the rate at which deliverables are produced, validated, and accepted.



251

Resource Optimization Techniques



252

Smoothing and Levelling

Use Resource Optimization to adjust the start and finish dates of activities.

You need to adjust planned resource use so that it's equal to or less than resource availability.

Adjust the schedule model due to demand and supply of resources.

Use smoothing and levelling techniques.



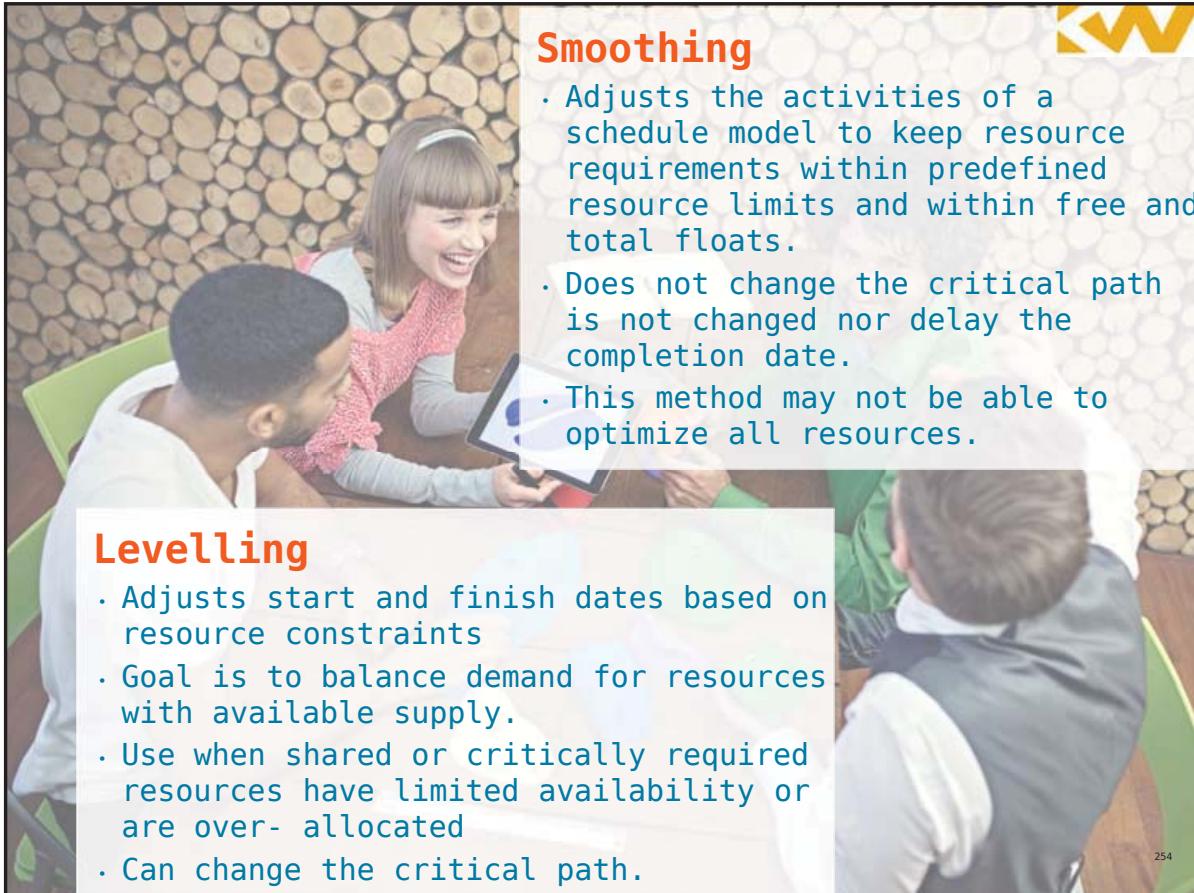
253

Smoothing

- Adjusts the activities of a schedule model to keep resource requirements within predefined resource limits and within free and total floats.
- Does not change the critical path if it is not changed nor delay the completion date.
- This method may not be able to optimize all resources.

Levelling

- Adjusts start and finish dates based on resource constraints
- Goal is to balance demand for resources with available supply.
- Use when shared or critically required resources have limited availability or are over- allocated
- Can change the critical path.

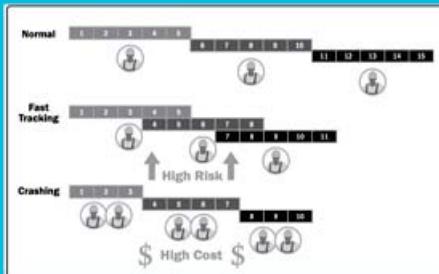


254

Schedule Compression Techniques



255



Schedule Compression Techniques

Crashing

- Shortens schedule duration for the least incremental cost by adding resources e.g. overtime, additional resources
- Works only for activities on the critical path
- Does not always produce a viable alternative and may result in increased risk and/or cost.

Fast-tracking

- Perform activities in parallel to reduce time
- May result in rework, increased risk, and increased cost

256

Coordination with Other Projects

- ✓ If the project is part of a program or a portfolio, evaluate the schedule status for effects on other program or portfolio components.
- ✓ A delay (or acceleration) of a project may not necessarily impact other projects.
- ✓ However, if the delay or acceleration is caused by activities on the project's critical path and that project is critical to the schedule of other projects, the overall effect can be significant.



Plan and Manage Budget and Resources

TOPIC D



Deliverables and Tools



Cost baseline
Management reserve
Resource management plan
Change requests
Cost forecasts
Risk analysis



Estimating techniques: Three Point, Analogous, Parametric, T-Shirt sizing, Planning poker
Review organization data
Meetings
Leverage PMIS
Understand change control
Use velocity data and analysis
Throughput analysis
Cost Variance, EVM, EAC
Features accepted vs feature remaining



259

Cost Estimates

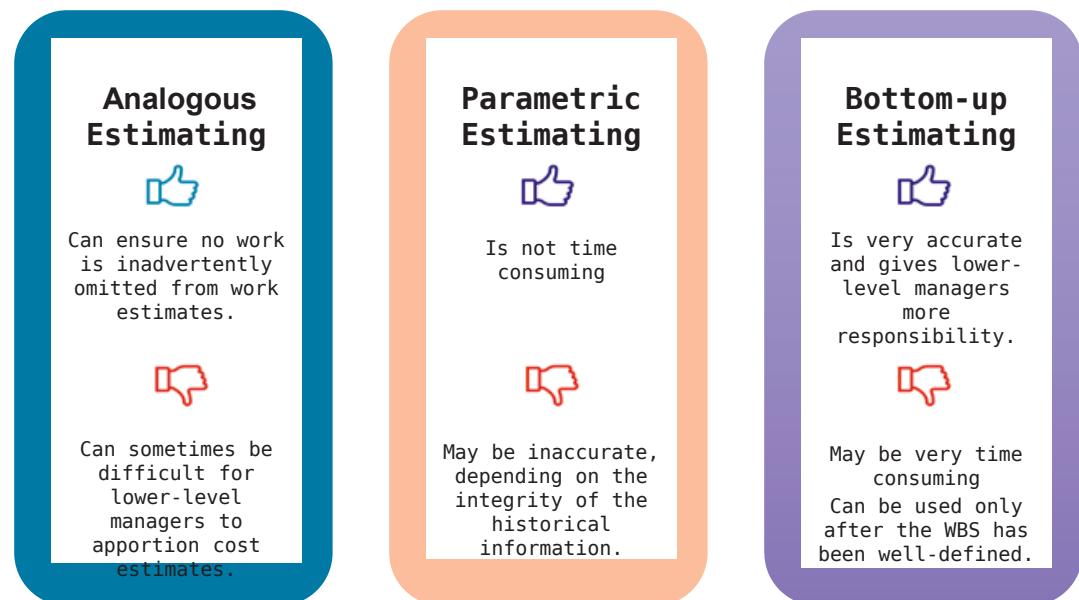
Develop an approximation of the cost for each activity in a project.

Use logical estimates to provide a basis for making sound decisions and they establish baselines.

IT
Labor
Materials
Facilities
Equipment
Services
Reserve

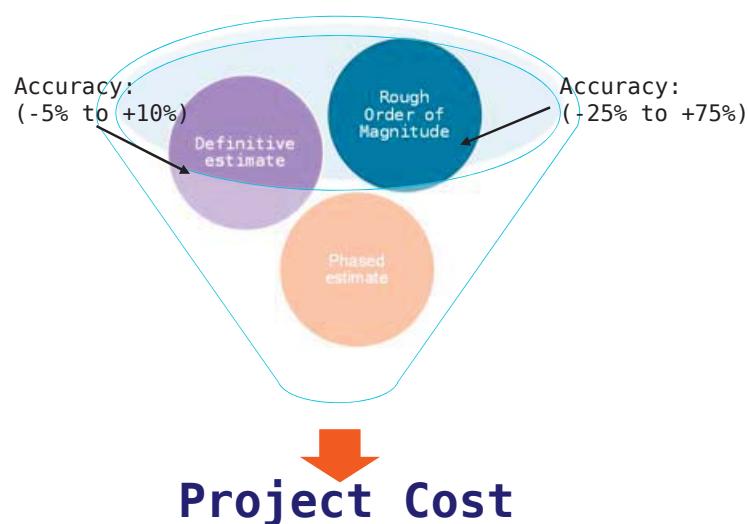
260

Estimating Techniques – Advantages and Disadvantages



261

Common Estimate Types



262

Project Governance



- ✓ Budget management is a critical project oversight and within the purview of project governance.
- ✓ Deviations in budget, scope, schedule, resources or quality, will impact the project.
- ✓ Project governance tells you whom these issues would impact and how to deal with them.
- ✓ Tailor cost estimation approach to phases of the project life cycle.

263

Compliance

Projects must be compliant with internal and external standards, such as:

- ✓ Appropriate government regulations
- ✓ Corporate policies
- ✓ Product and project quality
- ✓ Project risk

The Project Compliance Plan is a sub-plan of the project management plan.

In this step, you:

- ✓ Classify compliance categories
- ✓ Determine potential threats to compliance
- ✓ Analyze the consequences of noncompliance
- ✓ Determine necessary approach and action to address compliance needs





Lessons Learned Register



- ✓ Use during and after projects.
- ✓ Start with budgets from previous, similar projects.
- ✓ They contain valuable cost-estimating information - both successes and shortcomings.

265



GUIDELINES

Estimate Costs

- Gather estimates for individual work packages.
- Check with the resource supplier to validate assumptions.
- Choose a suitable estimating technique according to context.
- Look for alternative costing options.
- Determine which units of measure to use.
- Consider impact of risks on cost.
- Ensure that cost estimates are assigned to the right account.
- Ensure estimates include resource costs, level of estimate, and a list of assumptions.



266

GUIDELINES

Estimate Budget

- Aggregate the estimated costs of individual activities or work packages to establish an authorized cost baseline.
- Ensure budget contains funding needed to complete the project as defined in the scope baseline and the project schedule.
- Measure project cost performance against this cost baseline



267



Cost Baseline



DEFINITION

The cost baseline is the approved version of the time-phased project budget, excluding any management reserves.



268

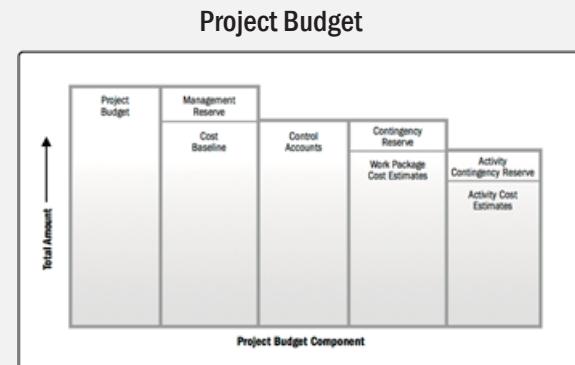
Cost Baseline

Can be changed only through formal change control procedures and is the basis for comparison to actual results.

Cost baseline:

- ✓ Monitors and measures cost performance
- ✓ Includes a budget contingency
- ✓ Is tailored for each project

Other components of the project budget are depicted at right.



control accounts
activity management reserve

control accounts
activity cost estimate
contingency reserve
work package estimates

269

GUIDELINES

Estimate Cost Baseline

- Gather inputs to establish the baseline e.g. WBS, project schedule, cost estimates, and risk management plan.
- Assign work to dates on project schedule and allocate funds for each activity or work package for assigned time period.
- Consider a contingency reserve to cover expenses associated with risks.
- Total the costs for each time period, then plot these on a chart to create an S-curve of the baseline.
- Publish and distribute the cost baseline to the appropriate project stakeholders.



270

Budget Challenges



- ✓ Ideally, budget is set during project planning and does not change.
- ✓ However, the following changes can pose a challenge:
 - New/changed project requirements.
 - New risks, or changes to the probabilities or impacts of existing risks.
 - Changes to cost estimates resulting from economic factors, procurement contract modifications, resource costs, etc.

271

Response to Budget Challenges



When changes or challenges occur, you must tailor:

- ✓ Budget or funding
- ✓ Cost
- ✓ Schedule
- ✓ Scope

If the budget remains fixed and additional funds are not available, then the project must change.

272

Funding Limit Reconciliation



DEFINITION

The process of comparing the planned expenditure of project funds against any limits on the commitment of funds for the project to identify any variances between the funding limits and the planned expenditures.

Funding Limit Reconciliation

Keep in mind:

- ✓ Most budgets assume steady incoming and outgoing flows.
- ✓ Large, sporadic expenditures are usually incompatible with organizational operations.
- ✓ Funding limits help regulate the outgoing capital flow to protect against overspending.



GUIDELINES

Anticipate Future Budget Challenges

- Keep the stakeholder register current and be aware of changes to project requirements if new stakeholders are added to the project.
- Monitor risks frequently to look for new risks and changes to existing ones.
- Monitor the performance of suppliers and vendors.
- Monitor all changes to the project and follow the Change Management System to try to keep them within budget.



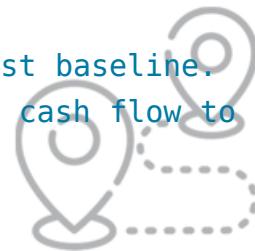
275



GUIDELINES

Determine a Budget

- Review:
 - Cost management plan
 - Human resource management plan
 - Scope baseline for project scope statement, WBS, and WBS dictionary
 - Risk register to consider any risks that may impact cost estimation
 - EEFs and OPAs
- Check the project schedule for type, quantity, and duration of resources.
- Use appropriate tools and techniques.
- Document the project budget, creating a cost baseline.
- Understand project funding requirements or cash flow to enable the project.
- Update project documents, as needed.



276





Plan and Manage Quality of Deliverables

TOPIC E



273

STARTING THE PROJECT > PLAN AND MANAGE QUALITY OF DELIVERABLES Deliverables and Tools



Quality Management Plan
Quality Metrics
Quality Assurance
Quality Control



Cost benefits analysis
Cost of Quality
Benchmarking
Quality audit
Process analysis
Measure quality
Verify deliverables
Quality measurement tools



278

Quality



DEFINITION

The degree to which a set of inherent characteristics fulfill requirements.

Quality Standards and Regulations

Standards - Documents established as a model by an authority, custom, or by general consent.

Regulations - These requirements can establish product, process, or service characteristics, including applicable administrative provisions that have government-mandated compliance.

De facto regulations - Regulations that are widely accepted and adopted through use.

De jure regulations - Regulations that are mandated by law or have been approved by a recognized body of experts.

ISO 9000 Series - A quality system standard that can be applied to any product, service, or process in the world.



Verified Deliverables

- ✓ Project team **verifies** deliverables based on quality standards and requirements
- ✓ The verified deliverables are **presented to and accepted** (or validated) by the customer – resulting in accepted deliverables.
- ✓ **Measure** products and outputs against the project's quality standards.
- ✓ **Implement** corrections and controls when quality standards are neither met nor within acceptable ranges.



Quality Management Plan



DEFINITION

A component of the project management plan that describes how applicable policies, procedures, and guidelines will be implemented to achieve the quality objectives.



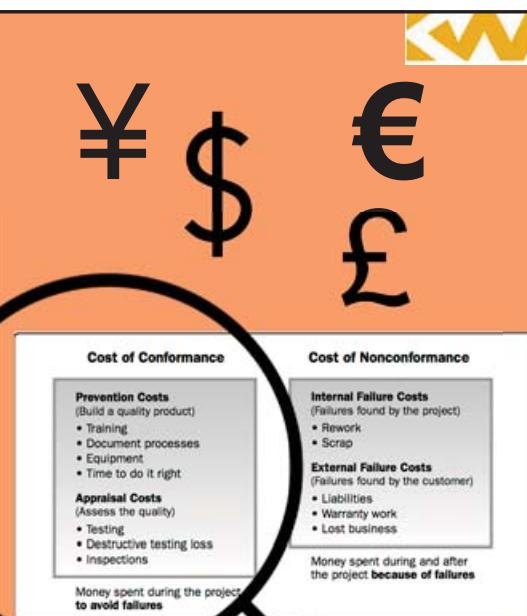
Quality Management Plan

- ✓ Describes the **activities and resources** necessary for the project management team to achieve the quality objectives.
- ✓ May be formal or informal, detailed, or broadly framed. **Style and detail** are determined by project requirements.
- ✓ **Review** the quality management plan early in the project.
- ✓ Benefits:
 - Decisions based on accurate information
 - Sharper focus on the project's value proposition
 - Cost reductions
 - Mitigate schedule overruns from rework



Cost of Quality (CoQ)

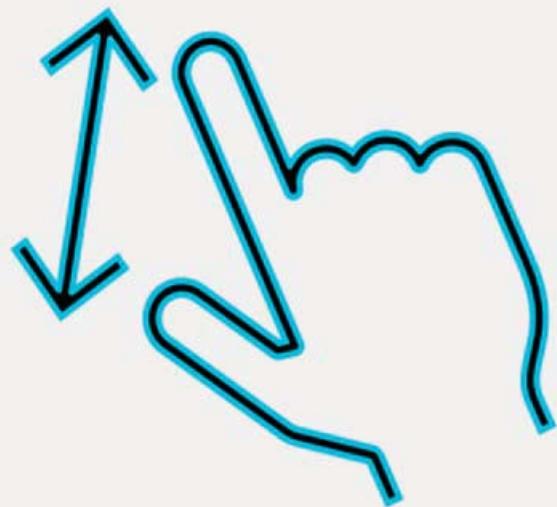
CoQ is all costs incurred over the life of the product by investment in preventing nonconformance to requirements, appraisal of the product or service for conformance to requirements, and failure to meet requirements.



Quality Metrics

Quality metrics - A description of a project or product attribute and how to measure it.

Tolerance - The quantified description of acceptable variation for a quality requirement.



Quality Audit



DEFINITION

A structured, independent process to determine if project activities comply with organizational and project policies, processes, and procedures.

Quality Audit



- ✓ Improves quality performance of a project.
- ✓ Can be conducted at scheduled or random intervals.
- ✓ Topics include:
 - Quality management policy
 - Collection and use of information
 - Analytical methods
 - Cost of quality
 - Quality process design

GUIDELINES

Manage Quality

- Ensure that random and/or scheduled quality audits are conducted by qualified auditors.
- Use one or more of the quality assurance tools and techniques to determine the causes of quality problems of the project's product, service, systems, or processes.
- Identify and implement the appropriate actions to take to increase the effectiveness and efficiency of the project team's work results.



Control Quality Tools

Data Gathering



- Checklists/Chek Sheets
- Statistical Sampling
- Questionnaires and Surveys

Data Analysis



- Performance Reviews
- Root Cause Analysis

Data Representation



- Cause-and-Effect Diagram
- Control Charts
- Histograms
- Scatter Diagrams

Data Gathering

Questionnaires and Surveys



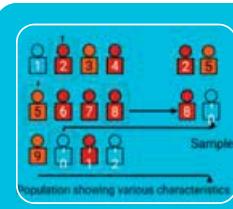
- Written set of questions, quickly accumulates information from a large number of respondents.
- Useful for varied audiences, for quick turnaround, or geographical dispersion of respondents

Checklists



- Check Sheets A structured tool, usually component-specific
- Verifies performance of required steps or completion of requirements
- Used to organize facts to facilitate data collection about a potential quality problem
- Useful for gathering attribute data while performing inspections for defects.

Statistical sampling



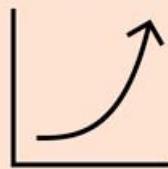
- Choosing part of a population of interest for inspection.
- Determine characteristics of an entire population based on measurement of representative sample.

Data Analysis

Performance Reviews

Technique that is used to measure, compare, and analyze actual performance of work in progress on the project against the baseline.

- Critical chain method
- Earned value management
- Trend analysis
- Critical path method



PM

Root Cause Analysis

Analytical technique used to determine the basic underlying reason that causes a variance, defect, or a risk.

- Using gathered data, identify the cause of the problem.
- Goal is to pinpoint the exact cause.
- Follow issue back to the initial trigger.
- Use RCA tools - Failure Modes and Effects Analysis (FMEA), a fishbone diagram, a Pareto chart, a scatter diagram

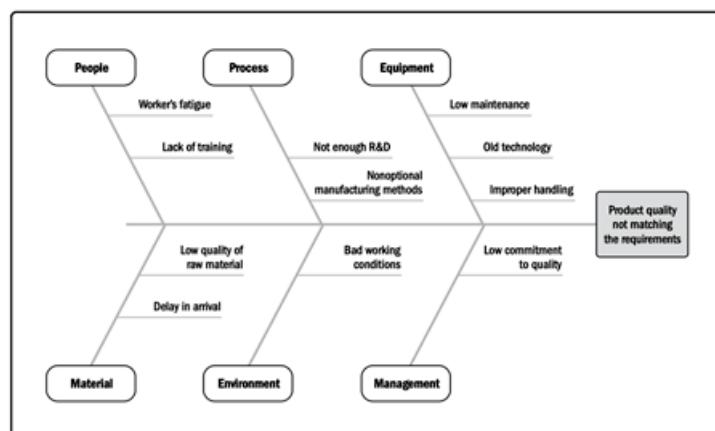
291

Data Representation (1 of 4)

Cause and Effect Diagram

Fishbone diagrams, why-why diagrams, or Ishikawa diagrams

Breaks down the causes of the problem statement identified into discrete branches, helping to identify the main or root cause of the problem.



Example fishbone diagram

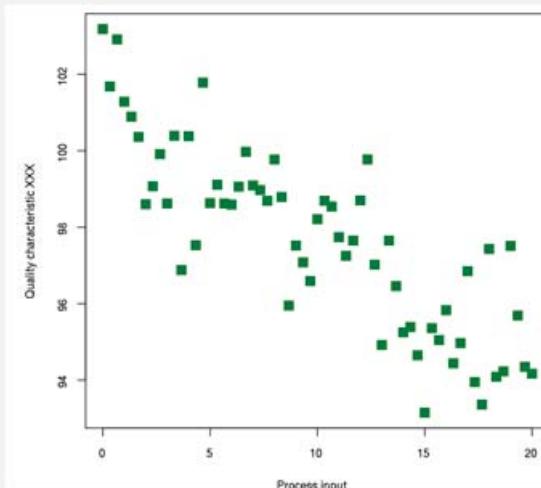
PM

292

Data Representation (2 of 4)

Scatter Diagram

- ✓ A graph that shows the relationship between two variables.
- ✓ Demonstrates a relationship between any element of a process, environment, or activity on one axis and a quality defect on the other axis.



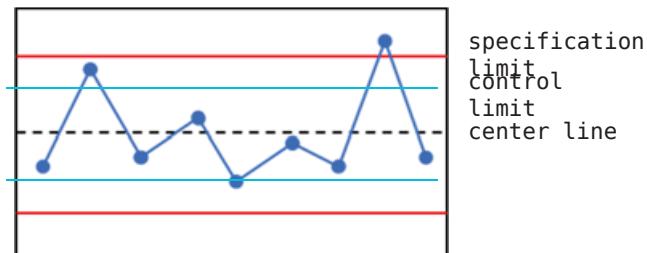
293

Data Representation (3 of 4)

Control Chart

A tool used to determine the predictability, behavior and stability of a process over time.

- ✓ A graphic display of project data against established control limits to reflect both the maximum and minimum values.
- ✓ Gives visibility to where corrective actions can prevent further problems.
- ✓ Ideal for repetitive processes with predictable results.



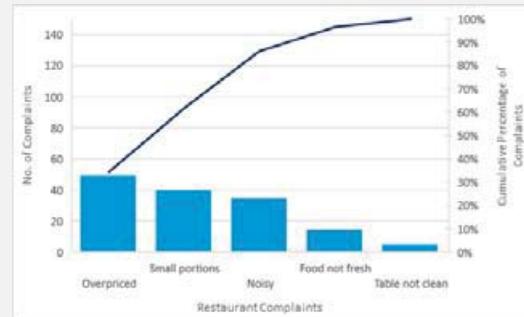
294

Data Representation

(4 of 4)

Pareto chart

- ✓ A histogram used to rank causes of problems in a hierarchical format.
- ✓ Use to help determine the most frequent defects, complaints, or other factors that affect quality.
- ✓ Demonstrates the frequency of occurrence
- ✓ Analyzes data sets related to a specific problem or issue.
- ✓ Does not define the root cause of a problem.



295



GUIDELINES

Control Product Quality

- Conduct inspections to detect quality errors during project work.
- Use Pareto diagrams to focus corrective actions on the problems with the greatest effect on quality.
- Use control charts to analyze and communicate the variability of a process or project activity over time.
- Identify ways to eliminate causes of unsatisfactory results.
- Use flowcharts to identify redundancies, missed steps, or the source of quality performance problems.
- Initiate process adjustments by implementing corrective or preventive actions.
- Continue to monitor, measure, and adjust quality throughout project life cycle.





Integrate Project Planning Activities

TOPIC F



291



Integration Management

- ✓ **Assessment and coordination** of all plans and activities that are built, maintained, and executed throughout a project.
- ✓ A holistic, integrated view **ties plans together**, aligns efforts, and highlights how they depend on each other.
- ✓ An integrated view of all plans can **identify and correct gaps** or conflicts.
- ✓ A consolidation of the plans **encapsulates the overall project plan** and its intended business value.

298

Project Management Plan

The document that describes how the project will be executed, monitored, controlled, and closed.



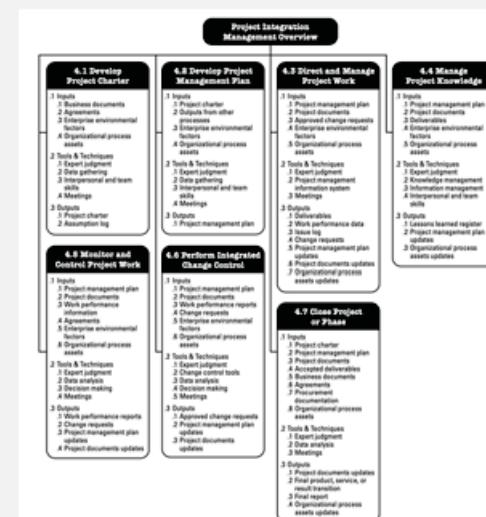
299

Project Integration Management Processes

Projects and project management are integrative by nature. This is an overview of the processes that project managers need to know.

Also know that:

- ✓ These processes overlap and interact with each other.
- ✓ The links among these processes are often iterative.



300

Project Management Information System (PMIS)

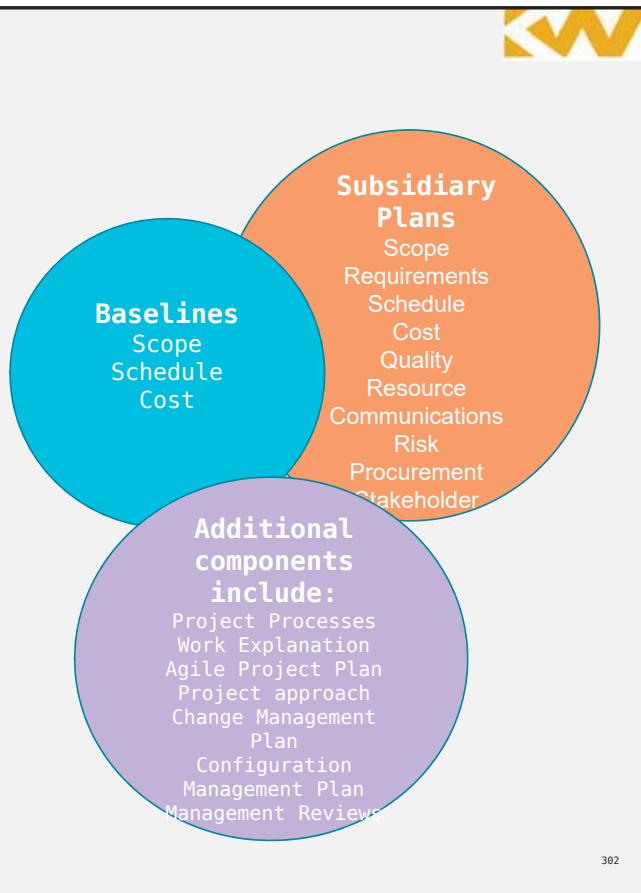
An information system e.g. Microsoft Project consisting of the tools and techniques used to gather, integrate, and disseminate the outputs of project management processes.

The PMIS enables quick and efficient work.



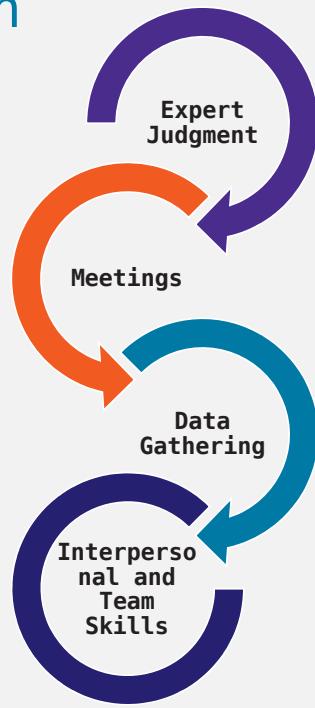
Project Management Plan Components

- ✓ These are a combination of essential and supporting processes used to run a project.
- ✓ Ensure the essential plans and processes are in place.
- ✓ Adapt and tailor the supporting plans and processes to your project.
- ✓ Consider the needs of the project to determine which components of the project management plan are needed.



Project Management Plan Tools and Techniques

- ✓ Use **expert judgment** to make critical decisions.
- ✓ Use **meetings** to facilitate communication and understanding.
- ✓ **Gather data** to understand the project
- ✓ Leverage **interpersonal and team skills** to be an effective leader.



303

Managing Change

304

Configuration Management Plan

Identify and account for project **artifacts under configuration control**, and how to record and report changes to them.

Change Management Plan

Provides direction for managing the **change control process** and documents the roles and responsibilities of the change control board (CCB).



Identification, maintenance, status reporting, and verification of **configurable items**

Identification, impact analysis, documentation, and approving or rejecting of **change requests**.

305

Change Management Plan

Answers the following questions:

- Who can propose a change?
- What exactly constitutes a change?
- What is the impact of the change on project objectives?
- What are steps to evaluate a change request before approving or rejecting it?
- When a change request is approved, what project documents will record the next steps (actions)?
- How will you monitor these actions to confirm completion and quality?



GUIDELINES

Develop a Project Management Plan

- Review:
 - Project charter - for the high-level boundaries of the project
 - Outputs from other processes
 - EEFs and OPAs
- Use tools and techniques.
- Use facilitation techniques.
- Document the project management plan.
- Assess incremental delivery options.



307



Factoring in Dynamic Change

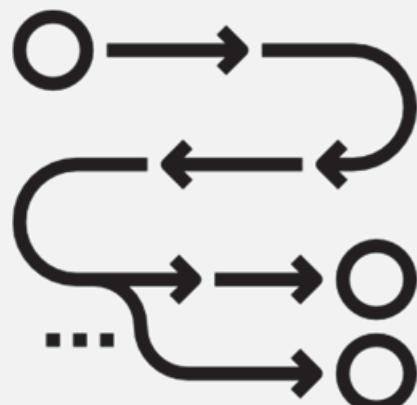
Highly dynamic and complex projects which are very common, require a robust approach to change.

Some Agile approaches for managing change:

Disciplined Agile (DA) - a hybrid tool kit that harnesses hundreds of agile practices to devise the best “way of working” (WoW) for your team or organization.

Scrum of Scrums - A technique for operation of Scrum at scale for multiple teams working on the same product, coordinating discussions of progress on interdependencies, and focusing on how to integrate the delivery of software, especially in areas of overlap.

Scaled Agile Framework (SAFe®) - A knowledge base of integrated patterns for enterprise-scale, lean-agile development.



308





Plan and Manage Procurement

TOPIC G



309

STARTING THE PROJECT > PLAN AND MANAGE PROCUREMENT Deliverables and Tools



Statement of Work
Procurement Management Plan
Source selection criteria
Selected sellers
Change Control Log
Agreement
Change Requests



Make or Buy Analysis
Market research
Meetings
Expert judgment
Proposal Evaluation Techniques
Negotiations
Bidder Conferences
Change Control Process

Procurement Strategy

The approach by the buyer to determine the project delivery method and the type of legally binding agreement(s) that should be used to deliver the desired results.



Delivery Solution

The goal of procurement is the delivery of procured goods or services by the supplier to the procuring organization.

Solution Delivery Phase	Description
Planning and analysis	Customer requirements are documented
Detailed design	Solution is documented
Implementation or installation	Solution is implemented or installed
Testing	Solution is tested
Training	Training is provided to the customer
Handover	Solution is formally handed over to the customer
Support and maintenance	Solution is transferred to customer support

Make or Buy?

Make-or-buy analysis - The process of gathering and organizing data about product requirements and analyzing them against available alternatives including the purchase or internal manufacture of the product.

Make-or-buy decisions - Decisions made regarding the external purchase or internal manufacture of a product.

Make-or-buy decision considerations:

What is the impact on cost, time, or quality?

Is there an ongoing need for the specific skill set?

How steep is the learning curve?

Are required resources readily available within the organization?



Statement of Work (SOW)



DEFINITION

A narrative description of products, services, or results to be delivered by the project.

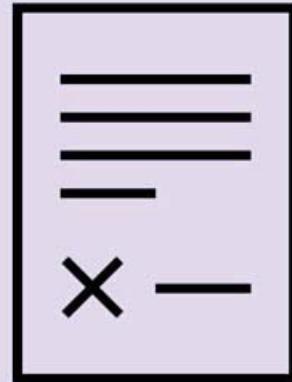
Procurement SOW

The Statement of Work (SOW) describes the procurement item in sufficient detail to allow prospective sellers to determine if they are capable of providing the products, services, or results.

- ✓ Distributed to potential vendors to evaluate their capability to perform the work or provide the services.
- ✓ Serves as a basis to develop the procurement documents during the solicitation process.
- ✓ A project scope baseline is used to create the procurement SOW.



summary
scope
deliverables
fees



315

Procurement Management Plan



DEFINITION

A component of the project or program management plan that describes how a project team will acquire goods and services from outside of the performing organization.



316

Procurement Management Plan

- ✓ Specifies the types of contracts that will be used
- ✓ Describes the process for obtaining and evaluating bids
- ✓ Mandates standardized procurement documents
- ✓ Describes how providers will be managed



Source Selection Criteria

A set of attributes desired by the buyer which a seller is required to meet or exceed to be selected for a contract. Some of these are:



- ✓ Overall or life-cycle
- ✓ Understanding of need
- ✓ Technical capability
- ✓ Management approach
- ✓ Technical approach
- ✓ Warranty
- ✓ Financial capacity
- ✓ Production capacity and interest
- ✓ Business size and type
- ✓ Past performance of sellers
- ✓ References
- ✓ Intellectual property rights
- ✓ Proprietary rights



Qualified Vendors

- ✓ Vendors approved to deliver products, services, or results based on the procurement requirements identified for a project.
- ✓ The list of qualified vendors can be based on historical information about the vendors.
- ✓ If the required resources are new to the organization, market research can help to "vet" them.



Bidder Conferences

These are meetings with prospective sellers prior to the preparation of a bid or proposal to ensure **all prospective vendors have a clear and common understanding of the procurement**.

Also known as contractor conferences, vendor conferences, or pre-bid conferences.

- ✓ Buyer explains the requirements, proposed terms, and conditions; buyer clarifies the vendors' queries.
- ✓ Buyer ensures all prospective vendors have a clear and common understanding of technical and contractual requirements of the procurement.



External Resource Requirements and Needs

Sometimes you need to move beyond the organization to secure services and expertise from outside sources on a contract or short-term basis.

External resource are used commonly.

It helps businesses to focus more on their core competencies.



Supplier and Contracts

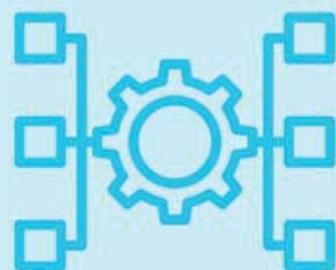
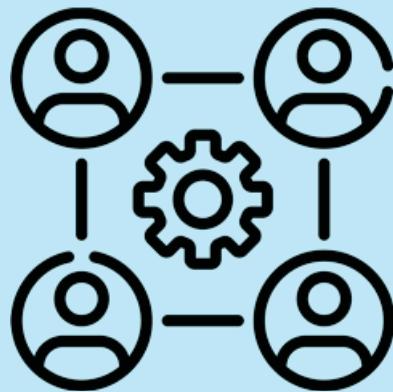
Contract - A mutually binding agreement that obligates the seller (**supplier**) to provide the specified project or service or result and obligates the buyer to pay for it for each agreement

- ✓ Contract types:
 - Fixed-price
 - Cost-reimbursable
 - Time-and-material (T&M)
- ✓ Agile contract types
 - Capped Time and Materials Contracts
 - Target Cost Contracts
 - Incremental Delivery Contracts



Communicating with Suppliers and Vendors

- ✓ Critical component of the procurement process due to the people involved.
- ✓ Consult the Communications Management Plan for provisions for working with vendors or suppliers, such as:
 - Periodic progress reports of supplier activities.
 - Advance notification of potential supplier cost overruns or schedule delays, and acknowledgement by the project manager to the supplier.
 - Formal acceptance by the project manager of supplier's contract deliverables.



Components of Contracts

- ✓ Description of the work being procured for the project, its deliverables, and scope
- ✓ Delivery date and schedule information
- ✓ Identification of authority, where appropriate
- ✓ Responsibilities of both parties
- ✓ Management of technical and business aspects
- ✓ Price and payment terms
- ✓ Provisions for termination
- ✓ Applicable guarantees and warranties

Traditional Contract Types

Contract type	Description
Fixed-price	<ul style="list-style-type: none"> An agreement that sets the fee that will be paid for a defined scope of work regardless of the cost or effort to deliver it. Also known as a lump sum contract. Provides maximum protection to buyer but requires a lengthy preparation and bid evaluation. Suited for projects with a high degree of certainty about their parameters.
Cost-reimbursable	<ul style="list-style-type: none"> A contract involving payment to the seller for the seller's actual costs, plus a fee typically representing the seller's profit. Includes incentives for meeting certain objectives, such as costs, schedule, or technical performance targets. Suited for projects when parameters are uncertain.
Time and Material (T&M)	<ul style="list-style-type: none"> A type of contract that is a hybrid contractual arrangement containing aspects of both cost-reimbursable and fixed-price contracts. Combines a negotiated hourly rate and full reimbursement for materials. Include not-to-exceed values and time limits to prevent unlimited cost growth. Suited for projects when a precise statement of work cannot be quickly prescribed.

325

Agile Contract Types

Contract Type	Description
Capped Time and Materials Contracts	<ul style="list-style-type: none"> Works like traditional Time and Materials contracts. However, an upper limit is set on customers' payment. Customers pay up for the capped cost limit. Suppliers benefit in case of early time-frame changes.
Target Cost Contracts	<ul style="list-style-type: none"> Supplier and customer agree on final price during project cost negotiation. Primarily for mutual cost savings if contract value runs below budget. These contracts may allow both parties to face additional costs if it exceeds budget.
Incremental Delivery Contracts	<ul style="list-style-type: none"> Customers review contracts during the contract life cycle at pre-negotiated designated points of the contract lifecycle. Customers can make required changes, continue or terminate the project at these points.

326

Control Procurements Process



DEFINITION

The process of managing procurement relationships, monitoring contract performance, making changes and corrections as appropriate, and closing out contracts.

Notify the appropriate entity (usually **Accounts Payable**) when work has been fulfilled and contracts can be paid.



Contract Change Control System

The system used to collect, track, adjudicate, and communicate changes to a contract.

- ✓ Might be a component of the integrated change control system or a separate system.
- ✓ Specifically dedicated to control contract changes.
- ✓ Specifies the process by which project contract changes can be made.
- ✓ Includes the documentation, dispute-resolution processes, and approval levels to authorize the changes to contract specifications.



Types of Contract Changes

Component	Description
Administrative changes	Non-substantive changes, usually about the way the contract is administered.
Contract modification	A substantive change to the contract requirements such as a new deadline or a change to the product requirements.
Supplemental agreement	An additional agreement related to the contract but negotiated separately.
Constructive changes	Changes that the buyer may have caused through action or inaction.
Termination of contract	A contract may be terminated due to vendor default or for customer convenience. Defaults are due to nonperformance, such as late deliveries and poor quality, or nonperformance of some or all project requirements.

Legal Concepts when Managing Disputes

Seek legal advice if the terms of a contract have not been met.
Negotiate settlements to arrive at a final equitable settlement of all outstanding issues, claims, and disputes by negotiation.

Legal Issue	Description
Warranty	A promise, explicit or implied, that goods or services will meet a pre-determined standard. The standard may cover reliability, fitness for use, and safety.
Waiver	The giving up of a contract right, even inadvertently.
Breach of contract	Failure to meet some or all of the obligations of a contract. It may result in damages paid to the injured party, litigation, or other ramifications.
Cease and desist (C&D) letter	A letter sent to an individual or a business to stop (cease) allegedly illegal activities and to not undertake them again (desist). Often used as a warning of impending legal action if it is ignored.

331



GUIDELINES

Handle Disputes

- Be aware of important legal terms e.g. 'warranty', 'waiver', and 'breach of contract' that can, if ignored, have a significant impact on the project.
- Consult with the legal department or an outside legal expert so you thoroughly understand any contracts that affect your project.
- If your contract isn't written specifically to exclude inadvertent waivers, avoid waiving your contract rights by:
 - Accepting a product that fails to meet standards for quality or performance.
 - Accepting late deliveries.
 - Overlooking an aspect of nonconformance to contractual obligations.



332

GUIDELINES

Manage Suppliers and Contracts

- Index and store all contract correspondence for ease of retrieval.
- Develop and implement an effective contract change control system.
- Evaluate the risk of each contract change request.
- Document all contract changes and incorporate any effects of the changes into the project plan.
- Develop and implement an effective performance reporting system for the seller.
- Specify any performance reporting criteria to apply to the seller.
- Set performance milestones to monitor project progress.
- If work is performed at another site, conduct site visits to determine how the seller's work is progressing.
- Submit approved invoices for payment in accordance with the contract and the project's payment system.



333



Establish Project Governance Structure

TOPIC H

STARTING THE PROJECT > ESTABLISH PROJECT GOVERNANCE STRUCTURE

Deliverables and Tools



Stakeholder Artifacts



Meetings

Leverage Organizational
Process Assets

PMIS

Update documents



335

Project Governance



Project Governance



DEFINITION

The framework, functions, and processes that guide project management activities in order to create a unique product, service, or result to meet organizational, strategic, and operational goals.



337



Project Governance



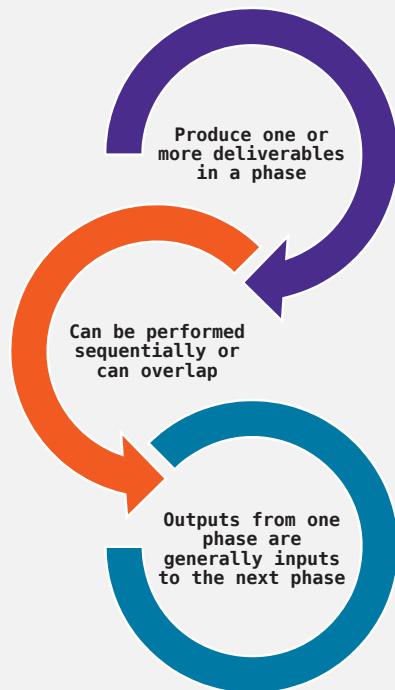
Components:

- ✓ Project success and deliverable acceptance criteria
- ✓ Process to identify, escalate, and resolve issues
- ✓ Relationship between project team, organizational groups, and external stakeholders
- ✓ Project organization chart with project roles
- ✓ Communication processes and procedures
- ✓ Processes for project decision-making
- ✓ Guidelines for aligning project governance and organizational strategy
- ✓ Project life cycle approach
- ✓ Process for stage gate or phase reviews
- ✓ Process for review and approval of changes above the project manager's authority
- ✓ Process to align internal stakeholders with project process requirements

338

Project Phases

A collection of logically related project activities that culminates in the completion of one or more deliverables.



339

Apply Governance to the Project Life Cycle

- ✓ At the beginning of a phase, verify and validate the former assumptions made to the project, analyze risks, and provide detailed explanation of the phase's deliverables.
- ✓ After the phase's key deliverables are produced, a review ensures completeness and acceptance.
- ✓ A phase can be closed, or the project terminated when huge risks are involved for the project or when the objectives are no longer required.



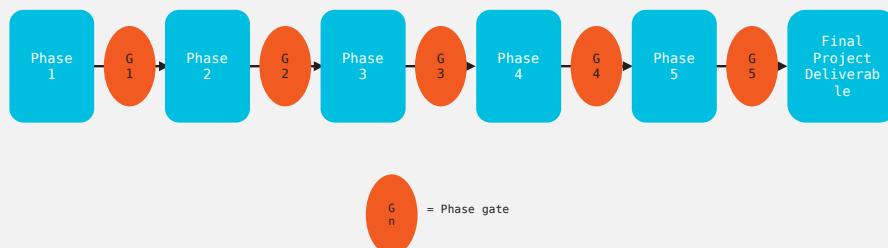
Phase Gates

A review at the end of a phase in which a decision is made to continue to the next phase, to continue with modification, or to end a project or program.

Synonyms include governance gate, tollgate, and kill point.

Used to check if each phase has fulfilled the exit criteria and is eligible to move to the next step.

Software development projects use a specialized type of phase gate called a quality gate.



341



Phase-to-Phase Relationships

Sequential relationships

contain consecutive phases that start only when the previous phase is complete. This relationship reduces the level of uncertainty, which may eliminate the option for shortening a project's schedule.

Overlapping relationships

contain phases that start prior to the previous phase ending. This relationship increases the level of risk and may cause rework if something from the previous phase directly affects the next phase.

342

GUIDELINES

Determine Appropriate Governance for a Project

- Involve the organization's decision managers i.e. senior managers.
- Choose the most appropriate governance goals and try to keep them simple.
- Select a group of experienced individuals to be responsible for all governance activities.
- Practice governance for projects, programs, and portfolios.
- Keep the governance process transparent to the project stakeholders.
- Remember that governance is an evolutionary process and take advantage of the lessons you have learned during it.



343



Plan and Manage Project/Phase Closure

TOPIC I



Deliverables and Tools



Definition of Done
Accepted Deliverables



Nil



345

Close Project or Phase

Several important activities occur during closeout:

- ✓ The planned work is completed.
- ✓ Project or phase information is archived.
- ✓ Project team resources are released to pursue other endeavors.



Close Project or Phase Criteria

Closure Reasons:

- The project or phase successfully met its completion objectives.
- Requirements changed during execution and the project is no longer feasible.
- Funding is no longer available to complete the requirements.
- Significant risks make the successful completion of the project impossible.
- The organization no longer needs the project deliverables.
- External factors eliminate the need for the project. Examples of these factors include:
 - Change in laws or regulations.
 - Merger or acquisition that affects the organization.
 - Global or national economic changes.



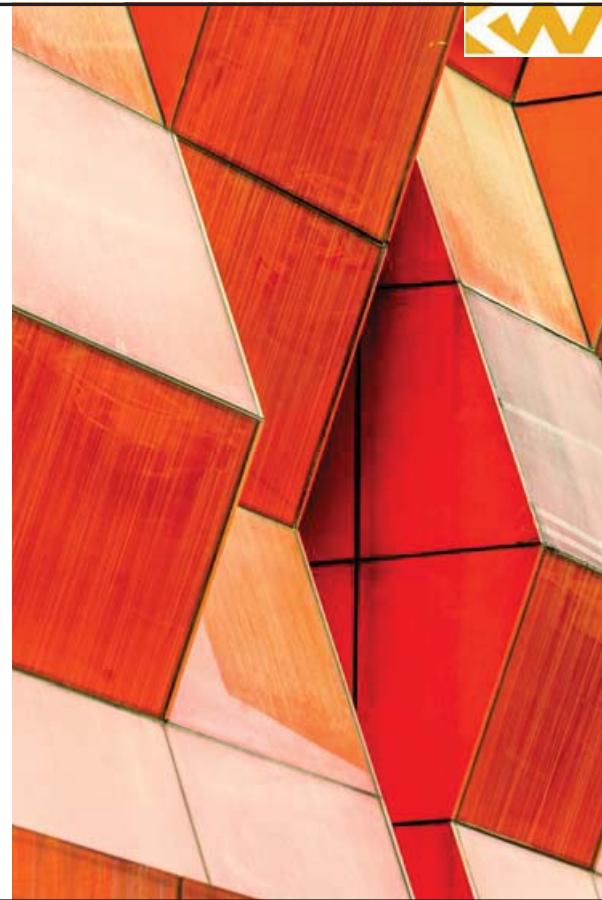
Close Procurements

- ✓ Close procurements when the contract terms of a procurement have been satisfied by both buyer and seller.
- ✓ This occurs throughout the life of the project, not during project closure.
- ✓ Keep contracts open only for the necessary period, to avoid erroneous or unintentional charges against the contract.



Acceptance of Project Deliverables

- ✓ Project deliverables are deemed accepted when acceptance criteria have been met.
- ✓ These criteria generally refer to some or all of the requirements that were established at the beginning of the project (and which might have been modified during the project's life cycle).
- ✓ Deliverables that meet these acceptance criteria are formally signed off and approved by the customer or sponsor.



Payments

- ✓ Payments made to a supplier or vendor are made in accordance with the terms of the contract between the buyer and the supplier or vendor.
- ✓ Unless a contract is closed at the completion of the project or phase, payment will most likely have been made at the time of contract closure.
- ✓ It should not be delayed until project or phase closure (unless specified in the contract), to avoid the potential for accidental charges to the contract.



Knowledge Management



Use the Lessons-Learned Register

Considerations:

- ✓ Scheduling lessons learned
- ✓ Conflict management lessons learned
- ✓ Sellers lessons learned
- ✓ Customer lessons learned
- ✓ Strategic lessons learned
- ✓ Tactical lessons learned
- ✓ Any other aspects of lessons learned



Knowledge Management



DEFINITION

A store of historical information about lessons learned in projects.



Knowledge Management

- ✓ Knowledge management during project or phase closure consists of finalizing the lessons-learned register, which is compiled throughout the project life cycle.
- ✓ This document should then be added to the lessons-learned repository, which is a database of lessons learned from multiple projects.
- ✓ At the close of the project – the lessons learned should be added to the Knowledge Management/Lessons Learned repository

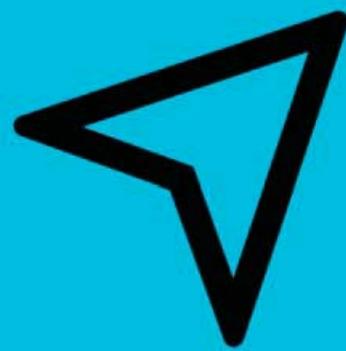
Transition Planning Artifacts

Coordination and strategy about how to best deliver and transition the product and other deliverables is needed.

Releasing and deploying deliverables in the most suitable manner ensures end-user awareness and increases the proper usages and adoption of outputs.

Preparation of artifacts includes:

- ✓ Training
- ✓ Documentation
- ✓ Communication
- ✓ Support



Transition Readiness

Releasing, delivering, and deploying the project's work into an environment that is not ready may negate its value.

Examine the readiness of all parties and **prepare them** for delivery, including:

- ✓ End users
- ✓ The business
- ✓ The physical resources
- ✓ The project team

Most critical in situations where **there is an upgrade** or improvement to an existing product or service.

Assess the readiness of all parties, implement the transition plans accordingly, and capture lessons learned for the **next release** or project.



GUIDELINES

Close Out a Project or Phase

- Review the project management plan.
- If applicable, use a project termination checklist.
- Gather and organize performance measurement documentation, product documentation, and other relevant project records.
- Confirm project's products meet compliance requirements.
- Release project resources.
- Update records to ensure that they reflect final specifications.
- Be sure to update the resource pool database to reflect new skills and increased levels of proficiency.
- Analyze project success and effectiveness and document lessons learned.
- Prepare lessons-learned reports and a final project report.
- Obtain project approval and formal project acceptance.
- Archive a complete set of indexed project records.
- Celebrate the success of the project with the team and other stakeholders.



357



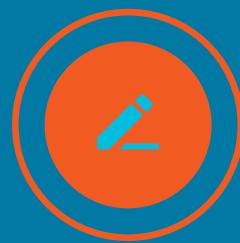
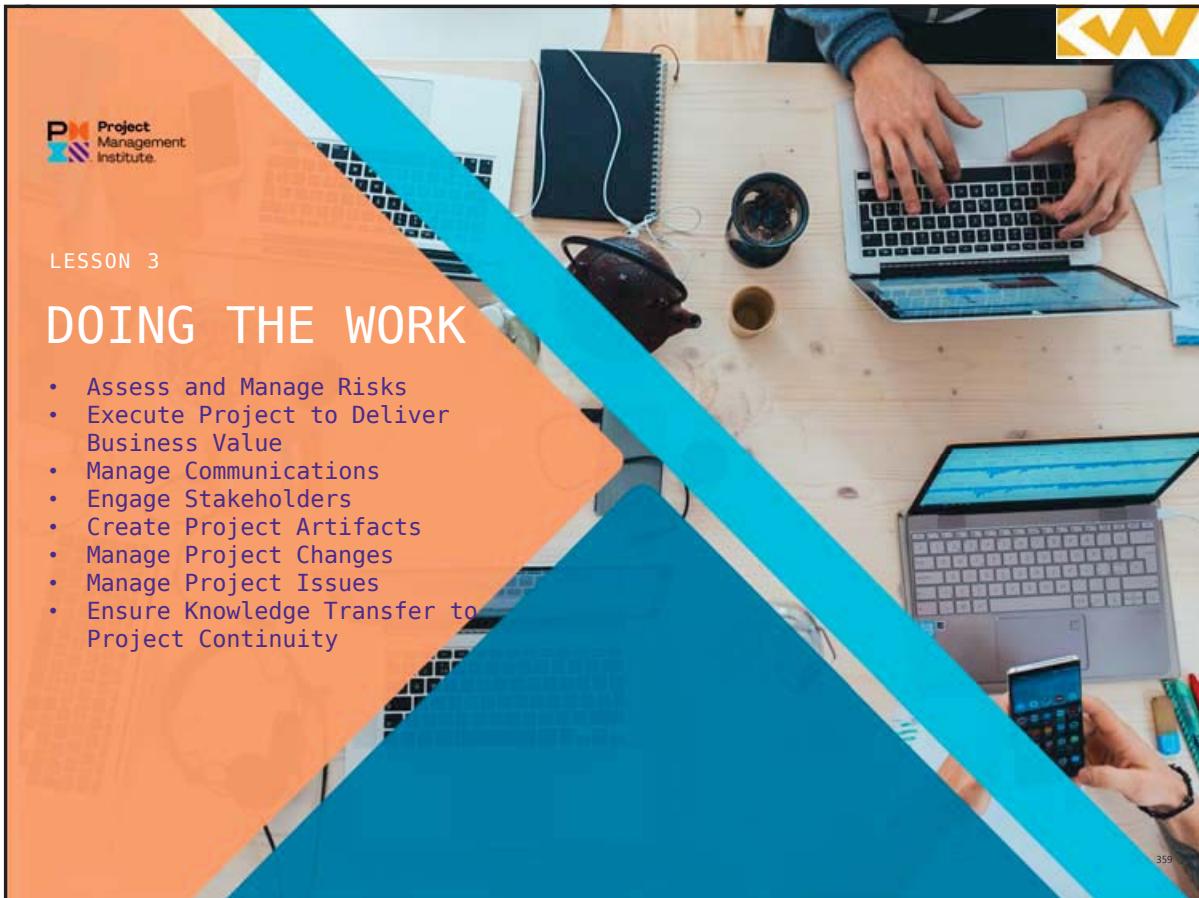
End of
Module
2



LESSON 3

DOING THE WORK

- Assess and Manage Risks
- Execute Project to Deliver Business Value
- Manage Communications
- Engage Stakeholders
- Create Project Artifacts
- Manage Project Changes
- Manage Project Issues
- Ensure Knowledge Transfer to Project Continuity



Assess and Manage Risks

TOPIC A

Deliverables and Tools



Risk Management Plan
Risk Register



Organizational Process Assets
Meetings
Expert judgment
Risk analysis techniques
Update Risk Register
Risk probability and impact assessment
Monitor and manage risks



361

Risk



DEFINITION

An uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives.



Risk

Positive risks, or **opportunities**, produce a positive project outcome.

Negative risks, or **threats**, have a negative impact on the project.

363

Trigger Condition



DEFINITION

An event or situation that indicates that a risk is about to occur.

Project Risk Management



DEFINITION

The project management knowledge area that includes the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project.



Defining Risk Management Approach

Consider the **likelihood** that the risk event will occur and the **potential impact** of the risk.



Risk Management Plan



DEFINITION

A component of the project, program, or portfolio management plan that describes how risk management activities will be structured and performed.

Risk Management Plan



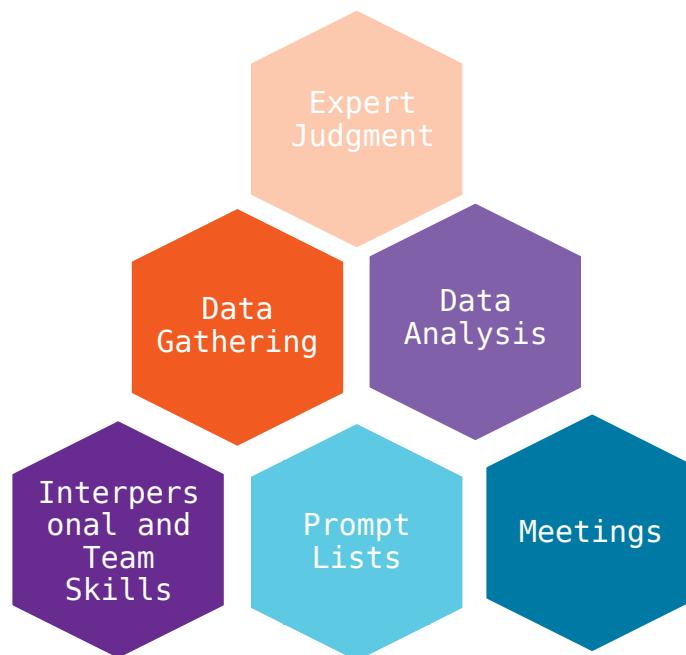
Risk Management Plan



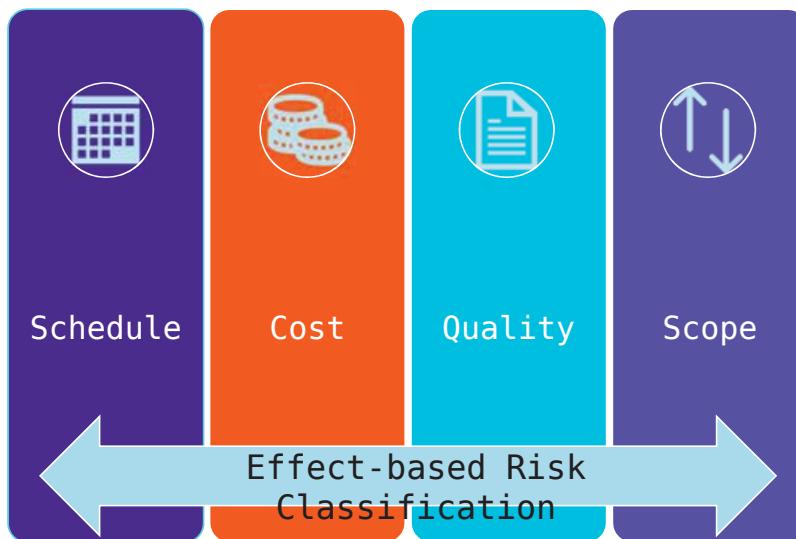
- ✓ Risk strategy
- ✓ Methodology
- ✓ Roles and responsibilities
- ✓ Funding
- ✓ Timing
- ✓ Risk categories
- ✓ Stakeholder risk appetite
- ✓ Definition of risk probability and impact
- ✓ Probability and impact matrix
- ✓ Reporting formats
- ✓ Tracking documents



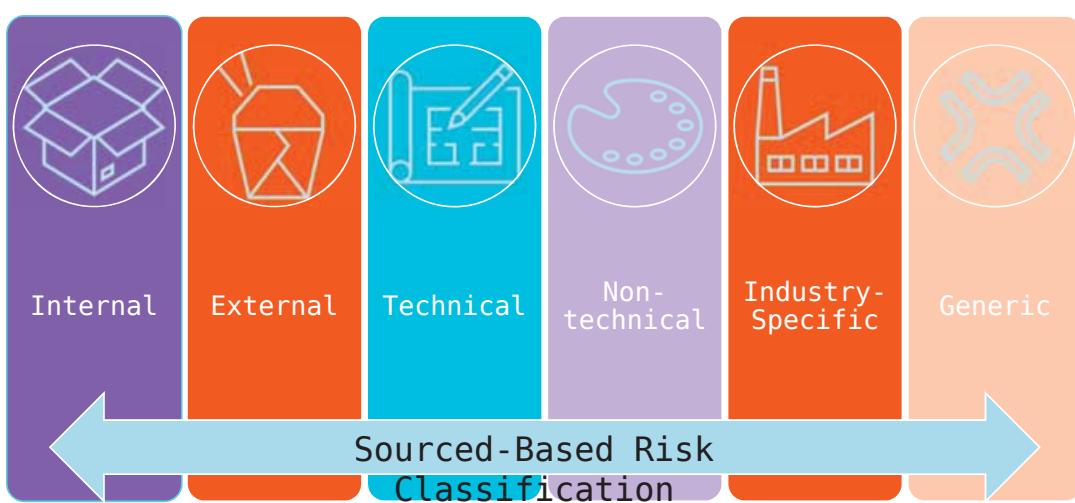
Risk Identification Techniques



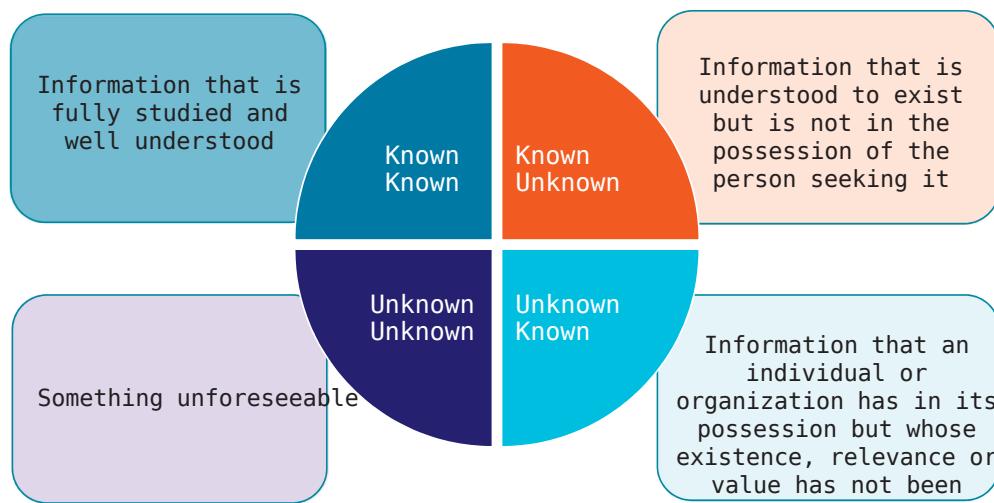
Risk Classification Approaches



Risk Classification Approaches



Risk Classifications



Risk Threshold



DEFINITION

The maximum amount of risk, and the potential impact of that risk occurring, that a project manager or key stakeholder is willing to accept.

Risk Appetite



DEFINITION

The degree of uncertainty an organization or individual is willing to accept in anticipation of a reward.

Risk Tolerance



DEFINITION

The level of risk exposure above which risks are addressed and below which risks may be accepted.

GUIDELINES

Iteratively Identify, Assess, and Prioritize Risks

- Identify risks in every project segment and work package before the project begins.
- Perform a structured review with key stakeholders of documentation from other planning processes to ensure understanding.
- Identify risks and triggers using risk identification techniques.
- Be consistent with risk approach but be mindful of emerging special circumstances.
- Consult relevant historical information for problems and resolutions e.g. risk response plans, final reports, and lessons learned from previous, similar projects.
- Group identified risks into categories reflecting common, relevant risks.
- Use analysis results to initiate the risk register.



377



Qualitative Risk Analysis

**DEFINITION**

The process of prioritizing individual project risks for further analysis or action by assessing their probability of occurrence and impact as well as other characteristics.



378



Qualitative Risk Analysis

- ✓ Focuses on high priority risks
- ✓ Subjective, based on team's perception of risks
- ✓ Provides the list of prioritized risks for further actions

379

Probability and Impact Matrix



DEFINITION

A grid for mapping the probability of each risk occurrence and its potential impact on project objectives.

Probability and Impact Matrix

Probability	Threats					Opportunities					Probability
	0.05	0.09	0.18	0.36	0.72	0.72	0.36	0.18	0.09	0.05	
Very High 0.90	0.04	0.07	0.14	0.28	0.56	0.56	0.28	0.14	0.07	0.04	Very High 0.90
High 0.70	0.03	0.05	0.10	0.20	0.40	0.40	0.20	0.10	0.05	0.03	High 0.70
Medium 0.50	0.02	0.03	0.06	0.12	0.24	0.24	0.12	0.06	0.03	0.02	Medium 0.50
Low 0.30	0.01	0.01	0.02	0.04	0.08	0.08	0.04	0.02	0.01	0.01	Low 0.30
Very Low 0.10	Very Low 0.05	Low 0.10	Moderate 0.20	High 0.40	Very High 0.80	Very High 0.80	High 0.40	Moderate 0.20	Low 0.10	Very Low 0.05	Very Low 0.10
Negative Impact					Positive Impact						

Quantitative Risk Analysis



DEFINITION

The process of numerically analyzing the combined effect of identified individual project risks and other sources of uncertainty on overall project objectives.

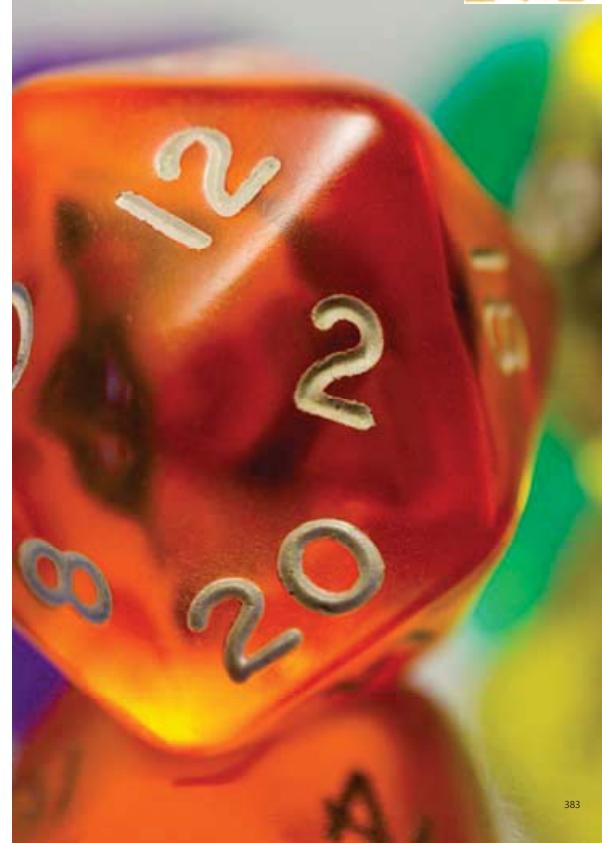
Quantitative Risk Analysis

Quantifies overall project risk exposure.

Provides additional quantitative risk information to support risk response planning.

Costly, so best for:

- ✓ Large or complex projects
- ✓ Strategically important projects
- ✓ When required by contract or key stakeholder.



383

Risk Response



DEFINITION

An action to address a risk.



384

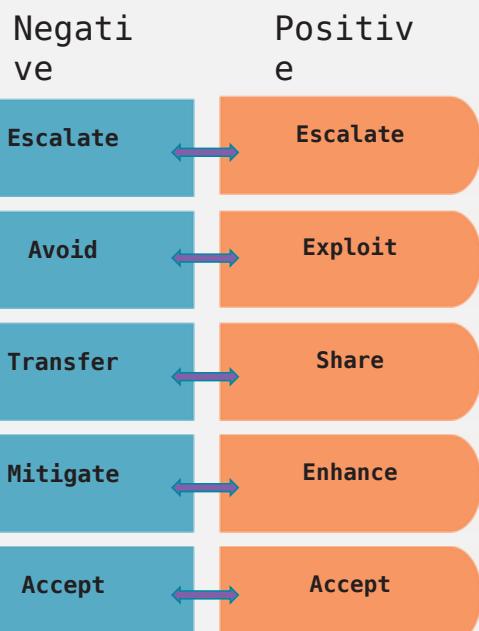
Risk Response

- ✓ Assign a person to implement that action.
- ✓ Develop options, select strategies, and agree on actions to address overall risk exposure and response
- ✓ Address risks by priority—greatest to least.
- ✓ Add resources and activities to the budget, schedule, and project management plan to support risk responses. Assign a response to each risk.
- ✓ Choose from various risk response strategies to determine a response for each risk.
- ✓ Develop a fallback plan in case the primary strategy is not effective.
- ✓ Review secondary risks - These are risks that could occur as a result of implementing a risk response.



Risk Response Strategies

- ✓ Prepare strategies for threats (**negative**) as well as opportunities (**positive**).
- ✓ Plan and implement strategies for **individual** project risks and **overall** project risk.



Contingency Response Strategies



DEFINITION

Responses which may be used in the event that a specific trigger occurs. Also known as “contingency plan” or “fallback plan”.



387

Contingency Response Strategies

- ✓ Develop strategies **in advance**, before things go wrong.
- ✓ Use if and when identified risks become issues.
- ✓ Allow you to **react quickly** and appropriately to the risk event, mitigating its negative impact or increasing its potential benefits.
- ✓ Strategies should be **holistic**, including time, cost, and impact estimates.



GUIDELINES

Determine and Implement Risk Responses

- Examine identified risks to determine causes and effects on project objectives.
- Brainstorm strategies for each risk.
- Choose the most effective response strategy for each identified risk.
- Ask the project sponsor for help if the rating will exceed organization's risk threshold.
- Identify backup strategies for risks with high risk factor scores.
- Quantify contingency reserve requirement to deal with accepted and unknown risks.
- Consult the risk management plan to understand the content and format of the risk response plan.
- Incorporate the risk response plan into the overall project plan to implement and monitor strategies.



389



Execute Project to Deliver Business Value

TOPIC B



390

DOING THE WORK > EXECUTE PROJECT TO DELIVER BUSINESS VALUE

Deliverables and Tools



No specific deliverables



No specific tools



Lead on Value Delivery

- ✓ **Communicate** the vision.
- ✓ **Model** attentive and responsive behaviors.



Create a Culture of Urgency for Value Delivery

Establish and cultivate that urgency in your culture as an ongoing task.

Lead by **communicating** the project's **importance** and **vision**.

Commit to and be accountable for striving towards that vision.

Represent the voice of the customer to create relevancy and personalize the value

393

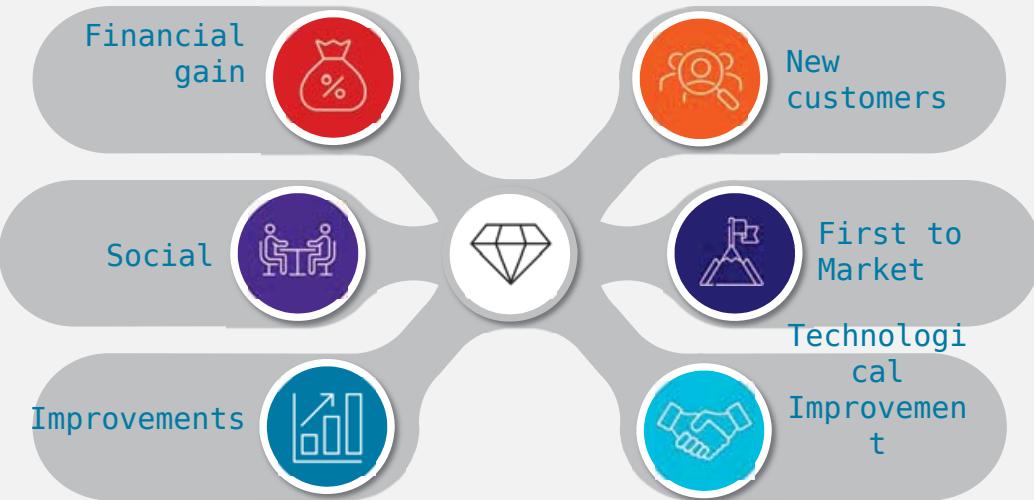
Business Value



DEFINITION

The net quantifiable benefit derived from a business endeavor. The benefit may be tangible, intangible, or both.

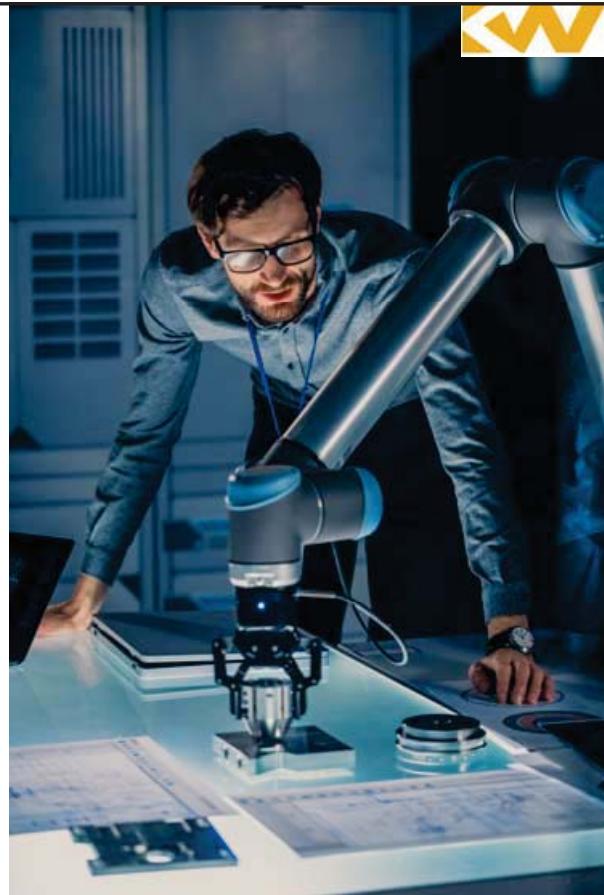
Business Value



Examine Business Value

Determine exactly what is of value through examination, evaluation, and confirmation.

Use a variety of means for determining what is of value.



Product Roadmap



DEFINITION

A strategic document and plan which guides why the product will be delivered and how the product will meet objectives and the product vision.



397



Product Roadmaps

- ✓ Vary in appearance and presentation.
- ✓ Display the **strategy** and **direction** of the product and the **value** it will deliver.
- ✓ Lead with the overarching vision of the product.
- ✓ Are progressively **elaborated over time** with information and work inputs and refinement of vision.
- ✓ Use themes (goals) to **provide structure and associations**.
- ✓ Provide **short-term** and **long-term** visualization of the product.

398

Incremental Delivery



- ✓ Enables value delivery sooner.
- ✓ Get higher customer value and increased market share.
- ✓ Allows partial delivery (or previews) to customers.
- ✓ Enables early feedback for the project team allowing for adjustments to the direction, priorities, and quality of the product.

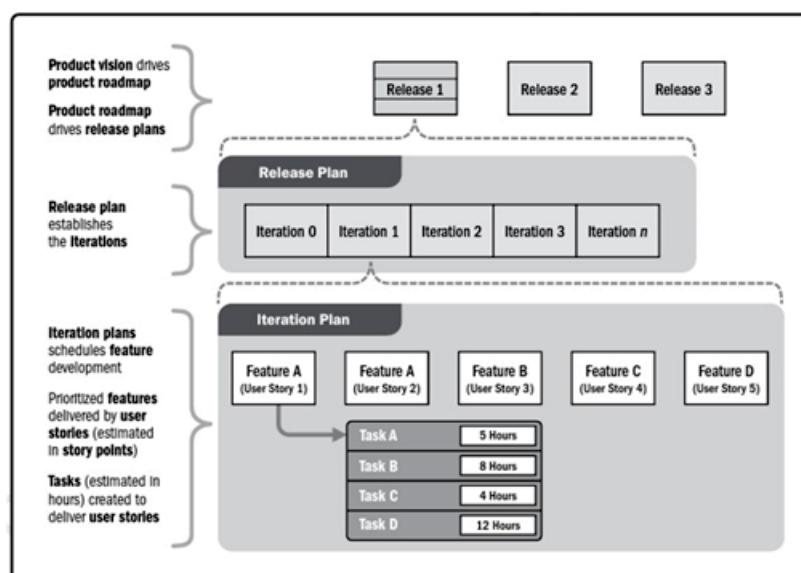


Figure 6-20. Relationship Between Product Vision, Release Planning, and Iteration Planning



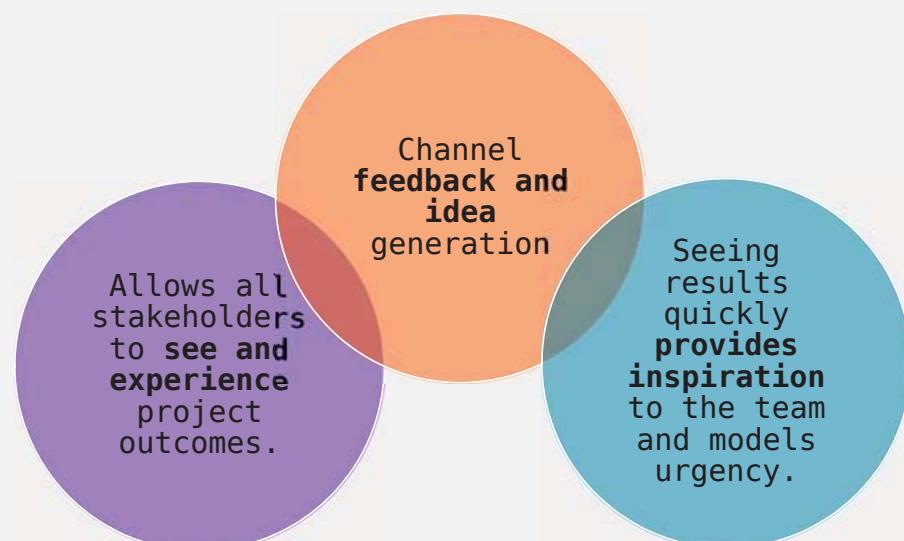
Minimum Viable Product (MVP)



DEFINITION

The smallest collection of features that can be included in a product for customers to consider it functional ("bare bones" or "no frills" functionality in Lean).

Minimum Viable Product (MVP)



Minimum Business Increment (MBI)



DEFINITION

In Disciplined Agile - the smallest amount of value that can be added to a product or service that benefits the business.



403

Minimum Business Increment (MBI)

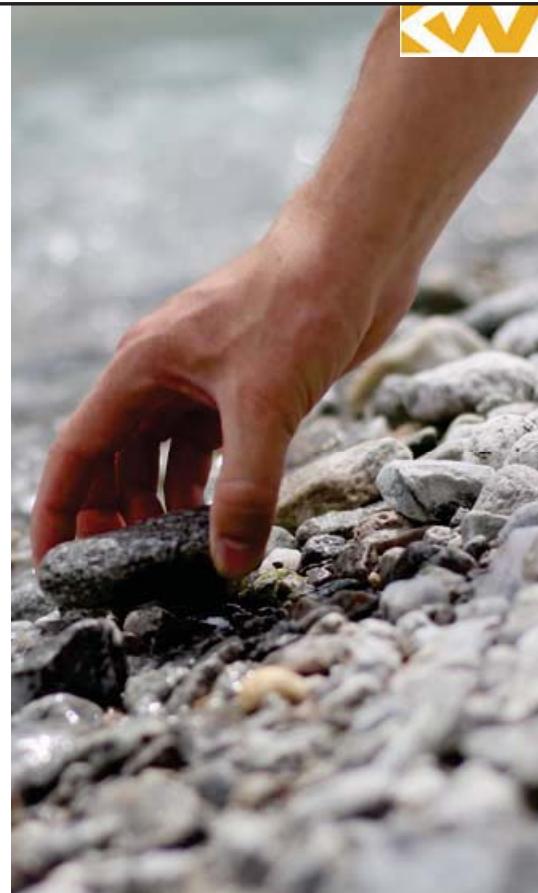
MBI is more viable when an MVP might disrupt the users and business, especially when a basic preliminary product, to gauge interest, is not necessary.

Optimize use of MBIs by:

- ✓ Ensuring the product and functions are understood.
- ✓ Pinpointing an incremental value increase.

Advantages of MBIs:

- ✓ Enable project team to deliver value sooner.
- ✓ Help team validate improvements.
- ✓ Enables team to incrementally build on success or pivot as needed.





Cycles and Timeboxes



Benefits:

- ✓ Timeboxes allow for **better telemetry** over time.
- ✓ Timeboxes create a **sense of urgency**.
- ✓ Cycling the project through similar timeboxes provides **progress measurements** from one timebox to the next.
- ✓ Teams gain more **predictable measurements** that can communicate expectations of cycle times, throughput, and velocity.
- ✓ Organize work into **release cycles** and working **time blocks**.

405



GUIDELINES

Measure Ongoing Progress

- Define value from the customer's, business, and/or user's perspective.
- Determine value expectations.
- Set targets and baselines based on expectations.
- Employ metrics that communicate progress towards value expectations.
- Use efficient data collection metrics and methods.
- Collect data at regular intervals.
- Present progress data to stakeholders.
- Compare progress with baselines and expectations.
- Improve on success or correct areas where progress does not meet expectations.





Manage Communications

TOPIC C

DOING THE WORK > MANAGE COMMUNICATIONS

Deliverables and Tools



Communications Management Plan

Project Communications

Stakeholder Register

Work performance and change updates



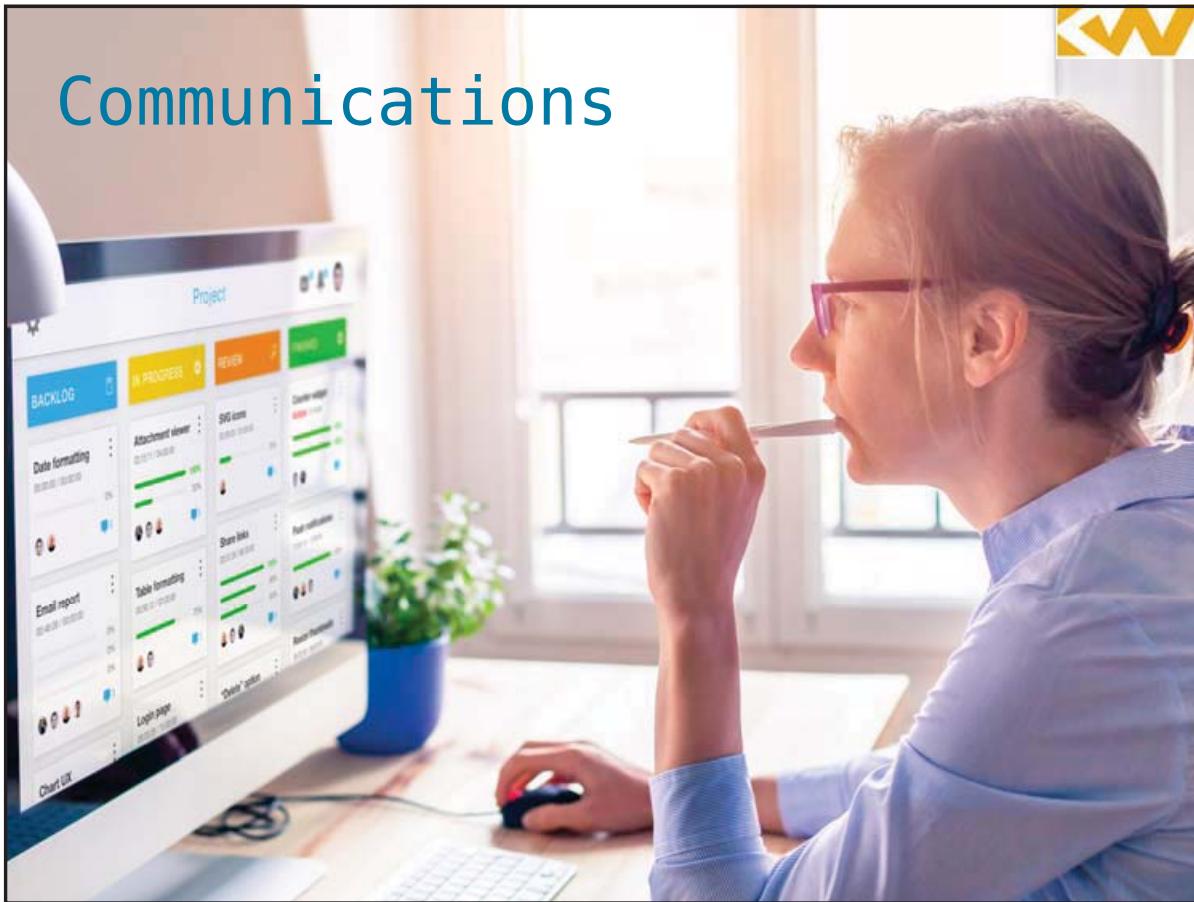
Stakeholder analysis

Create and update project communications plan

Update documents

Understand and practice Sender-Receiver Model

Communications



Project Communications

Consider these dimensions:

- ✓ Internal and external stakeholders
- ✓ Formality or informality - content and format
- ✓ Hierarchy – adjust tone upward, downward, or horizontally
- ✓ Official or unofficial need e.g. annual reports or governance related vs. project team communication
- ✓ Written or verbal – remember tone, inflection, and nonverbal gestures are influential!



Communications Management Plan



DEFINITION

A component of the project, program, or portfolio management plan that describes how, when, and by whom information about the project will be administered and disseminated.



411

Communications Management Plan Example

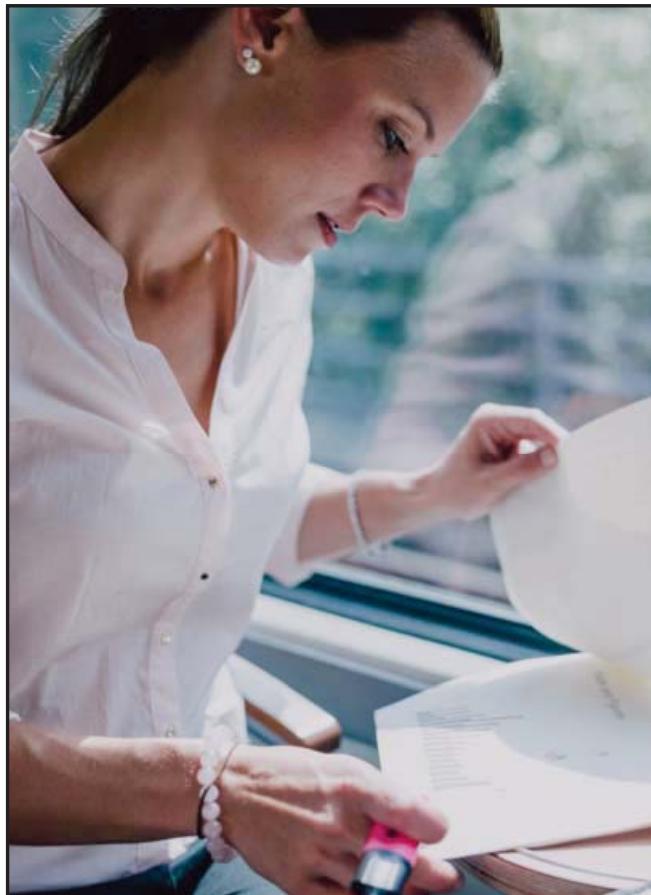
Communication	Frequency	Responsibility	Stakeholder	Notes
Project Kickoff Meeting	Start of project	PMO	Key Stakeholders	Both team and client kickoff meetings recommended
Extranet	Ongoing	PMO		Includes project schedule, key project deliverables, meeting minutes, change request log, issues log
Executive Steering Committee	Monthly – first Wednesday of each month	Account Manager	Client Executive	Review status, milestones met, earned value indicators, key issues
Status Meetings Status Report (Email)	Weekly – Friday 2 p.m.	Project Manager	Client Sponsor	Review project status, schedule, change requests, issues
Status Meetings	Weekly – Friday 11 a.m.	Project Manager	Development Team	Provides input for subsequent meetings with client sponsor
Newsletter (Email)	Weekly – Friday	PMO	Client Managers	
Client Satisfaction Survey	Monthly/end of each phase	Account Manager/Project Manager	Client Sponsor/Key Client Stakeholders	Informal (Monthly) Formal (End of each phase)



412

Communications Management Plan - Components

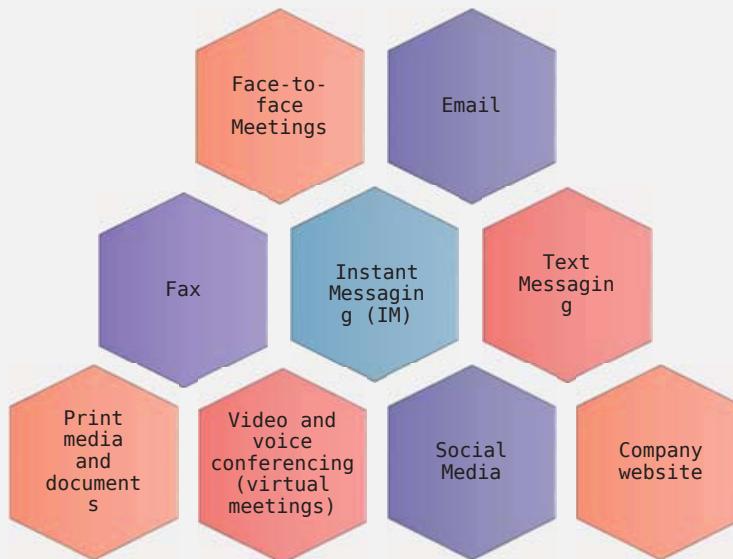
- ✓ Stakeholder communications requirements
- ✓ Information to be communicated, including language to be used
- ✓ Reason
- ✓ Time frame and frequency
- ✓ Responsible person – i.e. release of confidential information
- ✓ Receivers
- ✓ Methods or technologies of conveyance
- ✓ Time and budget allocation
- ✓ Escalation process for issues that need visibility
- ✓ Update method for the plan
- ✓ Glossary of common terminology
- ✓ Flowcharts depicting flow of information
- ✓ Constraints due to regulation or policies



Communication Requirements Analysis

- ✓ Leads to a clear articulation of the **stakeholders' communications needs**.
- ✓ Enables **effective choices** regarding the technologies to be recommended.
- ✓ Takes the form of a **grid, questionnaire or survey** that documents the communications and technology requirements for each stakeholder.

Communication Types



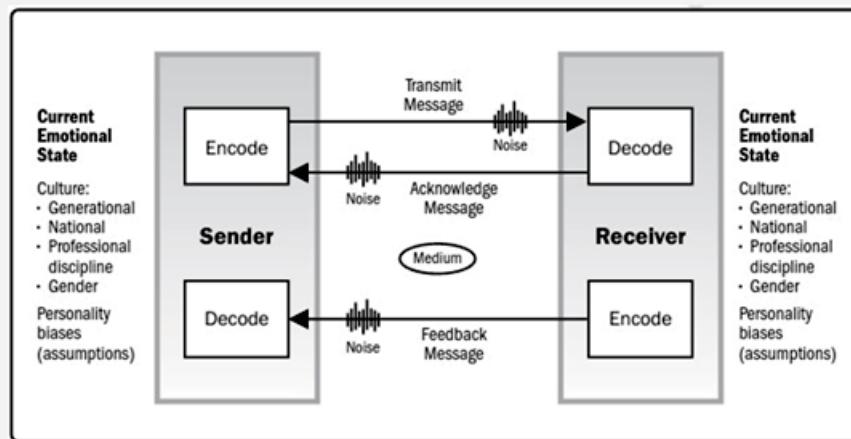
Communication Models



DEFINITION

A description, analogy, or schematic used to represent how the communication process will be performed for the project.

Communication Model



Sender-Receiver Model



417

Communication Methods



DEFINITION

A systematic procedure, technique, or process used to transfer information among project stakeholders.

Communication Methods



Interactive

Feedback

- ✓ Communication is a **two-way street**.
- ✓ Both **critical** and **affirming** feedback are key.
- ✓ Feedback **can be positive** if received and understood as intended.
- ✓ Feedback can be negative because of misunderstanding.
- ✓ No feedback provides an implicit acceptance of the message by the receiver.
- ✓ **Effective feedback** is clear, specific, and offered in a timely manner.



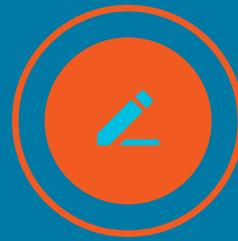
GUIDELINES

Effectively Manage Communication

- Gather and distribute contact information for all involved parties.
- Determine the **communication needs** of project stakeholders.
- Tailor amount of **detail and frequency** to recipient needs; project team members may require more detail on a more frequent basis. Senior management typically requires summary information on a less frequent basis.
- Analyze the value to the project of providing the information.
- Evaluate any constraints and assumptions to determine their possible impact on communication planning.
- Determine the **appropriate communications technologies** to use for communicating project information.
- Ensure your communications management plan includes all key elements.
- Integrate the communications management plan into the project plan.
- **Distribute** the plan to project stakeholders.



421



Engage Stakeholders

TOPIC D

Deliverables and Tools



Stakeholder Register

Stakeholder Engagement Plan
Work performance information
assessment



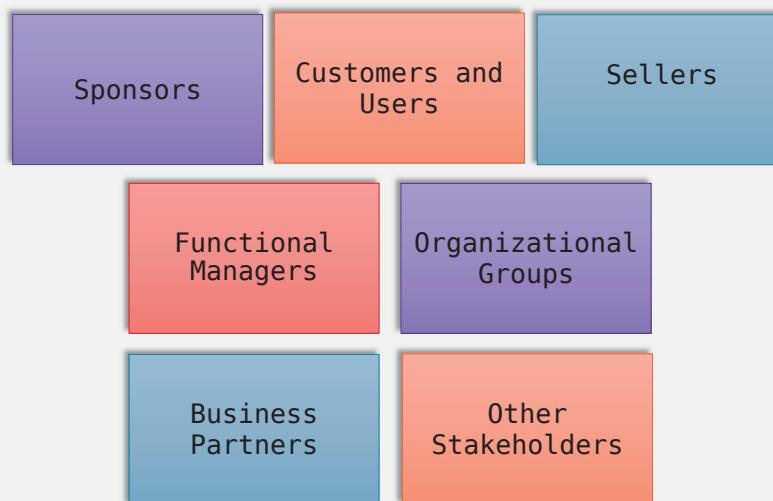
Organizational Process Assets

Expert judgment
Meetings
Power or Influence vs. Impact
Grid
Interpersonal skills
Management skills
Stakeholder Register



423

Stakeholder Categories



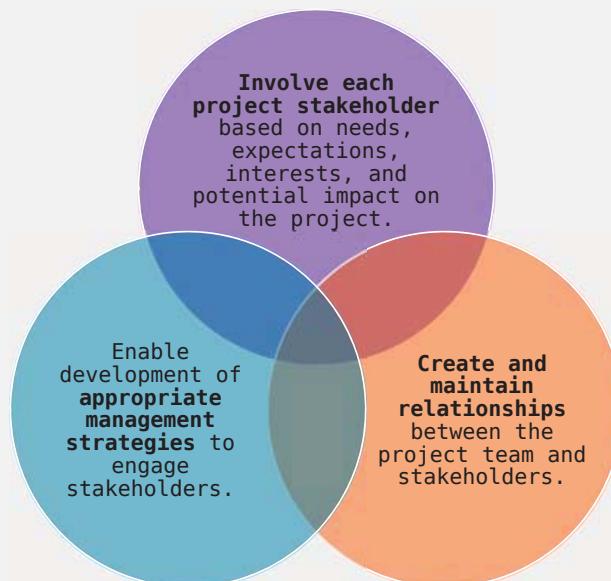
424

Stakeholder Register

- ✓ Main output of the Identify Stakeholders process.
- ✓ Includes, but is not limited to:
 - Identification information** - Name, position, contact details, etc.
 - Assessment information** - Major requirements, expectations, influence on project outcomes, primary involvement
 - Stakeholder classification** -
 - Internal, external
 - Impact/influence/power/interest
 - Upward/downward/outward/sideways



Stakeholder Engagement Strategy



Stakeholder Engagement Assessment Matrix



DEFINITION

A matrix that compares current and desired stakeholder engagement levels.

Stakeholder Engagement Assessment Matrix - Example

Stakeholder	Unaware	Resistant	Neutral	Supportive	Leading
Stakeholder 1	C			D	
Stakeholder 2			C	D	
Stakeholder 3				C	D

C = Current engagement level

D = Desired engagement level

GUIDELINES

Develop, Execute, and Validate a Strategy for Stakeholder Engagement

- Review the Project management plan, Stakeholder register, EEFs and OPAs
- Use tools and techniques such as expert judgment.
- Hold meetings with experts and the project team.
- Use analytical techniques to classify stakeholder engagement levels.
- Document the stakeholder engagement plan.



429



Create Project Artifacts

TOPIC E

Deliverables and Tools



No specific deliverables



No specific tools

Artifacts vs. Deliverables and Project Documents

Artifacts

Project teams create artifacts during project work; these facilitate management of the project.

Project Documents

are integral documents for a project; they define and support the work of the project. They are regularly updated by project management processes.

A Deliverable

is any unique and verifiable product, result, or capability (tangible or intangible) to perform a service, that is required to be produced to complete a process, phase, or project.

Project Artifact



433



Artifacts enable reconstruction of the history of the project and to benefit other projects.



Project teams create and maintain many artifacts during the life of the project.

Project Artifact Examples

Project artifacts might include:

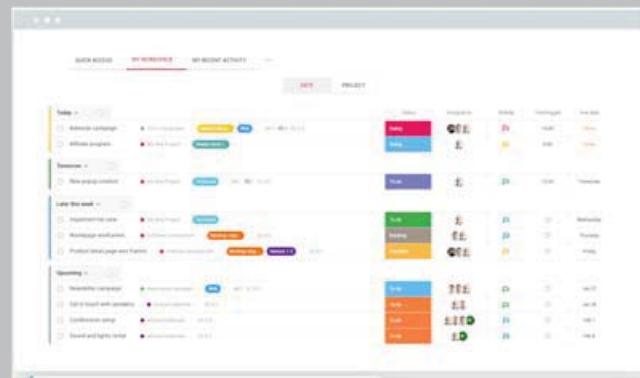
- ✓ Acceptance Criteria
- ✓ Assumptions
- ✓ Business Case
- ✓ Change Requests
- ✓ Constraints
- ✓ Lessons learned
- ✓ Minutes of status meetings
- ✓ Project Charter
- ✓ Slide decks
- ✓ Requirements
- ✓ Scope
- ✓ Scope Baseline
- ✓ Subsidiary project management plans



Project Artifact Examples

Artifacts unique to agile projects:

- ✓ Product Backlog
- ✓ Product Increment
- ✓ Product Roadmap
- ✓ Product Vision Statement
- ✓ Release Plan
- ✓ Sprint Backlog



435

Configuration Management



DEFINITION

A tool used to manage changes to a product or service being produced as well as changes to any project documents.



436

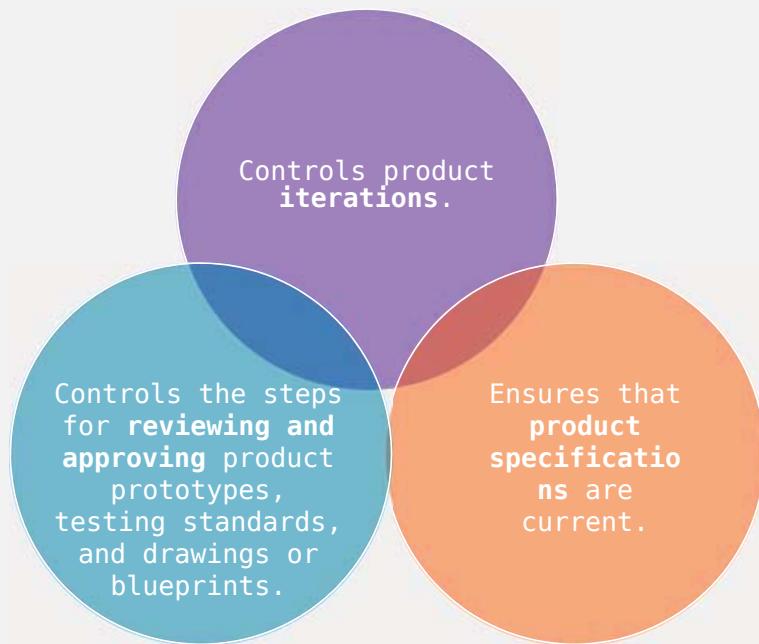
Configuration Management System



DEFINITION

A collection of procedures used to track project artifacts and monitor and control changes to these artifacts.

Configuration Management



Version Control



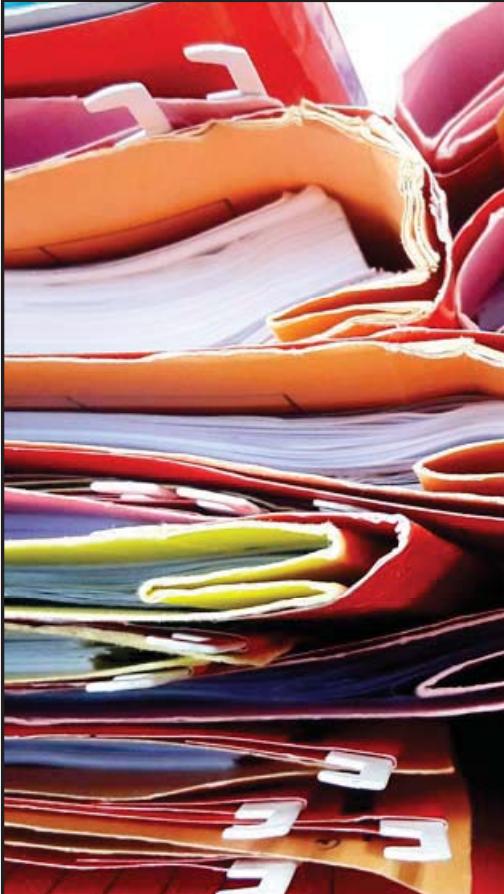
DEFINITION

A system that records changes to a file in a way that allows you to retrieve previous changes made to it.

Version Control

- ✓ Each time a file is updated, give it a **new version number**.
- ✓ Include a **date/time stamp** and the name of the user who made the changes, providing a digital “paper trail” of the document’s history.
- ✓ Use version control for **important artifacts** such as the project management plan, the subsidiary project management plans, the scope, and other documents.





Storage and Distribution of Artifacts



- ✓ Store artifacts in an accessible location for users.
- ✓ Use a storage and distribution system that matches the complexity of the project –
- ✓ Use cloud-based document storage and retrieval systems for larger projects, especially where team members are geographically distributed.
- ✓ Typical systems may include:
 - Built-in version control
 - Document check-out and check-in
 - User-based document security
 - Automatic email notification to specified users when a document is created or edited

441



Project Artifact Management



An effective archive management system includes:

- ✓ A simple way to **produce** and **control** documents
- ✓ **Standardized** formats and templates
- ✓ A structured process for the **review** and **approval** of documents
- ✓ Version control and security
- ✓ **Timely distribution** of documents

442



Manage Project Changes

TOPIC F

DOING THE WORK > MANAGE PROJECT CHANGES

Deliverables and Tools



Issues Log
Risk Register
Stakeholders Register
Updated Issues Log



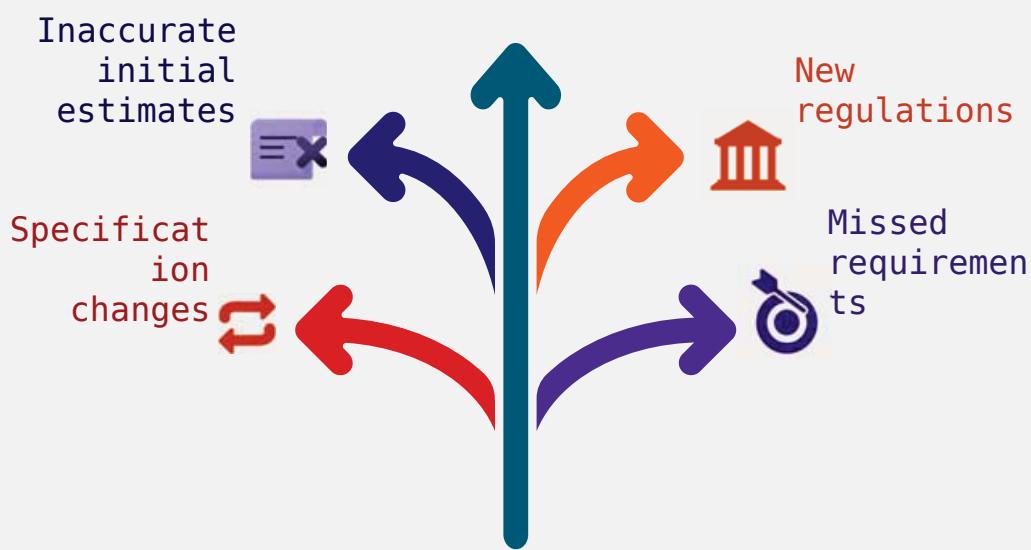
Manage and update Issues Log
PMIS
Communicate with stakeholders
Negotiate with stakeholders

Projects are about CHANGE.



445

Causes of Project Changes



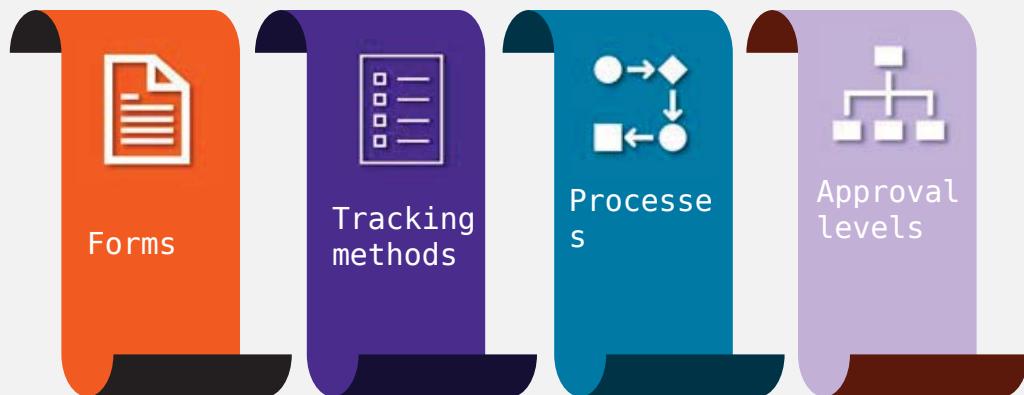
Change Control Systems



DEFINITION

A set of procedures that describes how modifications to the project deliverables and documentation are managed and controlled.

Change Control Systems



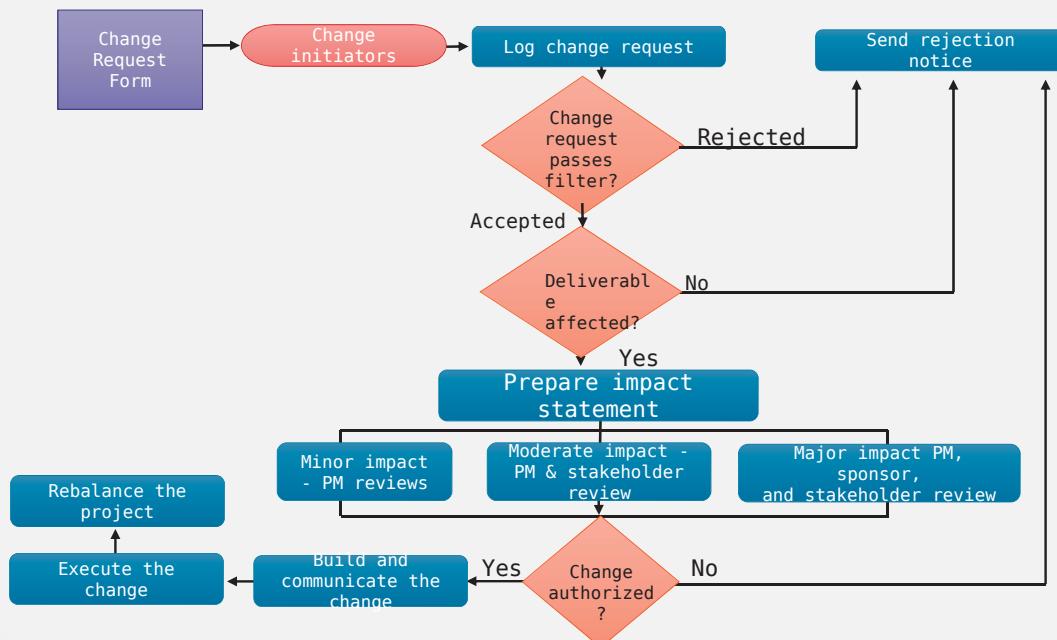
Change Control Board (CCB)



DEFINITION

A formally chartered group responsible for reviewing, evaluating, approving, delaying, or rejecting changes to the project, and for recording and communicating such decisions.

Change Management Process Flowchart



Approved Change Requests



DEFINITION

Requests that have been received and approved in accordance with the integrated change control plan and are ready to be scheduled for implementation.

Change Requests

Types of change requests:

Corrective action

Adjusts the performance of the project work with the project management plan.

Preventive action

Ensures future performance of the project work with the project management plan

Defect repair

Modifies a non-conformance within the project.

Update

Modifies a project document or plan.



Manage Project Issues

TOPIC G



453

DOING THE WORK > MANAGE PROJECT ISSUES

Deliverables and Tools



Issue log



No specific tools

Issues



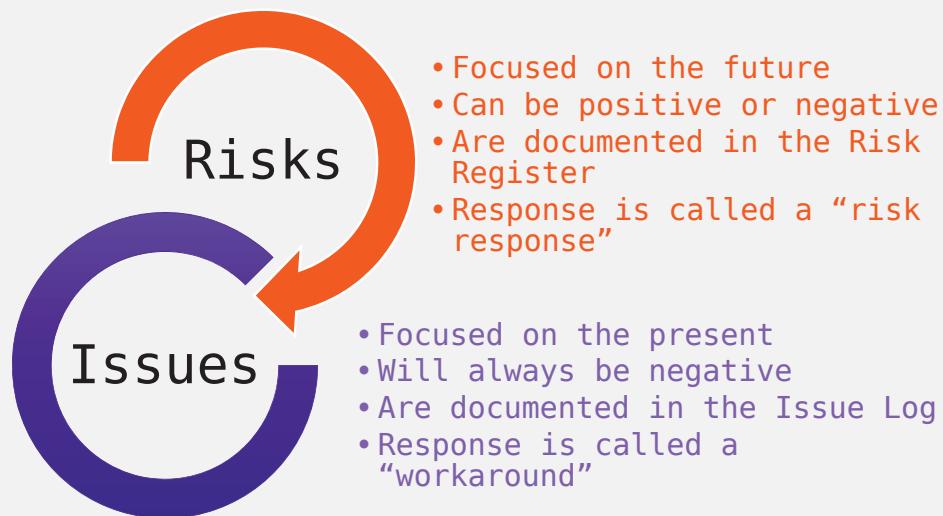
DEFINITION

A current condition or situation that may have an impact on the project objectives - an action item that the project team must address.

Issues



Risks and Issues



Issue Log



DEFINITION

A document where information about issues is recorded and monitored.

Issue Log

ID	Description	Opened	Due Date	Priority	Owner	Response	Status	Comments
25	Truck strike	10/15/20xx	11/01/20xx	High	R. Smith	TBD	Open	Tasks are on the critical path



Use it to track problems, inconsistencies, or conflicts that occur during the life of the project and require investigation in order to work toward a resolution.

Issue Resolution

- ✓ As issues arise, promptly add them to the issue log.
- ✓ Assign an owner to each issue. The owner is responsible for tracking the progress of the workaround and reporting back.
- ✓ Give realistic due dates and make every reasonable attempt to meet it.
- ✓ Issues should be a regular topic of every status meeting.
- ✓ Limit the number of open issues to a manageable number.
- ✓ Don't hesitate to escalate an issue to the project sponsor if it begins to have a major effect on the project.



GUIDELINES

Resolving Issues

- Use your organization's Issue Log template; in the absence of one, create an Issue Log.
- Train project team members to promptly report potential issues.
- Enter the issue into the Issue Log and assign an owner and a due date.
- Monitor progress and discuss each open issue at every project status meeting.
- Develop a response (also known as a workaround) to the issue.
- Assess the impact of the response.
- Approve the response.
- Close the issue.



461



Ensure Knowledge Transfer For Project Continuity

TOPIC H



462

DOING THE WORK > ENSURE KNOWLEDGE TRANSFER FOR PROJECT
CONTINUITY

Deliverables and Tools



Lessons Learned Register



No specific tools

Knowledge Types

Explicit

Can be codified using symbols such as words, numbers, and pictures.

Can be documented and shared with others.



Tacit

Personal knowledge that can be difficult to articulate and share such as beliefs, experience, and insights.



Essential to provide the context of the explicit knowledge

Level	Description
Individual	<p>Each team member needs to know how to perform their work in accordance with each assigned task's scope, schedule, and cost.</p> <p>Acquire required knowledge by:</p> <ul style="list-style-type: none"> • Research • Collaboration with team members • Examination of the project's or organization's knowledge repository
Project	<ul style="list-style-type: none"> • Focus on achieving the goals of the current project. • Solicits knowledge about other projects that can be applied to the current project. • Project Management Office (PMO) is an excellent source of knowledge, as it exists for the purpose of defining and maintaining standards for project management within an organization.
Organization	<ul style="list-style-type: none"> • Focus on managing programs or portfolios. • The program manager or portfolio manager seeks information from peers who manage other programs or portfolios, to adapt this knowledge to their specific need.



465

Lessons Learned



DEFINITION

The knowledge gained during a project which shows how project events were addressed or should be addressed in the future for the purpose of improving future performance.



466

Lessons Learned

- ✓ Knowledge gained during a project can be useful to subsequent phases of a project and to other projects.
- ✓ Include both **positive** and **negative** experiences that occur throughout the project life cycle.
- ✓ Avoids “**reinventing the wheel**”
- ✓ Long-term learning tool.



Considerations for Lessons Learned

Schedule at the **right time**

Include topics on:

- ✓ Conflict management
- ✓ Vendor relationships
- ✓ Customers
- ✓ Strategy
- ✓ Tactics



Lessons-Learned Register



DEFINITION

A project document used to record knowledge gained during a project so that it can be used in the current project and entered into the lessons-learned repository.

Lessons-Learned Repository



DEFINITION

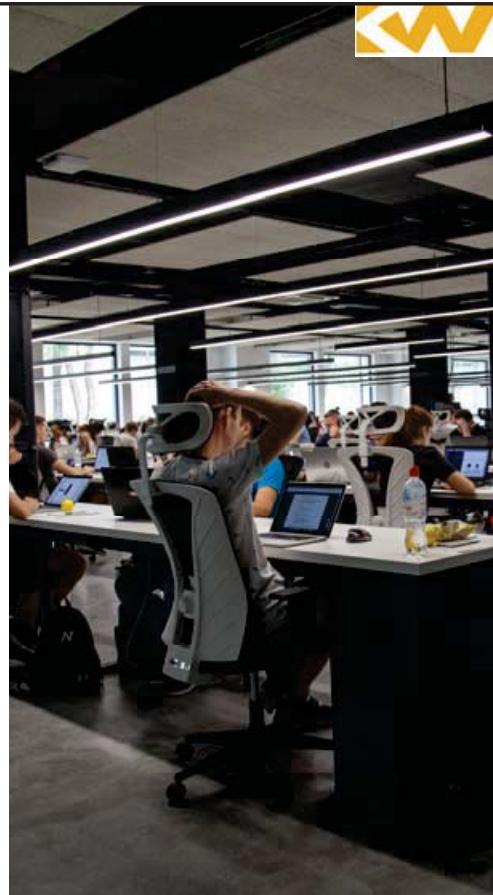
A store of historical information about lessons learned in projects.

Project Responsibilities Within the Team



Working Environment Expectations

- ✓ Knowledge is not constant, what we knew yesterday can change based on what we did today.
- ✓ Continuously evaluate the project environment for new risks and follow the risk management plan to proactively address them before they become issues that will affect the project objectives.
- ✓ Don't hoard knowledge; follow the communications management plan and inform stakeholders of changes affecting their work.
- ✓ Use appropriate tools to share knowledge with stakeholders:
 - Face-to-face during formal meetings
 - Face-to-face during informal meetings and discussions
 - Telephone
 - Email
 - Wikis
 - Intranet
 - Printed documents





Knowledge Transfer Approach

Connect individuals, in person or virtually, to share tacit knowledge and collaborate together.

473



Knowledge Transfer Techniques

- ✓ Networking
- ✓ Facilitating special interest groups
- ✓ Meetings, seminars, and various other types of in-person and virtual events that encourage people to interact and exchange ideas and knowledge.
- ✓ Training that involves interaction between attendees.
- ✓ Work shadowing and reverse shadowing provide a more individualized method to the exchange of specialized knowledge.

474

GUIDELINES

Maintain Team and Knowledge Transfer

- Follow your PMO's guidelines on documenting new knowledge.
- Be alert to new sources of project knowledge and follow the communications management plan to convey that knowledge to stakeholders.
- Proactively seek new knowledge.
- Compile a lessons-learned register throughout the project's lifecycle and add it to a lessons-learned repository with registers from other projects.



475

End of
Module
3



LESSON 4

KEEPING THE TEAM ON TRACK

- Lead a Team
- Support Team Performance
- Address and Remove Impediments, Obstacles, and Blockers
- Manage Conflict
- Collaborate with Stakeholders
- Mentor Relevant Stakeholders
- Apply Emotional Intelligence to Promote Team Performance



Lead a Team

TOPIC A

Deliverables and Tools



Vision / Mission document
Charter
Product box
Reward and Recognition Plan



Diversity awareness
Leadership styles
Influence matrix
Salience model
Power grids
Behavior modeling
Challenge status quo
Recognize contributions
Remove impediments
Communicate vision



479

Leadership

The project manager is the visionary leader for the project.

- ✓ Educate the team and other stakeholders about project value delivery
- ✓ Promote teamwork and collaboration
- ✓ Remove roadblocks

Promote the project's mission and value to inspire the team, keep them focused and feel part of the organization's mission.





Leadership Skills

- ✓ Conflict management
- ✓ Cultural awareness
- ✓ Decision making
- ✓ Facilitation
- ✓ Meeting management
- ✓ Negotiation
- ✓ Networking
- ✓ Observation/conversation
- ✓ Servant Leadership
- ✓ Team building

Diversity Awareness and Cultural Competencies



Leadership ≠ Management



Lead and Manage

Let's reflect on two of the project manager's roles to understand the difference.

Management	Leadership
Direct using positional power	Guide, influence, and collaborate using relational power
Maintain	Develop
Administrare	Innovate
Focus on systems and structure	Focus on relationships with people
Rely on control	Inspire trust
Focus on near-term goals	Focus on long-range vision
Ask how and when	Ask what and why
Focus on bottom line	Focus on the horizon
Accept status quo	Challenge status quo
Do things right	Do the right things
Focus on operational issues and problem solving	Focus on vision, alignment, motivation, and inspiration

Leadership Traits



Strong personal ethics, integrity, and trustworthiness



Interpersonal skills (communicator, collaborator, motivator)



Conceptual and analytical skills

Servant Leadership

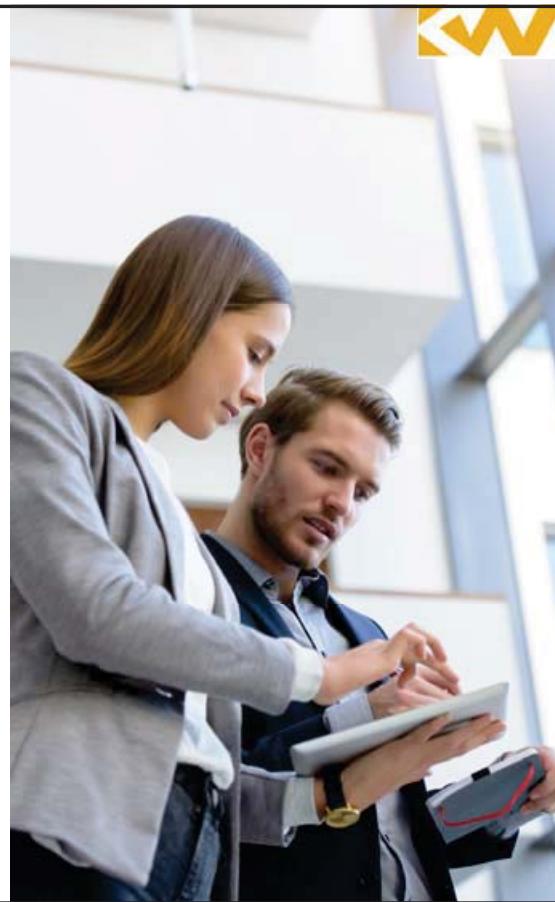


DEFINITION

The practice of leading through service to the team, by focusing on understanding and addressing the needs and development of team members in order to enable the highest possible team performance.

Servant Leadership

- ✓ Facilitate rather than manage
- ✓ Provide coaching and training
- ✓ Remove work impediments
- ✓ Focus on accomplishments



Challenge the Status Quo

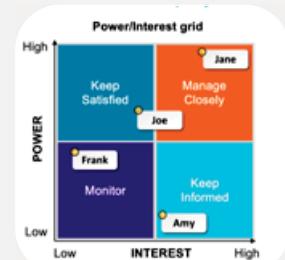
- ✓ Let past experiences and processes provide guidance to but not dictate your actions.
- ✓ Commit to a **growth mindset** to continuously improve and innovate, to find new ideas and perspectives.
- ✓ Discover the best approach through **challenge** and **introspection**.
- ✓ Avoid complacency and blind acceptance.

360 View of Stakeholders

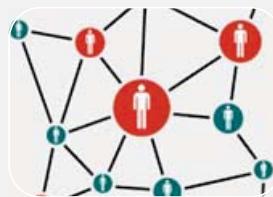
- ✓ Good leadership is based partially on your influence and the influence of the other project stakeholders.
- ✓ Use tools and techniques to ensure that you understand your stakeholders. Some examples:



Salience Model



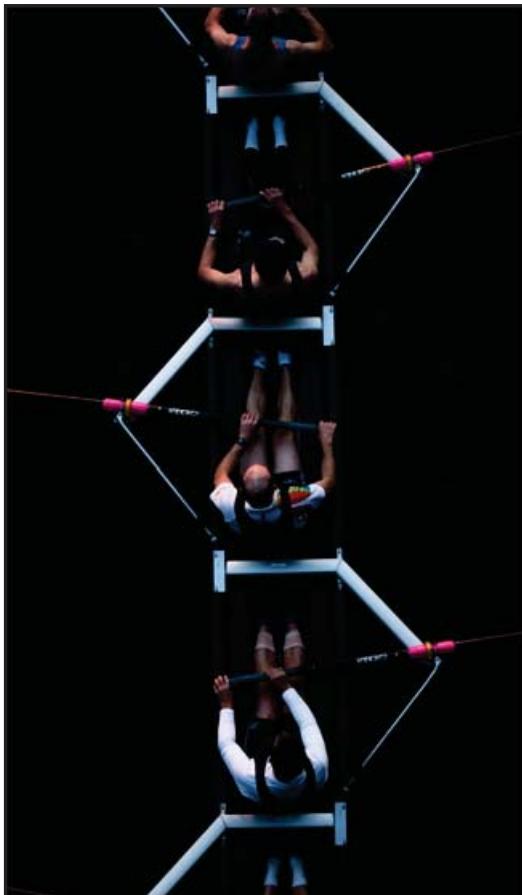
Power/Impact/Interest Grid



Directions of Influence



489



Team Building

- ✓ Cohesion and **solidarity** help teams perform better.
- ✓ Good leadership facilitates the **bonding** between project team members.
- ✓ Team-building activities build **unity, trust, empathy, and focus** on the team over the individual.

Team Building

Use rewards and recognition to keep teams motivated.

Rewards

- ✓ Tangible, consumable items
- ✓ A specific outcome or achievement achieved
- ✓ Definite start and finish, or fixed time
- ✓ Usually expected when goal is met



Motivate towards a specific outcome; never without recognition too.

Recognition

- ✓ Intangible, experiential event
- ✓ Acknowledge behavior rather than outcome
- ✓ Not restricted to a set time
- ✓ Usually not expected by recipient



To increase recipient's feeling of appreciation; can be given without a reward



GUIDELINES

Lead a Team

- Use emotional intelligence and other leadership methods to motivate your team.
- Adapt your leadership style to work best with each stakeholder.
- Establish good communication among team members, internally and externally.
- Monitor performance of team members on an ongoing basis.
- Manage conflict.
- Establish an issues log to track and assign project issues.





Support Team Performance

TOPIC B



493

KEEPING THE TEAM ON TRACK > SUPPORT TEAM PERFORMANCE

Deliverables and Tools



RACI matrix
Management by Objectives
Benchmarking
Performance reports



RACI matrix
Task boards
Performance tracking tools
Information Radiators
Burnup charts
Earned Value
Throughput metrics
Cycle time
Value stream map



494

Key Performance Indicators (KPIs)



DEFINITION

Metrics used to evaluate an organization's progress toward meeting its goals and objectives. Usually defined by organizational leadership.



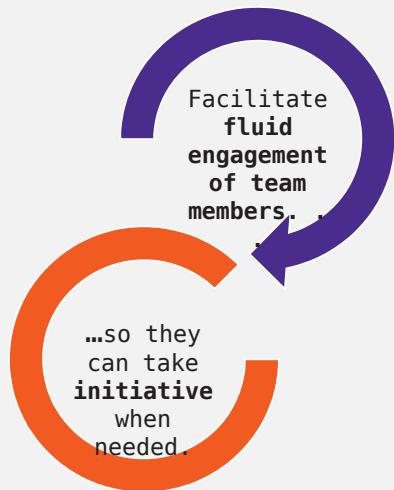
495

Strive to shape a team with a **healthy culture** of working **autonomy** and a shared **sense of responsibility** for their work.

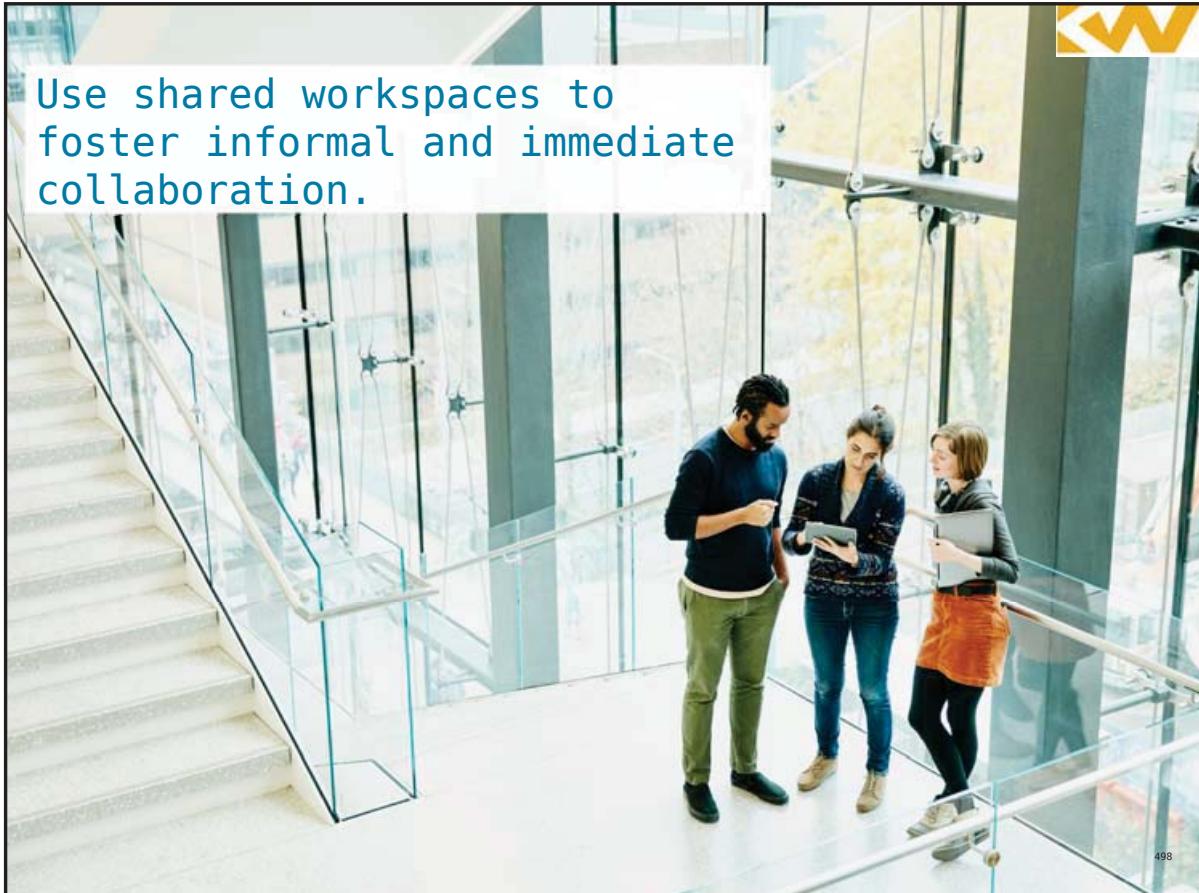


Team Structure and Workspaces

- ✓ Team environments are physical and virtual.
- ✓ Factor in environment and location to team performance.
- ✓ Foster meaningful interaction—this is a core tenet of agile.
- ✓ Respect agreed team working hours and practices.



Use shared workspaces to foster informal and immediate collaboration.



Team members need to be able to contribute from everywhere and at any time.



Empowerment and Unity

- ✓ Empower them to make **timely decisions**.
- ✓ Encourage the team's **sense of ownership of the work**.
- ✓ Encourage the team to **foster collaborative work and decision making**.
- ✓ **Prioritize team unity.** Individual contributions are important, but team unity is critical.



Autonomy and Teamwork



Know when to interfere. In general, people work more productively when granted autonomy.

Include the team in:

- ✓ Clarifying and prioritizing requirements
- ✓ Splitting requirements into tasks
- ✓ Estimating effort

501



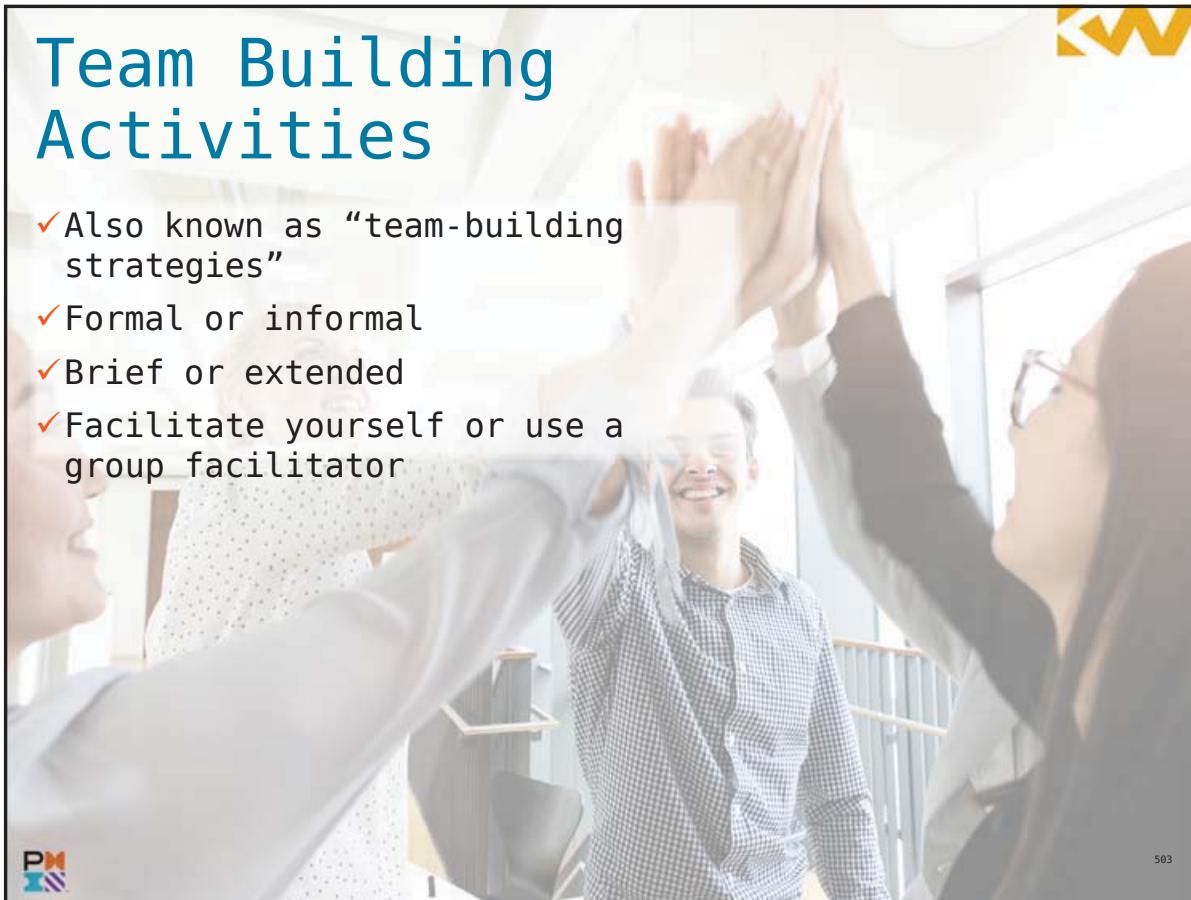
Keep the Tone Positive and Fluid

- ✓ Establish a culture of **fluid communication** and engagement in a workspace that promotes **positive interactions**.
- ✓ It makes leading and managing a team easier.

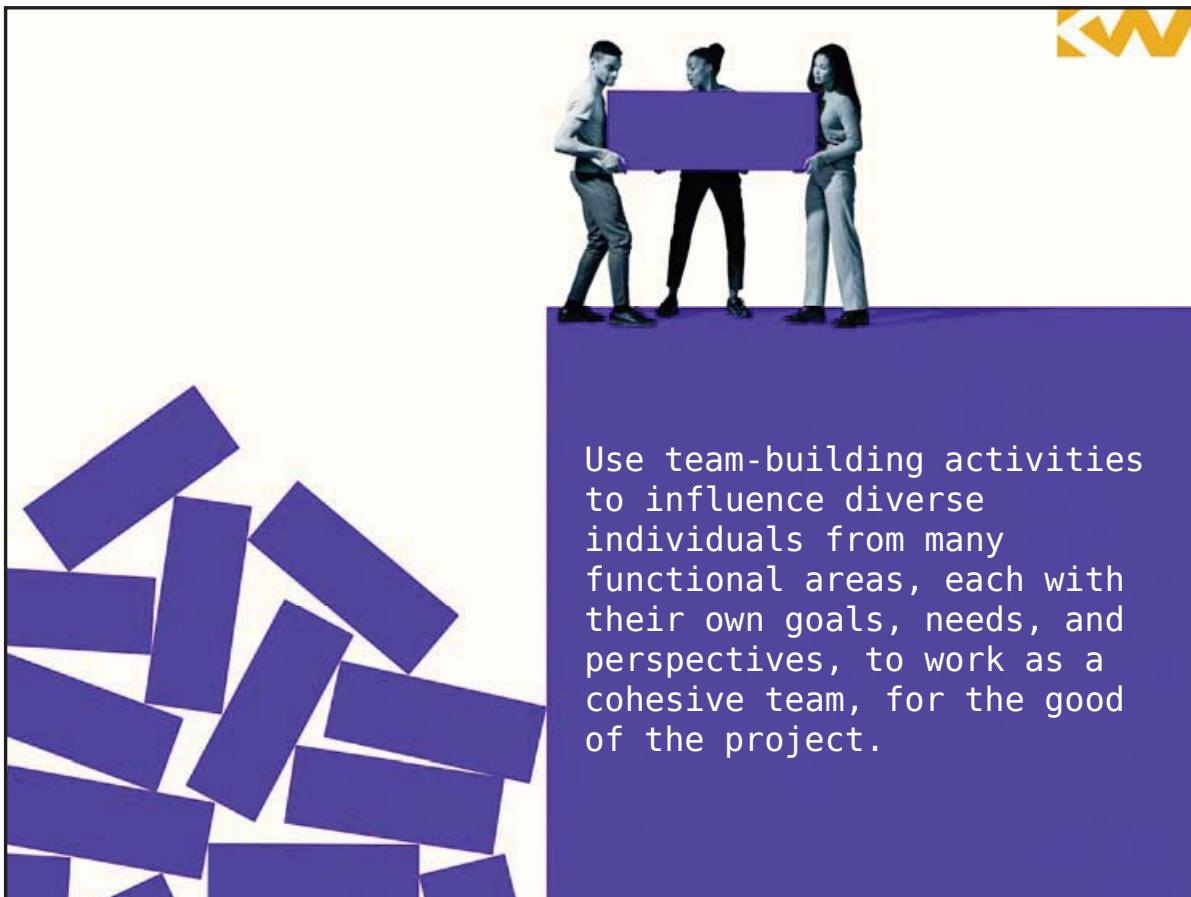
502

Team Building Activities

- ✓ Also known as “team-building strategies”
- ✓ Formal or informal
- ✓ Brief or extended
- ✓ Facilitate yourself or use a group facilitator

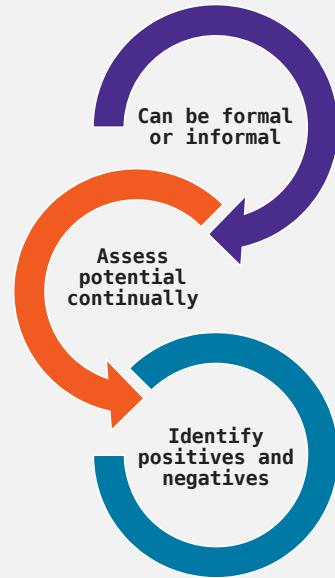


503



Team Performance Assessments

- ✓ Improve team member interaction
- ✓ Solve issues
- ✓ Deal with conflicts
- ✓ Improve team member skills and competencies
- ✓ Increase team cohesiveness



Performance Assessment Tasks

- ✓ Compare performance to goals
- ✓ Reclarify roles and responsibilities
- ✓ Deliver positive as well as negative feedback
- ✓ Discover unknown or unresolved issues
- ✓ Create and monitoring individual training plans
- ✓ Establish future goals



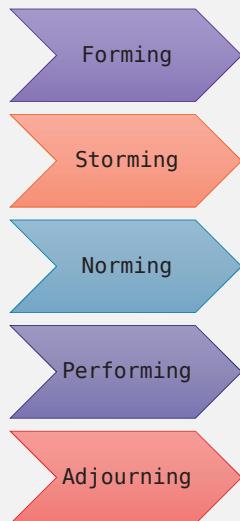


Team Development

- ✓ Is a process which can **progress and regress**
- ✓ Acknowledges **diversity** and promotes **inclusivity**
- ✓ Requires **trust, communication, and respect**
- ✓ Takes **effort!**

507

Team Development Stages (Tuckman ladder)



Team members get to know each other and trust one another.

Team members begin to assert themselves and control emerging issues.

Team begins to work productively, without worrying about personal acceptance or control issues.

Team is working at optimum productivity and is collaborating easily, communicating freely, and solving its own conflict problems.

Team members complete their assigned work and shift to the next project or assigned task.

Manage with Objectives

- ✓ Use clear objectives for a more productive and driven team.
- ✓ Set objectives collaboratively with the team.
- ✓ Create challenging, yet attainable objectives.
- ✓ Conduct objective setting:
 - At the start of a project or phase
 - Throughout the project life cycle, as in an iteration planning session



509



Feedback

- ✓ Is crucial for any team, using any methodology, in any environment.
- ✓ Discover the most appropriate and timely means of feedback.
 - Public/private
 - Individual/group
- ✓ Give and receive constructive feedback freely.

Splendid work!

Let's ask the team for suggestions to improve!



510

Performance Tracking Techniques

Tool	
Scrum/Agile/Kanban boards	Based on the Japanese management method of pulling cards to various stages as they are worked on, physical or electronic boards can track work as it progresses across various stages or categories.
Throughput Metrics	Measurement of the team's work that has moved from one stage to another stage over a certain time.
Cycle Time	Measurement of work that has progressed all the way from plan to completed or delivered.
Quality Metrics	Various measurements to track quality deliverables, defects, and acceptable output.
Earned Value	Tracking cost and effort performance against a planned value.
Bar Charts (Gantt)	Using the project schedule to track performance over time.
Velocity	Measurement of total output from an iteration to attempt to predict future iteration outputs.



The monetary **value** of the work contribution is another way of **supporting** and **measuring** performance.

Earned Value Management (EVM)

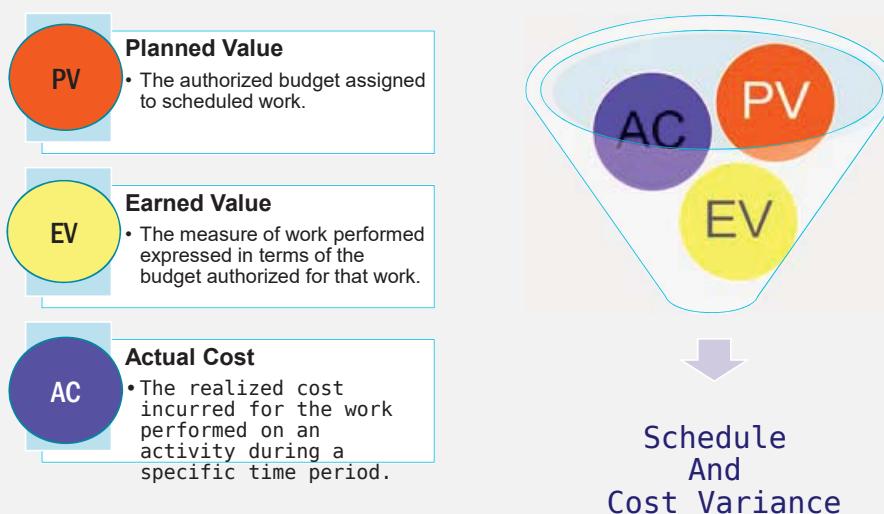


DEFINITION

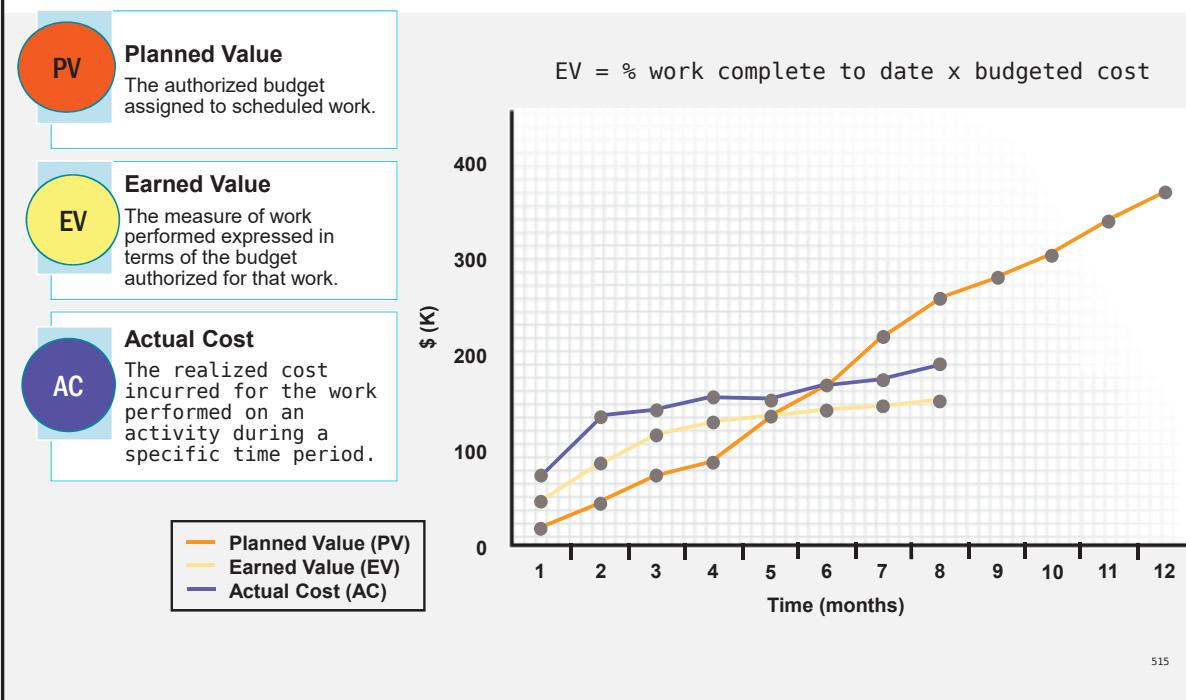
A methodology that combines scope, schedule, and resource measurements to assess project performance and progress.

Earned Value Management (EVM)

In projects that use earned value management, the cost baseline is referred to as the performance measurement baseline.



Earned Value Management (EVM)



EVM Measures for Schedule Control

Schedule Variance - a measure of schedule performance expressed as the difference between the EV and the PV.

- A positive SV indicates a project is ahead of schedule.
- A zero SV indicates a project is on schedule.
- A negative SV indicates a project is behind schedule.

$$(SV = EV - PV)$$

Schedule Performance Index - a measure of schedule efficiency expressed as the ratio of EV to PV.

- An SPI number greater than 1.0 indicates a project is ahead of schedule.
- An SPI of 1.0 means the project is on schedule.
- An SPI number less than 1.0 indicates a project is behind schedule.

$$(SPI = EV / PV)$$

EVM Measures for Cost Control

Cost Variance - the amount of budget deficit/surplus at a given point in time, expressed as the difference between EV and AC.

- A positive CV indicates a project is ahead of schedule.
- A zero CV indicates a project is on schedule.
- A negative CV indicates a project is behind schedule.

$$(CV = EV - AC)$$

Cost Performance Index - a measure of the cost efficiency of budgeted resources expressed as the ratio of EV to AC.

- An CPI number greater than 1.0 indicates a project is ahead of schedule.
- An CPI of 1.0 means the project is on schedule.
- An CPI number less than 1.0 indicates a project is behind schedule.

$$(CPI = EV / AC)$$

Estimate at Completion Analysis

Estimate At Completion (EAC) - The current projected final cost of the project.



Based on the current spending efficiency (the CPI).



Calculated from the following formula, where BAC is the projected budget at completion:

$$EAC = \frac{BAC}{CPI}$$

Estimate at Completion Analysis

Estimate To Complete (ETC) - The amount of money needed to complete the project.



Based on the current spending efficiency of the project.



Calculated using the formula below:

$$ETC = EAC - AC$$



Performance Report Types

Type	Description
Information Radiators	Big visual boards to display in high traffic public locations about the project and the advancement of the project. The aim is to radiate information to all about the project work.
Burndown Chart	A graph to show the progress by plotting the burning down of work during an iteration or other time period.
Burnup Chart	A graph to show the progress and gains made by the project team over time.
Earned Value Management Reports	Graphs and values based on the earned value management (EVM) equations.
Variance Analysis Reports	Graphs and their analysis comparing actual results to expected results.
Work Performance Reports	The physical or electronic representation of work performance information compiled in project documents, intended to generate decisions, actions, or awareness.
Quality Reports	Charts and reports based on the quality metrics collected.
Dashboards	Physical or electronic summaries of the progress, usually with visuals or graphics to represent the larger data set
Task Boards	Physical or electronic depictions of the work that must be done and their current state.

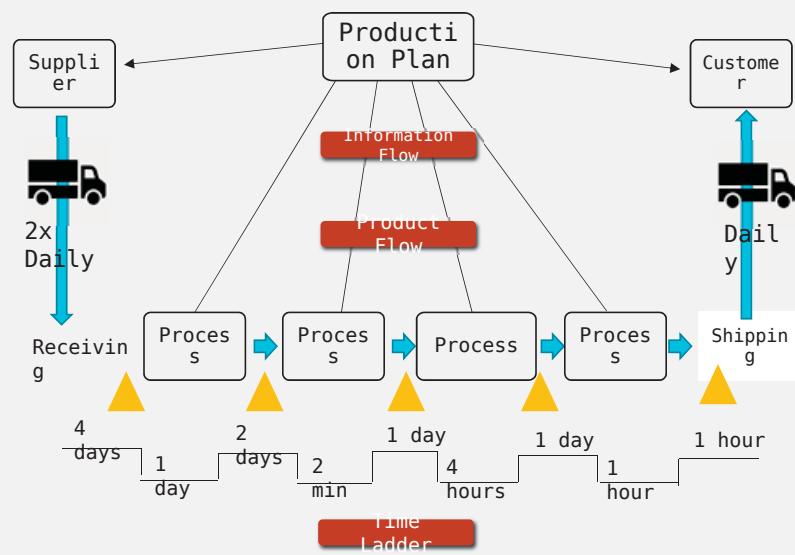
Value Stream Map



DEFINITION

A lean enterprise technique used to document, analyze, and improve the flow of information or materials required to produce a product or service for a customer.

Value Stream Map



Retrospectives and Lessons Learned



- ✓ Gather data on improvements and recognize successes.
- ✓ Review what went well and what could have been better.
- ✓ Involve everyone and respect their input.
- ✓ Avoid the blame game and focus on learning and growth opportunities



Agile Retrospectives – held as necessary throughout the project

Lessons Learned – at the end of projects

523

Implement Results of Retrospectives/Lessons Learned

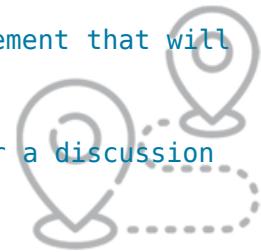
- ✓ **Rank** the opportunities by importance and urgency.
- ✓ **Incorporate tasks necessary** to realize the improvements.
- ✓ **Apply ideas** to the team environment.



GUIDELINES

Conduct a Retrospective

- Prepare some ideas or areas of focus in case the team needs inspiration or ideas.
- Make two columns on a board: “What Went Well” and “What Could Be Improved”.
- Ask attendees to identify items that went well in the iteration and add them to the first column.
- Ask them to identify items that could be improved and add them to the second list.
- Allow each participant to identify the reason for the improvement.
- Moderate a conversation about common items that need improvement and mark those.
- Narrow the list down to a few areas for improvement that will bring value in the next Sprint.
- Get team consensus on the plan improvement.
- Update these tasks to the Product Backlog after a discussion with the Product Owner.
- Implement changes.



525



Address and Remove Impediments, Obstacles, and Blockers

TOPIC C



526

KEEPING THE TEAM ON TRACK > ADDRESS AND REMOVE IMPEDIMENTS, OBSTACLES, AND BLOCKERS

Deliverables and Tools

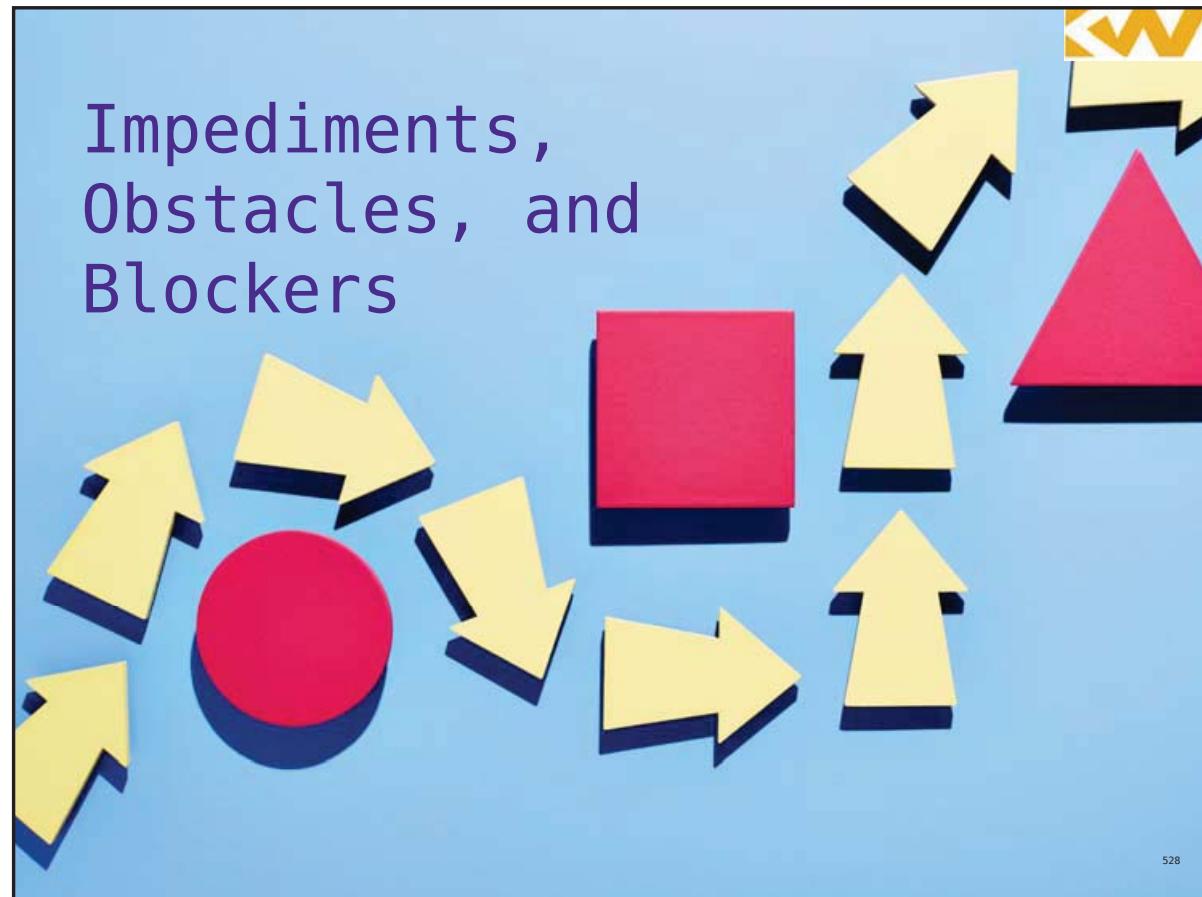


Backlog (reprioritized)
Updated risk register
Action plans
Updated impediment task board



Daily standup
Sprint reviews
Risk reviews
Backlog assessment

Impediments, Obstacles, and Blockers



Impediments



DEFINITION

Situations, conditions, and actions that slow down or hinder progress.

Obstacles



DEFINITION

Barriers that should be able to be avoided or overcome with some effort or strategy.

Blockers



DEFINITION

Events or conditions that cause stoppages in the work or advancement.

Impediments, Obstacles, and Blockers

The team can't agree on a solution!



Construction can't begin before permits are granted!



The company has halted the use of the product until a new contract is signed!



Assess Product Backlog

- ✓ Work to be done is also called a product backlog.
- ✓ Use backlog assessments and refinements to explore alternatives to overcome or avoid risks, such as removing work items or blockages.

 Continually assess the backlog for potential impediments, obstacles, and blockers.

 Evaluate impediments against pending work.

 Also assess scheduled activities and other lists of work items.

 The team and business stakeholders must assess the work backlog work in terms of value and priority.



533

Daily Standup (Daily Scrum)



DEFINITION

A brief, daily collaboration meeting in which the team reviews progress from the previous day, declares intentions for the current day, and highlights any obstacles encountered or anticipated.



534

Daily Standup



- ✓ Conducted at a designated time (in the team “ground rules”).
- ✓ Mandatory attendance of everyone in the Sprint.
- ✓ During the meeting, answer:
 - What’s been done since the last meeting?
 - What needs to be done before the next meeting?
 - What does anyone need help with?

535



Tracking Impediments

Tracking impediments as they are raised, addressed, and resolved, to ensure communication and oversight.

Track impediments with:

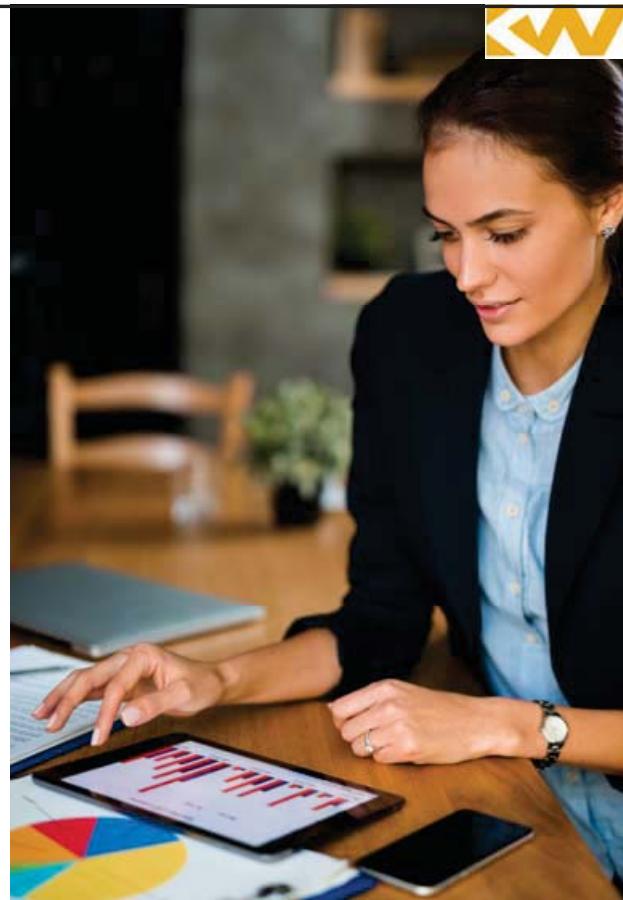
- ✓ Issue log
- ✓ Kanban (task) board
- ✓ Software applications

Capture the status and efforts associated with the identified impediments.

536

Risk Reviews/ Risk Register

- ✓ Impediments may be due to, or a result of, project risks or issues.
- ✓ Risks raised formally during the daily standup meetings, iteration reviews, or informally, are added to the risk register.
- ✓ Newly identified and existing risks are updated based on the current knowledge and situation.



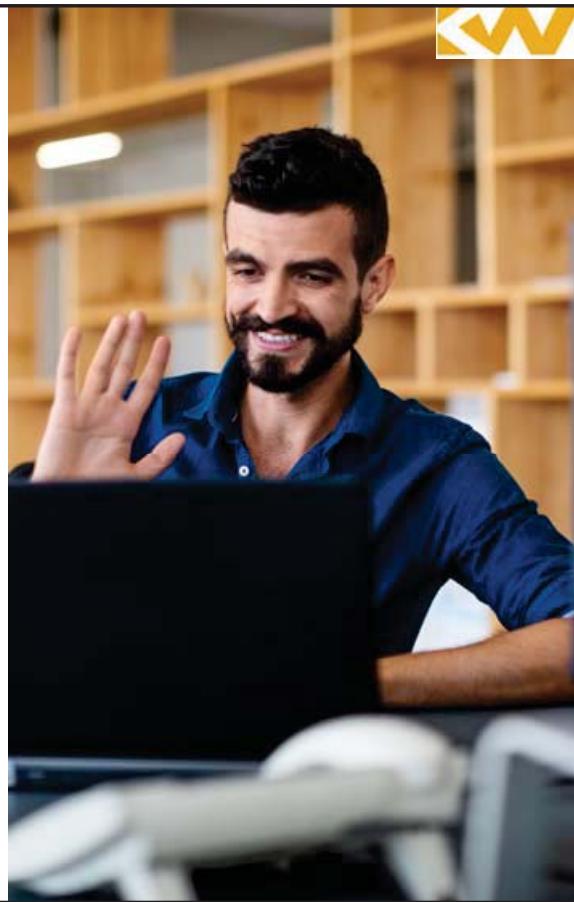
Handle Impediments as a Servant Leader

Aim to **clear an unobstructed path** for the team so they can contribute and deliver.

Optimize the workplace to be free of obstacles and other impediments.

- ✓ Create the right team space
- ✓ Focus efforts on work
- ✓ Remove distraction, non-value work, and other confusion

Take on most of the burden of **addressing and removing impediments** so the team can do their best work.



GUIDELINES

Working with External Stakeholders, Other Projects, and Work Demands

- Work with the team to assess and evaluate the impediment.
- Review previous attempts or efforts to fix the problem.
- Discuss impact and solutions.
- Connect the impediment to the external source.
- Establish a single point of contact (SPOC) within the team, typically the project manager or person with the most subject matter knowledge.
- Shield the rest of the team to focus on other work.
- Create action plan and schedule.
- Follow up and communicate per agreements.
- Document resolution and lessons learned for future reference.



539

GUIDELINES

Prioritize Critical Impediments, Obstacles, and Blockers

- Define the prioritization categories appropriate for team, project, and/or organization.
- Redefine levels as needed.
- Anchor the priority levels with real examples.
- Clarify the new and still open impediments.
- Review the impact or potential impact to the team and to the project objectives.
- Assign a priority to each impediment as a team or a selected subgroup based on connection to the impediment
- Communicate the priorities in a visible place, such as an information radiator.
- Create action plans for the highest priority impediments.
- Continually reassess for impediments, obstacles, and blockers.



540



Manage Conflict

TOPIC D



541

KEEPING THE TEAM ON TRACK > MANAGE CONFLICT

Deliverables and Tools



Team charter or Ground Rules
Updated RACI matrix



Conflict management theory
Change management theory
Conflict management models
Conflict resolution strategies
Emotional Intelligence
Active listening
Empathy

The Project Manager's Role

- ✓ While all stakeholders are responsible for managing conflict, your job is to **heavily influence the direction and handling of conflict**.
- ✓ Use interpersonal and team skills to **ensure positive results** when handling conflict.
- ✓ In agile projects, you facilitate conflict resolution while the team is empowered to resolve conflicts.
- ✓ As a servant leader, you assist in the removal of impediments or sources of conflict.



Skills and Leadership Techniques

In addition to the conflict management techniques we discuss shortly, also use your interpersonal skills to address conflict:

- ✓ Emotional Intelligence
- ✓ Influencing
- ✓ Leadership
- ✓ Decision-Making



Causes of Conflict

- ✓ Competition
- ✓ Differences in objectives, values, and perceptions
- ✓ Disagreements about role requirements, work activities, and individual approaches
- ✓ Communication breakdowns



Conflict Management



DEFINITION

Application of one or more strategies to deal with disagreements.



Conflict Management

Effective conflict management leads to:

- ✓ Improved understanding
- ✓ Better performance
- ✓ Higher productivity

Ineffective conflict management leads to:

- ✗ **Destructive behavior**
- ✗ **Animosity**
- ✗ **Poor performance**
- ✗ **Reduced productivity**

547

Conflict Management Approaches



Conflict Management Approaches (1 of 2)

Smooth/Accommodate

- ✓ Emphasize areas of agreement
- ✓ Concede position to maintain harmony and relationships

Withdraw/Avoid

- ✓ Retreat from the situation
- ✓ Postpone the issue

Collaborate/Problem Solve

- ✓ Incorporate multiple viewpoints
- ✓ Enable cooperative attitudes and open dialogue to reach consensus and commitment



Conflict Management Approaches (2 of 2)

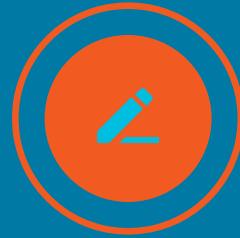
Force/Direct

- ✓ Pursue your viewpoint at the expense of others
- ✓ Offer only win/lose solutions

Compromise/Reconcile

- ✓ Search for solutions that partially satisfy everyone
- ✓ Compromise to temporarily or partially resolve the conflict





Collaborate with Stakeholders

TOPIC E



551

KEEPING THE TEAM ON TRACK > COLLABORATE WITH STAKEHOLDERS

Deliverables and Tools



Stakeholder Register
Stakeholder Engagement Plan
Stakeholder Management Plan



Facilitated Workshops

Engaging Stakeholders



- ✓ Trust
- ✓ Collaboration
- ✓ Productive working

553

Stakeholder Engagement Plan



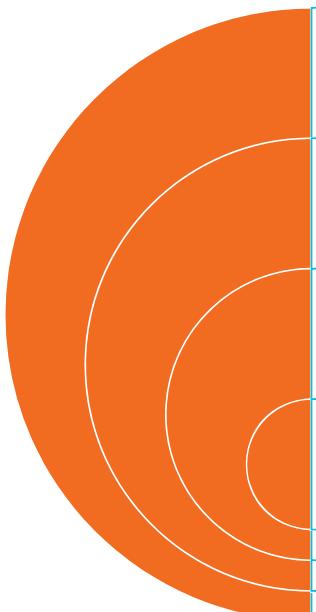
DEFINITION

Identifies the strategies and actions required to promote productive involvement of stakeholders in project or program decision making and execution.



Effective collaboration builds trust between all parties.

Collaboration



Optimize understanding of aims and expectations through open dialogue and meaningful communication.

Accept that each person's involvement and engagement level may fluctuate during project.

Keep discussions transparent to ensure stakeholders are knowledgeable and expectations are set.

Leverage communication and interpersonal skills, feedback, and meeting management to maximize feedback loop and stakeholder engagement.

Collaboration Activities

Nearly constant engagement is recommended

Base the frequency of engagement on mutual needs and expectations

Activities that encourage regular collaboration include:

- Daily stand-up meetings
- Co-locating teams for face-to-face communication
- Scheduled sessions e.g. milestone reviews, backlog grooming sessions, and project update meetings

Determine and optimize collaborative activities as an ongoing team effort



GUIDELINES

Develop a Stakeholder Engagement Plan – (Part 1 of 2)

- Review project artifacts:
 - Project management plan - life cycle selected for the project, how work will be executed, how resource requirements will be met, how changes will be monitored and controlled, and the need and techniques for communication among stakeholders.
 - Stakeholder register - how to appropriately engage stakeholders.
- Organizational culture, structure, and political climate - determine best options to support an adaptive process for engaging stakeholders.
- Lessons-learned database and historical information - insight on previous stakeholder engagement plans and their effectiveness.



GUIDELINES

Develop a Stakeholder Engagement Plan – (Part 2 of 2)

- Use expert judgment to decide on the level of engagement required from each stakeholder at project stages.
- Hold meetings with experts and the project team to define the required engagement levels of all stakeholders.
- Use analytical techniques to classify the level of engagement for stakeholders.
- Document the stakeholder engagement plan.



559



Maximize Meeting Time

- ✓ Be organized
- ✓ Timebox
- ✓ Collaborate

560

GUIDELINES

Facilitating a Meeting

- Ensure meetings are appropriate to the stakeholder's engagement level.
- Set and distribute an agenda before the meeting.
- Allow stakeholders to review and change the agenda.
- Start meetings promptly to support a sense of urgency.
- Timebox meetings.
- Allow others to speak and share.
- Take notes or record the meeting, with permission.
- Keep meeting discussions on topic. Save off-topic discussions for another time.
- Recap the meeting and assign action items.
- Thank everyone for attending.
- Adjourn the meeting per the scheduled time or earlier.
- Distribute the meeting notes or recording.



561



Monitor Relevant Stakeholders

TOPIC F

Deliverables and Tools



Training and Mentoring Plan
Training Effectiveness Assessment
Training Schedule



Group Coaching
Teaching and Training
Facilitation
Transformation Skills



563

Interacting with Relevant Stakeholders

Examples of how to interact with relevant stakeholders:

- ✓ When refining the backlog, mentor the Product Owner on best practices.
- ✓ When onboarding a new project team member, guide them on team processes.
- ✓ When a team member must purchase material for the project, show them the procurement best practices and processes for the organization.



564

Coaching and Mentoring



Coach and mentor others to help them improve.

Raise team abilities to increase their output and value.

Increase the knowledge base and skill sets of all project stakeholders to promote more successful and effectively managed projects.

Start mentoring relevant stakeholders in a project and expand your mentoring reach into throughout the organization.



Make Time for Mentoring and Coaching



Individual Mentoring and Coaching

- ✓ Encourage others to take lead on activities
- ✓ Facilitate meetings and sessions
- ✓ Practice taking on new roles
- ✓ Use informal opportunities
- ✓ Create formal opportunities
- ✓ Transfer skills
- ✓ Model behaviors
- ✓ Encourage teammates to assist each other



Share Explicit Knowledge with an Individual while Performing a Task

- ✓ Encourage self-organization and initiative
- ✓ Facilitate opportunities for others to practice project management tasks
- ✓ Coach individuals on how to contribute to other project roles
- ✓ Coach an individual with tacit knowledge
- ✓ Lead formal training sessions
- ✓ Pass on and practicing skills
- ✓ Demonstrate desired skills and best practices every day
- ✓ Self-organizing teams coach and mentor each other every day in their work



Mentor and Coach as a Group



- ✓ Mentoring and coaching also occurs in whole team settings.
- ✓ Everyone learns when you demonstrate the best way to complete a project management task.
- ✓ Call out and explain actions and their causes or motivations.
- ✓ Allow others in the group to contribute and guide the practice.
- ✓ The entire team learns and grows as a unit.

569

Training and Sharing Plans

- ✓ Set aside time for sharing and learning to increase the opportunities to capitalize on mentoring.
- ✓ Establish formal or informal plans for training and sharing.
- ✓ Leverage retrospectives and lessons learned sessions to call out successes and failures in project management and operation.
- ✓ Schedule training sessions to formalize mentoring and coaching. These sessions can be facilitated by anyone.



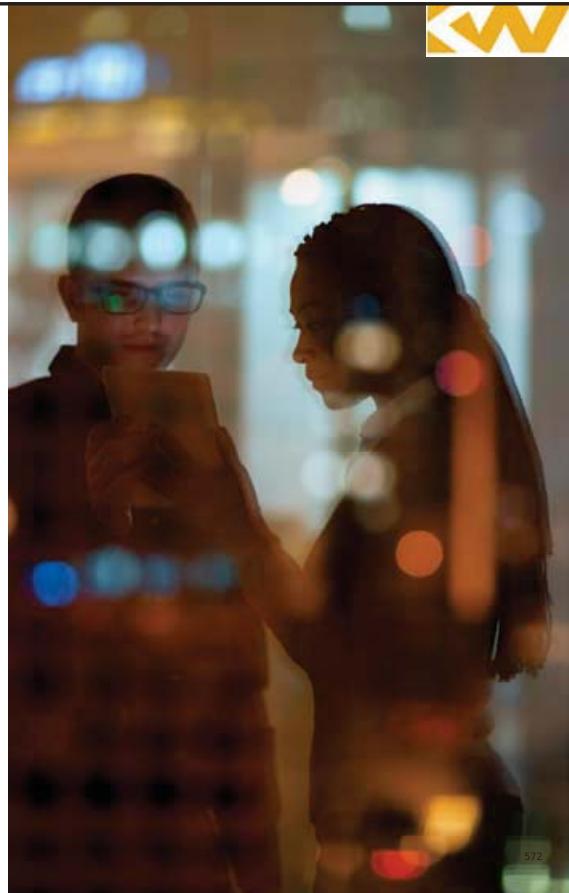
Facilitation

- ✓ Take the lead in facilitating project management activities.
- ✓ Model good project facilitation skills so others can learn.
- ✓ Encourage participation from stakeholders to build their knowledge and comprehension.
- ✓ Guide and offer advice to provide relevant feedback to help people grow in confidence.
- ✓ Increase the abilities of all project stakeholders to increase success. **When all contribute, all gain.**



Transformation Skills

- ✓ Support co-workers to support the business - Supporting business transformations requires patience and compassionate mentoring.
- ✓ Enable an agile operating system - You will be required to coach team members when introducing new methods such as agile.
- ✓ Keep knowledge current - In today's digital world, the skill set being used today may be obsolete or limited tomorrow.





Apply Emotional Intelligence to Promote Team Performance

TOPIC G



573

KEEPING THE TEAM ON TRACK > APPLY EMOTIONAL INTELLIGENCE TO
PROMOTE TEAM PERFORMANCE

Deliverables and Tools



Personality Profile Assessments
Communications plan
Motivation Triggers
Performance Reports
Risk Register



Emotional Intelligence
Empathy
Listening skills
Transparency
Problem solving
Motivational models

Emotional Intelligence



Emotional Intelligence

Count on your soft skills to help Personal Skills:

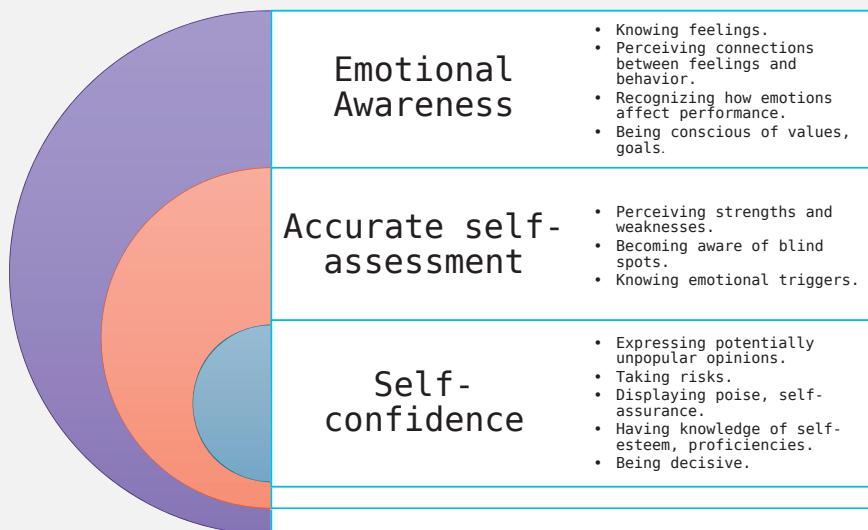
- ✓ Self-awareness
- ✓ Self-regulation
- ✓ Motivation

Interpersonal Skills:

- ✓ Social skills
- ✓ Empathy



Self-Awareness Elements



Self-Regulation Elements

Innovation

- Producing fresh ideas.
- Considering innovative answers to problems.
- Embracing new approaches and possibilities.
- Looking for novel ideas.

Adaptability

- Adapting to changing events.
- Interpreting events in a flexible way.
- Handling numerous demands and changing priorities.

Self-control

- Remaining cool under pressure.
- Staying focused in a stressful environment.
- Controlling rash, destructive emotions.

Trustworthiness

- Acknowledging errors, challenging others' immoral conduct.
- Establishing confidence via reputation for honesty, credibility.
- Standing by principles.
- Behaving in morally appropriate ways.

Conscientiousness

- Having well-ordered, meticulous approach to work.
- Being accountable for fulfilling goals.
- Satisfying obligations, delivering on promises.

Interpersonal and Team Skills

- ✓ Active listening
- ✓ Communications styles assessment
- ✓ Emotional intelligence
- ✓ Influencing
- ✓ Motivation
- ✓ Nominal group technique
- ✓ Political awareness
- ✓ Transparency



Motivation Elements



Commitment

- ✓ Making decisions based on team's core principles.
- ✓ Realizing benefit in comprehensive quest.
- ✓ Sacrificing to fulfill company goal.
- ✓ Searching for opportunities to achieve team's mission.



Achievement Drive

- ✓ Setting tough goals, taking chances.
- ✓ Driving hard to get results.
- ✓ Discovering how to upgrade capabilities.
- ✓ Striving to minimize uncertainty.



Initiative

- ✓ Working above-and-beyond toward goals.
- ✓ Inspiring others through extraordinary feats.
- ✓ Cutting through rules to finish job.
- ✓ Seizing opportunities.



Optimism

- ✓ Hoping to succeed instead of fearing failure.
- ✓ Seeing reversals as events caused by controllable factors.
- ✓ Working toward goals regardless of barriers.



Empathy

The ability to understand the feelings of another, to see from their point of view.

The capacity to empathize is a powerful tool. It provides a foundation for understanding the motivations of other people.



581

Empathy – Looking Inward

Understanding Others

- ✓ Serving others based on needs.
- ✓ Observing emotional cues and listening carefully.
- ✓ Displaying tact and appreciating others' points of view.

Service Orientation

- ✓ Happily providing proper help.
- ✓ Understanding customers' point of view.
- ✓ Seeking strategies to increase consumers' satisfaction.
- ✓ Recognizing consumers' needs.

Empathy – Looking Outward

Developing Others

- ✓ Recognizing, rewarding associates' achievements
- ✓ Providing helpful criticism.
- ✓ Coaching and mentoring.

Leveraging Diversity

- ✓ Appreciating various ideologies.
- ✓ Creating conditions where different types of groups can thrive.
- ✓ Showing consideration for diverse groups.
- ✓ Objecting to discrimination and bigotry.

Political Awareness

- ✓ Understanding political truths and realities of companies.
- ✓ Grasping influences that set opinions of clients, consumers, rivals.
- ✓ Recognizing critical social systems.
- ✓ Correctly interpreting power connections.

Social Skills - Elements

- ✓ Communication
- ✓ Building Bonds
- ✓ Collaboration/Cooperation
- ✓ Change Catalyst
- ✓ Conflict Management
- ✓ Influence
- ✓ Leadership
- ✓ Team Capabilities



Social Skills Elements (Part 1 of 4)



Communication

- ✓ Managing tough problems directly.
- ✓ Effectively exchanging information.
- ✓ Cultivating clear communication.
- ✓ Achieving a mutual awareness.

Building Bonds

- ✓ Building connections with colleagues.
- ✓ Establishing large, casual networks.
- ✓ Keeping others informed.
- ✓ Seeking mutually rewarding relationships.



Social Skills Elements (Part 2 of 4)



Collaboration/Cooperation

- ✓ Fostering a collaborative environment.
- ✓ Cultivating options for cooperation.
- ✓ Balancing job duties and professional relationships.
- ✓ Working together; sharing strategies, knowledge, assets.

Change Catalyst

- ✓ Challenging current situation to appeal for change.
- ✓ Advocating for change.
- ✓ Appreciating importance of change.
- ✓ Exhibiting change anticipated of others.



Social Skills Elements (Part 3 of 4)

Conflict Management

- ✓ Detecting clashes, moving disputes into the open.
- ✓ Managing difficult individuals.
- ✓ Urging open discussion of issues.
- ✓ Engineering resolution for both sides.

Influence

- ✓ Polishing presentations.
- ✓ Winning people over.
- ✓ Coordinating impressive events to sell an idea.
- ✓ Building solidarity and approval.



Social Skills Elements (Part 4 of 4)

Leadership

- ✓ Stimulating interest for collective vision and goal.
- ✓ Modeling effective leadership.
- ✓ Taking on leadership role regardless of official title.
- ✓ Directing others' performance.

Team Capabilities

- ✓ Building team character.
- ✓ Attracting group members.
- ✓ Displaying team characteristics.
- ✓ Safeguarding team and its good name.



Organizational Theory

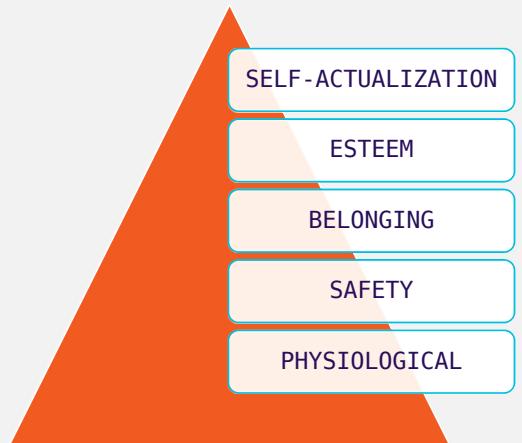


DEFINITION

The study of how people, teams, and organizations behave

Organizational Theory

- ✓ Purpose of organizational theory
- ✓ Maximize efficiency and productivity
- ✓ Solve problems
- ✓ Motivate people
- ✓ Meet stakeholder requirements
- ✓ Common organizational theorists
- ✓ Maslow's Hierarchy of Needs
- ✓ McGregor's Theory X and Theory Y
- ✓ McClelland's Achievement Theory
- ✓ Herzberg's Motivation Theory



Active Listening



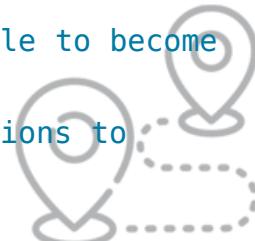
- Repeat the gist of the message
- Verify your understanding of the message
- Lean slightly toward the speaker
- Focus on the speaker at eye-level
- Maintain eye contact without staring
- Respond with non-verbal gesture or verbal response
- Ask questions
- Allow speaker a moment to collect their thoughts



GUIDELINES

Building Emotional Intelligence with Key Stakeholders

- Recognize your own emotions and behaviors.
- Assess how your emotions, attitudes, actions, behaviors control you.
- Observe how your emotions affect those around you.
- Take note of physical nonverbal cues of others, such as a shrug or smile.
- Interpret those cues against the context, situation, and your emotions.
- Remain mindful of the emotions of others.
- Mirror the behaviors of others when suitable to become better connected.
- Practice controlling or changing your emotions to better suit the situation.



End of Module 4



LESSON 5

KEEPING THE BUSINESS IN MIND

- Manage Compliance Requirements
- Evaluate and Deliver Project Benefits and Value
- Evaluate and Address Internal and External Business Environment Changes
- Support Organizational Change
- Employ Continuous Process Improvement



Manage Compliance Requirements

TOPIC A



595

KEEPING THE BUSINESS IN MIND > MANAGE COMPLIANCE REQUIREMENTS

Deliverables and Tools



Risk Register
Configuration Management System
Execution Reports
Nonfunctional Requirements
Signoffs/Approvals
QA Outputs
Quality Management Plan



Risk Register
Risk Response Plan
Variance Analysis
Configuration Management System
Tolerance
Escalation Procedures
Audits
Sampling
QA Tools



596

Compliance Requirements

- ✓ In most projects, solutions are subject to **legal or regulatory constraints**.
- ✓ Identify, track, and manage compliance requirements **throughout the project**.
- ✓ This might include requirements for **specific practices, privacy laws, handling of sensitive information**, and so on.



Use of the Risk Register

- ✓ Use a Risk Register to track and manage risks.
- ✓ Also, validate legal and regulatory compliance for deliverables continuously.
- ✓ Perform a **summary check of compliance** before the end of the project.



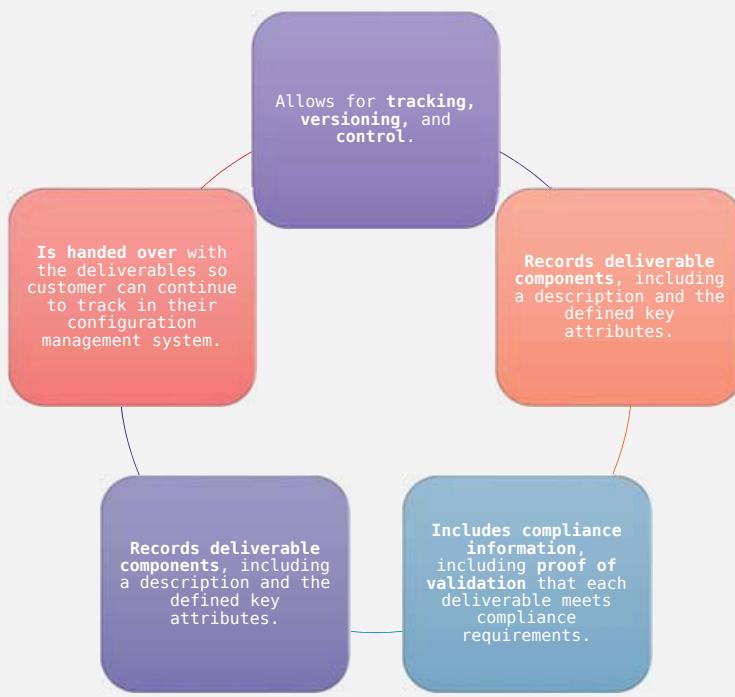


Compliance-related Risks

For compliance-related risks, include:

- ✓ The identified risk
- ✓ Risk owner
- ✓ Impact of a realized risk
- ✓ Risk responses

Configuration Management System



Compliance Categories Classification

Categories vary based on:

- ✓ Industry and **solution** scope.
- ✓ Unique legal and **regulatory exposure**.

quality
safety
workplace health
process risk
corrupt practice
environmental risk
social responsibility



Compliance Reporting



Update:
Work Performance Reports regularly



- With:
- Project activities and changes
 - Team improvements
 - Deliverable status
 - Overall progress
 - Risk status

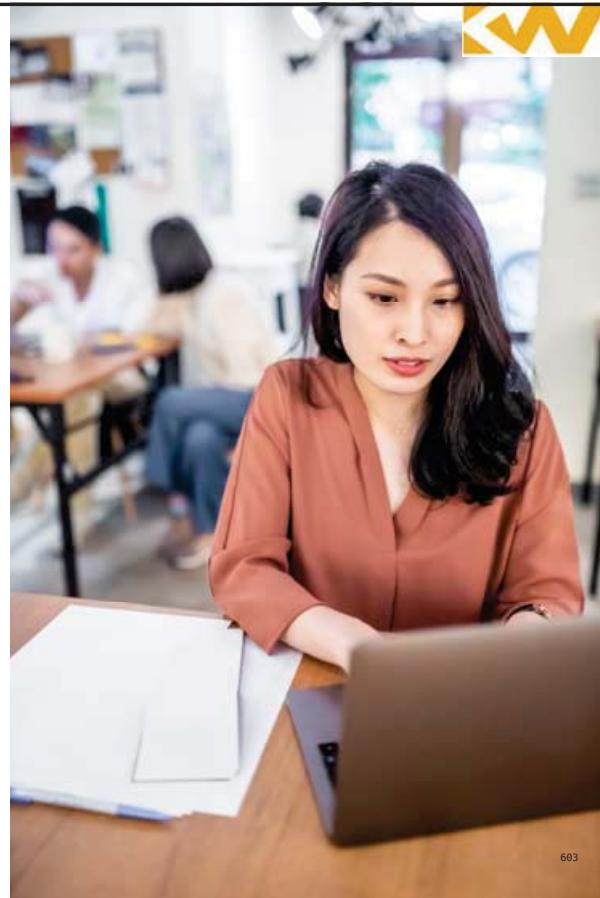


- Compliance-related risks, include:
- Risk management actions
 - Testing and validation activities
 - Audits
 - Other actions to verify deliverable compliance

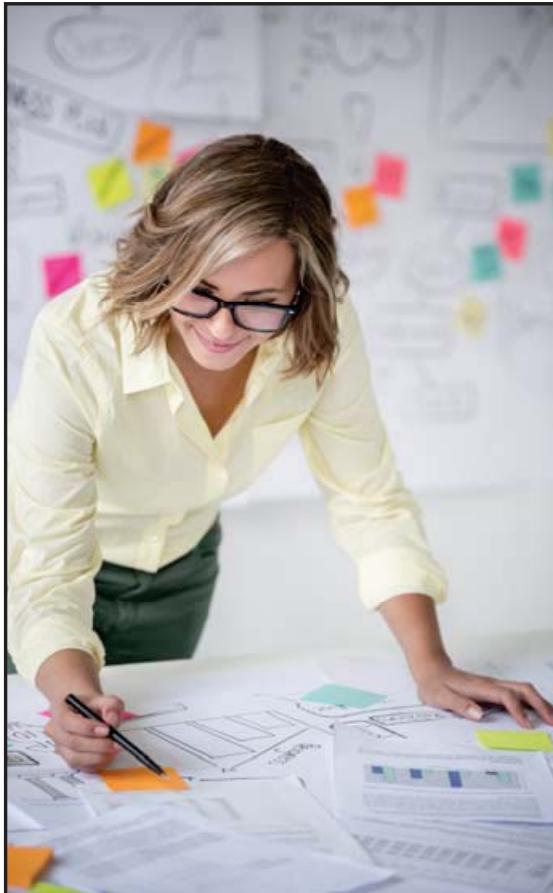


Variance Analysis

- ✓ Create regular reports on project variances and details of **actions** taken to **control** and **keep the project on track**.
- ✓ Variances related to compliance are **critical** because of potential **impact on usability** of the deliverable.
- ✓ Variance analysis should include:
 - **Identification** of the variant
 - **Plans** for bringing the project or deliverable back into compliance
 - Any proposed **changes** required to meet compliance requirements



603



Potential Threats to Compliance

- ✓ **Identification** of new vulnerabilities
- ✓ **Changes** in legal or regulatory requirements
- ✓ **Errors** in testing and validation to confirm compliance
- ✓ **Errors or bugs** in deliverables
- ✓ **Lack of awareness** of compliance requirements



604

Signoffs and Approvals



Identify the **stakeholders authorized** to sign-off and approve compliance of deliverables.



This step **follows successful testing and validating** of deliverables. But this can be **throughout the project or at completion**.



Benefits of compliance sign-off:

- ✓ Early warning of potential threats to compliance.
- ✓ The ability to capture variances and determine a course of action.



Remediate compliance issues **to avoid**:

- ✓ Negative impact on the timeline
- ✓ Cost overruns
- ✓ Increased risks

GUIDELINES

Analyze the Consequences of Noncompliance

To identify and manage legal, regulatory, and other compliance requirements, you need to:

Define:

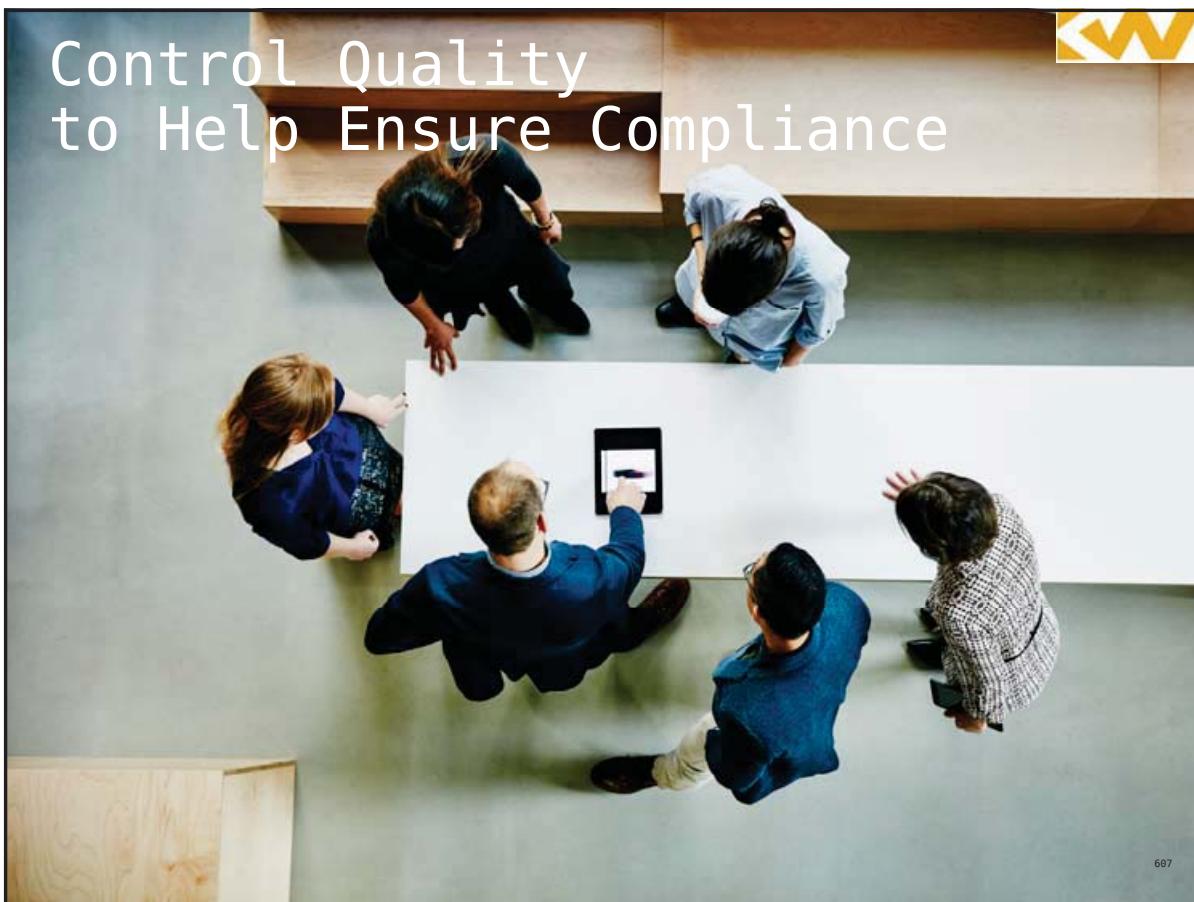
- Legal, regulatory, and other **constraints**
- The **business rules** that constrain the project solution and improve the likelihood of compliance
- **Parts** of the potential solution **subject to** compliance requirements
- The **scope** of the compliance requirement
- The **stakeholders** responsible for reviewing, approving, and signing-off on compliance.

Track and manage:

- The review and approval activities related to compliance requirements
- The risks and risk responses related to compliance requirements



Control Quality to Help Ensure Compliance



607

Quality Management Plan



DEFINITION

A component of the project management plan that describes how applicable policies, procedures, and guidelines will be implemented to achieve the quality objectives.

Quality Management Plan

- ✓ Describes **resources** and **activities** needed to achieve the necessary quality objectives.
- ✓ Sets **expectations** for the project's quality requirements.



Control Quality Process Outputs

As the project team produces deliverables, QA:

- ✓ **Verifies** that they meet both functional and nonfunctional requirements.
- ✓ Possibly, **identifies** and **suggests** potential improvements.
- ✓ **Validates alignment** with compliance requirements.
- ✓ **Provides feedback** on any identified variances.
- ✓ **Identifies potential approaches** to cure defects or other noncompliance.



Continuously **monitor** the QC reports and recommendations and **coordinate** with the project team to **address** defects or noncompliance issues.





Escalation Procedures

Determine whether a noncompliance issue is within the project's tolerance level



If yes, then work with the team to propose a resolution.



If it's beyond the tolerance level, then escalate the issue to the responsible stakeholder for adjudication.



Define these procedures during project and risk planning.

611

Quality Audits



DEFINITION

A process conducted by an external team that confirms the implementation of approved change requests including updates, corrective actions, defect repairs, and preventive actions.

Audits

- ✓ Verify compliance with organizational policies, processes, and procedures.
- ✓ Can verify implementation of change requests.
- ✓ Identify use of good/best practices, nonconformity, gaps, and shortcomings.
- ✓ Share good practices from other projects in the organization or industry.
- ✓ Proactively offer improvements to boost productivity.
- ✓ Highlight contributions to lessons learned.



Sampling

If QA can't inspect every product or deliverable, use sampling to **identify quality issues**.

This approach can provide similar results and **reduce the cost of quality**.

attribute sampling - result either conforms or does not conform

variable sampling - result is rated on a continuous scale that measures the degree of conformity



GUIDELINES

Measure Project Compliance

- Establish a clear Quality Management Plan and act on it continuously to identify noncompliance issues as early as possible.
- Use quality control outputs to confirm deliverable and process compliance and identify needs for corrective actions.
- Establish project tolerances and either initiate corrective actions yourself or quickly escalate noncompliance beyond the tolerances.
- Establish where external audit teams can confirm and validate use of appropriate processes and procedures and how audit results can enable the team to identify improvements.
- Leverage effective quality tools and techniques to assess quality deliverables and identify improvements, corrective actions, or defect repairs required.



615



Evaluate and Deliver Project Benefits and Value

TOPIC B



616

Deliverables and Tools



Benefits Management Plan



Value Analysis
Cost Analysis
EVM, ETC analysis
ROI, NPV, IRR
Benefit Cost Analysis
Decision Trees, EMV
Monte Carlo
Net Promoter Score
A/B Testing



617

Business Value



DEFINITION

The net quantifiable benefit derived from a business endeavor, the benefit of which may be tangible, intangible, or both.



618

Benefits Management Plan



DEFINITION

A document that describes how and when the benefits of a project will be derived and measured.

Benefits Management Plan

Target benefits	Expected tangible and intangible business value to be realized from the project.
Strategic alignment	How the benefits align with the organization's business strategies
Timeframe	When the benefits (short-term and long-term) will be realized, usually by project phase
Benefits owner	Person or group that monitors, records, and reports the benefits
Metrics	Direct and indirect measurements of the realized benefits
Risks	Risks associated with achieving the targeted benefits

Sprint Reviews /Demos

- ✓ At the end of each iteration or sprint, the team conducts a sprint review or demo.
- ✓ In early stages, obtain the product owner's **acceptance of the story** and **any feedback** to enable the team to make changes to **optimize business value**.
- ✓ Focus on completing **whole user stories** in each sprint.
- ✓ Verify that the capability is "**potentially shippable**".



Release Management

In traditional projects, product release occurs at the end when everything is complete.

However, in today's complex business environment, where **work is hardly ever "done"**, we need to **factor change into our thinking about work**.



Agile projects can convert high-value capabilities into delivered solutions early.

Disciplined Agile



DEFINITION

A hybrid tool kit that harnesses hundreds of agile practices—agile, lean, and traditional sources—to guide you to the best way of working for your team or organization.



623

Disciplined Agile (DA) Approaches

- ✓ Use DA approaches to support **dynamic work environments**.
- ✓ A Product Owner creates a **minimum business increment (MBI)** that defines work requirements to deliver the stated value.
- ✓ The MBI **creates value quickly** and incrementally, so the business can start using and benefitting from it.

Advantages:

- Feature or capability assessment
- Improve organizational tolerance for change
- A time cadence for subsequent releases



Benefit Cost Analysis



DEFINITION

A systematic approach to estimating the strengths and weaknesses of alternatives used to determine options which provide the best approach to achieving benefits while preserving savings. Also called cost-benefit analysis.

Benefit Cost Analysis

- ✓ Frequently used to **compare potential projects** to determine which one to authorize.
- ✓ Select the alternative which demonstrates that **benefits outweigh costs by the greatest amount**.
- ✓ Alternative **should not be chosen** when costs exceed benefits.
- ✓ The **accuracy of the estimates** of cost and benefit determines the **value of the benefit cost analysis**.



Present Value (PV)



DEFINITION

The current value of a future sum of money or stream of cash flows given a specific rate of return.

Present Value (PV) Calculation

The PV formula is:

$$PV = \frac{FV}{(1 + r)^n}$$

Present Value
(PV) Calculation

If you need \$USD 3,000 in three years and can invest your money at 8 percent (8%) interest, the present value of your initial investment is calculated:

$$\$2,381.50 = \frac{\$3,000.00}{(1 + 0.08)^3}$$



Net Present Value



DEFINITION

The present value of all cash outflows minus the present value of all cash inflows.

NPV is a financial tool used in capital budgeting.

NPV compares the value of a currency unit today to the value of the same currency unit in the future, after taking inflation and discount rate into account.

Internal Rate of Return (IRR)



DEFINITION

The interest rate that makes the net present value of all cash flow equal to zero.

IRR is also a financial tool often used in capital budgeting.

IRR is the discount rate at which the NPV of the project is zero. It is calculated iteratively, by setting up the NPV calculation in a spreadsheet or other software and changing the discount rate until the NPV equals zero.

Return on Investment



DEFINITION

A financial metric of profitability that measures the gain or loss from an investment relative to the amount of money invested. Sometimes called the rate of return. Usually expressed as a percentage. A positive ROI is interpreted as a good investment, and a negative ROI is a bad investment.



631



Net Promoter Score (NPS)

NPS is a metric used in customer experience programs to measure customer loyalty.

Customers rate their experience with a number from -100 to +100. A higher score is desirable.

A/B Testing



633

Monte Carlo Simulation



DEFINITION

An analysis technique in which a computer model is iterated many times, with the input values chosen at random for each iteration driven by the input data, including probability distributions and probabilistic branches.

Monte Carlo Simulation

Outputs are generated to represent the **range of possible outcomes** for the project.

Monte Carlo refers to not one single analysis method but to a **wide class of techniques**, mostly making use of sophisticated computers and inputs of **random numbers, probabilities, and algorithms**.



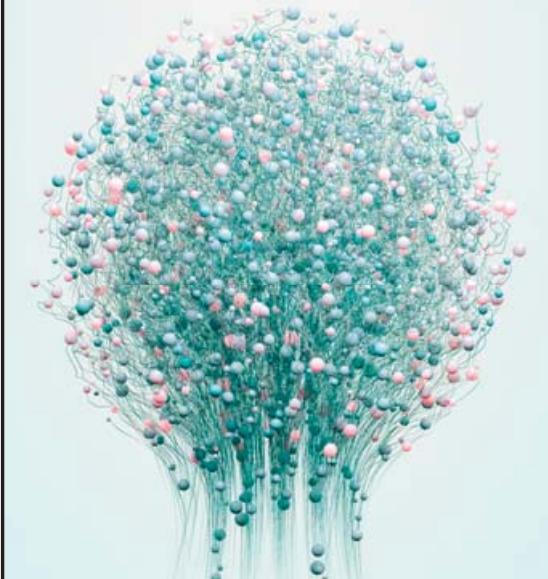
Simulation



DEFINITION

An analytical technique that models the combined effect of uncertainties to evaluate their potential impact on objectives.

Using Simulations



- ✓ Uses computer models and estimates of risks.
- ✓ Translates uncertainties into potential impact.
- ✓ Involves calculating multiple project durations, using varying sets of assumptions.

Decision Tree Analysis

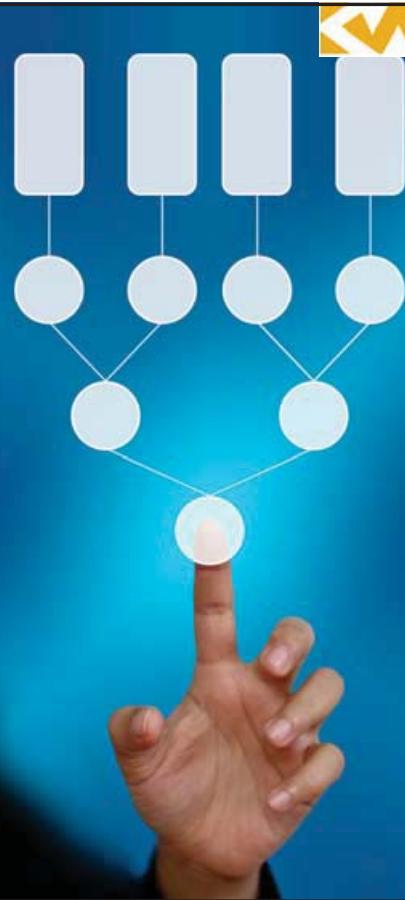


DEFINITION

A diagramming and calculation technique for evaluating the implications of a chain of multiple options in the presence of uncertainty.

Use Decision Trees to Find Benefit and Value

- ✓ Use to support **selection** of the best of several action options.
- ✓ Branches represent different **decisions or events**, each of which can have **associated costs and risks**.
- ✓ The **end-points** of branches in the decision tree represent the **outcome** from following that path, which can be **negative or positive**.
- ✓ Calculate the **expected monetary value** of each branch and select the optimal one.



639



Evaluate and Address Internal and External Business Environment Changes

TOPIC C



640

Deliverables and Tools



Baselines
Configuration Management
System
Backlogs
(Updated) Roadmaps



Change Control Boards
Backlog Reprioritization
Product Owner Duties
Release Planning
Governance



641



Internal Business Environment

- ✓ **Organizational changes** can make a dramatic impact on the **scope** of a project.
- ✓ The **project manager** and **project sponsor** need to have visibility into business plans, reorganizations, process changes, and other internal activities.
- ✓ Because internal business changes might cause:
 - Need for new deliverables
 - Reprioritization or removal of existing deliverables

642

Get to Know the External Business Environment

The PESTLE acronym identifies the external business environment factors that can **affect the value and desired outcomes** of a project.

Others are:

- ✓ TECOP (technical, environmental, commercial, operational, political)
- ✓ VUCA (volatility, uncertainty, complexity, ambiguity)

These frameworks can help you to better understand external factors that can introduce **risk, uncertainty, or provide opportunities**.

Political
Economic
Social
Technical
Legal
Environmental



Update Baselines

- ✓ In traditional project plans, the **completed initial plan** contains the baseline.
- ✓ As changes occur in the project, you **update** the baseline to reflect any **new requirements**.
- ✓ Agile projects process change continuously, in iterations or increments. Work is prioritized and updated in the **product backlog** or in the **value stream** (Disciplined Agile).

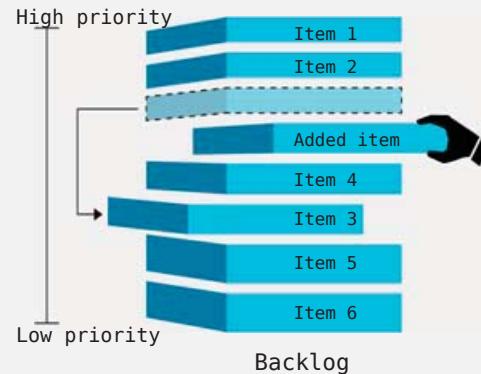


Backlog Reprioritization



Product owner **re-prioritizes** the backlog as stories or requirements change.

Business value determines the priority of the changes.



645

Recommended Options for Changes

- ✓ When change is proposed, the product owner should **focus on the intended business value** of the change.
- ✓ Give the **project team** discretion to consider the change and **identify potential solution options**.



A clear governance structure becomes critical when project changes are driven by changes in the internal or external business environments.



647

Governance Steering Committee

- ✓ 'The Project Board' or overall governance or steering committee that coordinates the project:
- ✓ Might include: the project sponsor, a senior user, and PMO resources.
- ✓ Are responsible for:
Clarifying the project charter and objectives; and allocating resources to the project.



GUIDELINES

Assessing the Impact on Project Backlog Based on Business Environment Changes

- Understand the project's organizational context.
- Understand the external factors that may impact your project.
- How is the project work prioritized?
- What is the project governance model?



649



Support Organizational Change

TOPIC D



650

Deliverables and Tools



Change Management Plan
Roll Out Plan
Training Plan
Training Artifacts

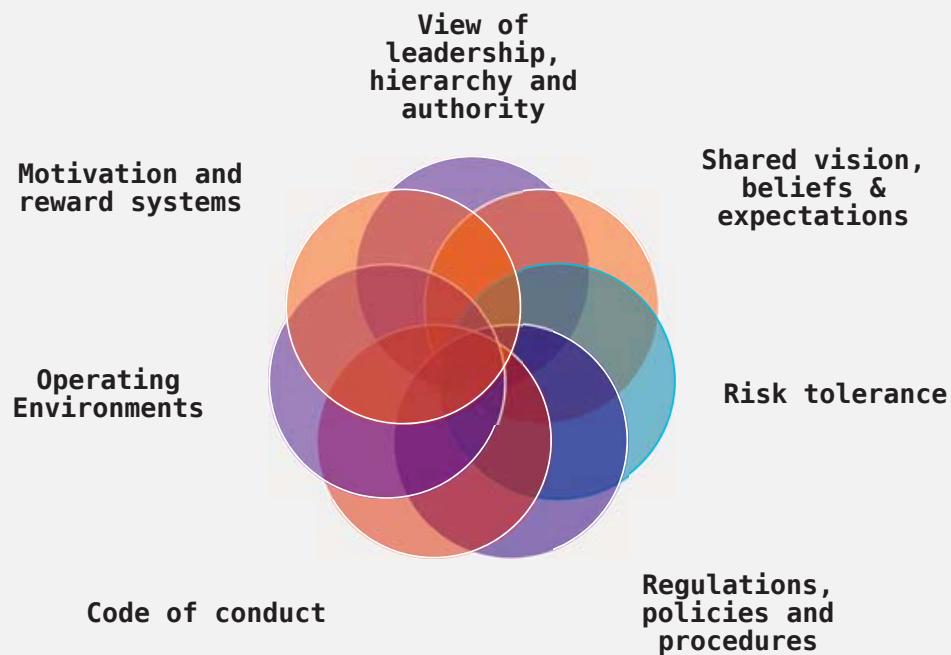


Project Management Plan updates
EEFs
OPAs
Demos
PM / PMO org structures



651

Organizational Cultures and Styles



652

Organizational Structures



- ✓ Affect resource availability
- ✓ Affect how projects are conducted
- ✓ Main structures include functional, project-oriented, matrix, and composite.

653

Relative Authority in Organizational Structures

Consider your authority relative to the functional manager's authority over the project and the project team.

Relationship	Functional	Matrix	Project-oriented
Team members are loyal to	Functional department	Conflicted loyalty	Project
Team members report to	Functional manager	Both functional manager and project manager	Project manager
Project manager's role is	Part-time	Full-time	Full-time
Team members' role is	Part-time	Part-time	Full-time
Control of project manager over team members is	Low	Medium	High

Project Management Office (PMO)



DEFINITION

A management structure that standardizes the project-related governance processes and facilitates the sharing of resources, methodologies, tools, and techniques. Types of PMOs include supportive, controlling, and directive.



655

Roll Out Plan

- ✓ You need to plan for successful implementation of changes.
- ✓ Roll out plans enable you to define the knowledge transfer, training, and readiness activities required to implement the change.
- ✓ Depending on the size, scope, and nature of the change, the plan details might include:
 - The Project team and the affected customer and users
 - Training and support activities





Project Management Plan Updates

Based on the scope of changes, you may need to **update the project management plan** for:

- ✓ Scope
- ✓ Timelines
- ✓ Work packages
- ✓ Team member assignments

In **agile** projects, the team might remove lower-value deliverables from scope to make room for the change.

657

Training Plan

Changes to the project plan that will likely impact the training plan:

- ✓ Scope of the training and knowledge transfer required
- ✓ Roles and responsibilities of the stakeholders
- ✓ Timelines



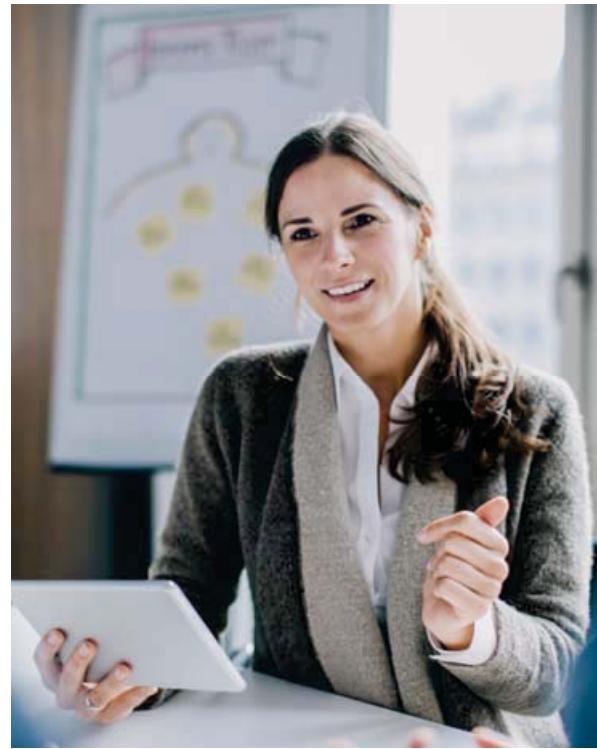
Training Artifacts

Changes to the plan and deliverable set requires changes to the training artifacts, including:

- ✓ Training courseware
- ✓ Lab configurations and exercises
- ✓ Knowledge requirements and potentially credentials, if certification of skills is expected
- ✓ Updates for the trainers to gain the necessary knowledge transfer required to deliver the updated training

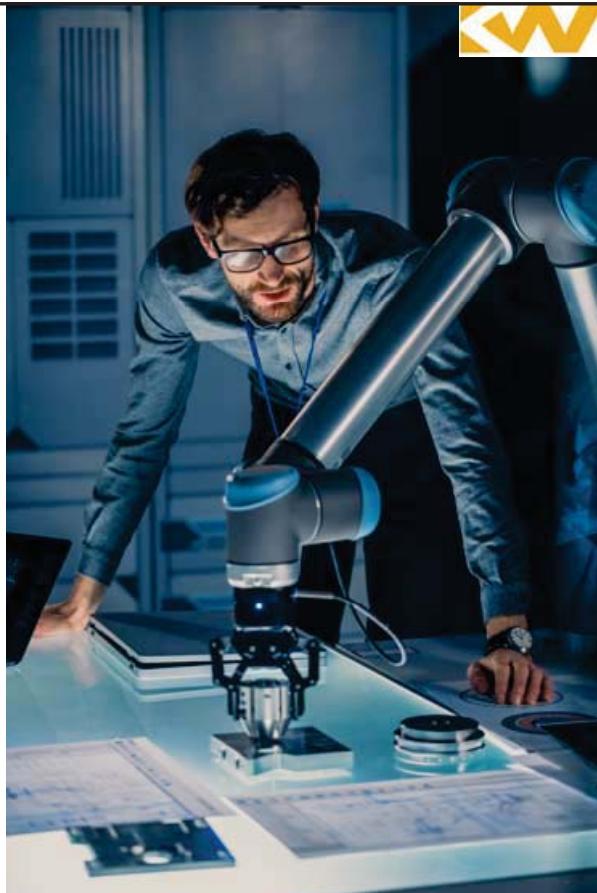


Whether in-house or outsourced, you have to ensure these changes to training are made.



Demos

- ✓ Changes to **software solutions** may require demonstration of changed configurations, processes, workflows, and roles and responsibilities.
- ✓ **Key customer and user stakeholders** need to review the demo and provide feedback to ensure the changes work as intended and do not impact the workflow of the solution.
- ✓ Early feedback allows for adaptation, while the feedback is immediately relevant and should **improve the quality of the change while reducing overall cost and risk**.



GUIDELINES

Recommend, Plan, and Facilitate Change (Part 1 of 2)

- Establish a **single change request method** which includes:
 - A description of the proposed change
 - The business value of the change
 - Any risk and risk mitigation recommendations
 - Likely cost of the change
- Ensure that a CCB can assess the change cost, risk, and value, other potential impacts to the project, and make recommendations.
- Check the project's tolerance – can you approve the change or do you need to escalate it to the governing board for review and approval?



661

**GUIDELINES**

Recommend, Plan, and Facilitate Change (Part 2 of 2)

- Follow **organizational change management best practices**:
 - Build a compelling case for change
 - Get buy-in and commitment of key stakeholders
 - Communicate the change vision
 - Enable other stakeholders to engage
- Ensure changes are properly aligned and updates are made to relevant project artifacts – i.e. project plan, training plans, training artifacts, and software configurations or demos.



662





Employ Continuous Process Improvements

TOPIC F



663

KEEPING THE BUSINESS IN MIND > EMPLOY CONTINUOUS PROCESS IMPROVEMENTS

Deliverables and Tools



Processes and standards



Quality Theory methods
CI approaches
Lessons learned
Retrospectives
Experiments

Continuous Improvement



DEFINITION

An ongoing effort to improve products, services, or processes.

Institute of Quality Assurance definition includes improving business strategy, business results, and customer, employee, and supplier relationships.



665

Continuous Improvement

- ✓ Aim for small, incremental improvements or large breakthroughs.
- ✓ A business strategy that is developed at the organizational level for projects to adopt and use.
- ✓ Might be implemented by an organization's PMO.



Culture of Continuous Improvement

W. Edwards Deming's philosophy of improving quality aims to reduce expenses, increase productivity, and thus increase market share.

Be guided by these four concepts:

- ✓ **Better design** of products to improve service.
- ✓ **Higher level** of uniform product quality.
- ✓ **Improvement** of product testing in the workplace and in research centers.
- ✓ **Greater sales** through global markets.

A portrait of a woman with grey hair and glasses, looking thoughtful. To her right is a dark overlay containing text.

**Further Study
in Quality
Theory Methods**

*Approaches by
industry thought
leaders can help
you understand how
to improve business
results.*

Six Sigma - respond to customer needs and improving processes by systematically removing defects.

William Smith, Jr.

Break quality management into quality planning, control and improvement

Joseph M. Juran



Continuous process improvement in which quality must be continuously improve to meet customer needs

W. Edward Deming

Four absolutes: conforming to requirements, quality achieved by prevention, standard of zero defects, and quality measured by determining CoQ.

Philip B. Crosby

Design quality into the product so factors that cause variation can be identified and controlled.

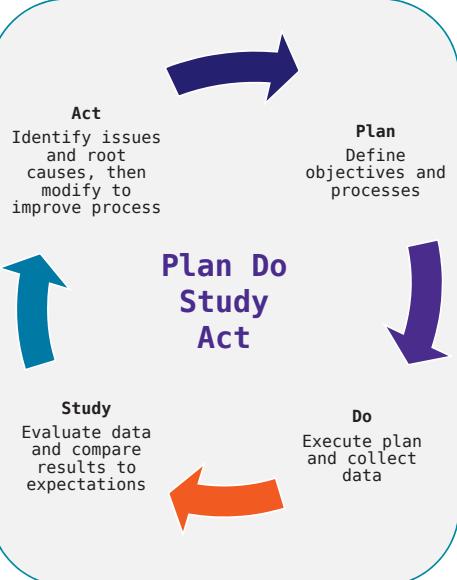
Genichi Taguchi

669

Continuous Improvement Approaches

Kaizen

- ✓ Many small changes or improvements.
- ✓ Small changes less likely to require major expenditures of capital.
- ✓ Ideas come from workers—not expensive research, consultants, or equipment.
- ✓ All employees should continually improve their own performance.
- ✓ All are encouraged to take ownership of their work to improve motivation.



670

Continuous Improvement Tools

Lessons Learned Register is an important component of each project.

- ✓ Use it as a source of improving the processes in other projects.
- ✓ Avoid filing it away at the end of a project and not referring to it.

Retrospectives:

- ✓ Common in agile projects at the end of each iteration.
- ✓ Helps the team look back at an iteration and plan improvements for the next one.

Experiments provide a way to improve team efficiency and effectiveness:

- ✓ Some techniques include A/B testing and team feedback to identify improvements.
- ✓ Perform experiments one at a time to isolate the results.

671

Update to Process and Standards

- ✓ Lessons learned at the project level can apply to the **organization's continuous improvement process**, in addition to the project management processes.
- ✓ Escalate these lessons and evaluate them for consideration at the organizational level.



GUIDELINES

Execute Continuous Improvement Steps

- Review the organization's continuous improvement strategy.
- Develop a continuous improvement approach for your project, keeping in mind the project goals and the expectations of the stakeholders.
- Use lessons learned from your project and other projects—as sources of continuous improvement.
- For agile projects, use retrospectives to improve the next iteration.
- Use lessons learned at the project level to improve the organization's continuous improvement process.



673

End of Module 5

