
# Project Performance Domains

SE423: Software Project Management

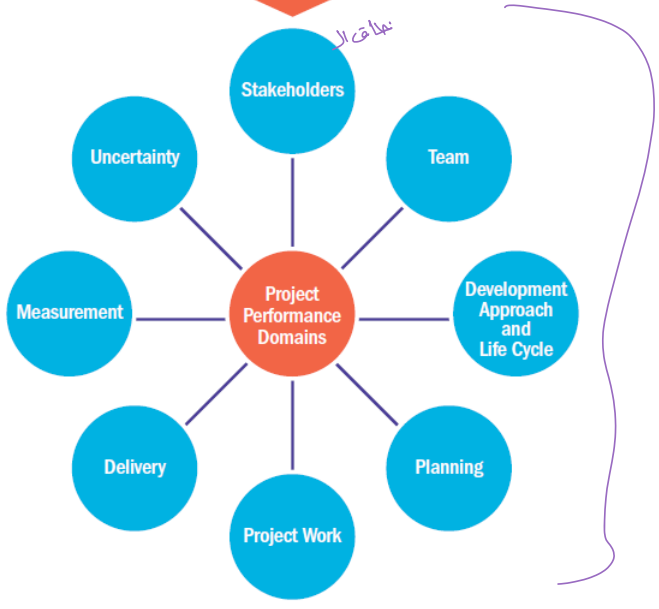
# Project Performance Domains

- A project performance domain is a group of related activities that are critical for the effective delivery of project outcomes.
- Project performance domains are interactive, interrelated, and interdependent areas of focus that work in unison to achieve desired project outcomes.

- Performance domains run concurrently throughout the project, regardless of how value is delivered (frequently, periodically, or at the end of the project).

| Principles of Project Management | | | |
|---|---|---|---|
| Be a diligent, respectful, and caring steward | Create a collaborative team environment | Effectively engage with stakeholders | Focus on value |
| Recognize, evaluate, and respond to system interactions | Demonstrate leadership behaviors | Tailor based on context | Build quality into processes and deliverables |
| Navigate complexity | Optimize risk responses | Embrace adaptability and resiliency | Enable change to achieve the envisioned future state |

Guide Behavior



# Stakeholder Performance Domain

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- Stakeholder
  - 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, program, or portfolio.
- Stakeholder Analysis تحليل المستفيدين
  - A method of systematically gathering and analyzing quantitative and qualitative information to determine whose interests should be taken into account throughout the project.
  - includes stakeholders who are internal and external to the organization, those who are supportive of the project, and those who may not be supportive or are neutral.

# Stakeholder Performance Domain

- Technical project management skills are important, but having the interpersonal and leadership skills to work effectively with stakeholders is maybe more important.

## STAKEHOLDER PERFORMANCE DOMAIN

The Stakeholder Performance Domain addresses activities and functions associated with stakeholders.

Effective execution of this performance domain results in the following desired outcomes:

- A productive working relationship with stakeholders throughout the project.
- Stakeholder agreement with project objectives.
- Stakeholders who are project beneficiaries are supportive and satisfied while stakeholders who may oppose the project or its deliverables do not negatively impact project outcomes.

# Checking Outcomes of Stakeholder Performance Domain

| Outcome | Check |
| --- | --- |
| A productive working relationship with stakeholders throughout the project | Productive working relationships with stakeholders can be observed. However, the movement of stakeholders along a continuum of engagement can indicate the relative level of satisfaction with the project. |
| Stakeholder agreement with project objectives | A significant number of changes or modifications to the project and product requirements in addition to the scope may indicate stakeholders are not engaged or aligned with the project objectives. |
| Stakeholders who are project beneficiaries are supportive and satisfied; stakeholders who may oppose the project or its deliverables do not negatively impact project results | Stakeholder behavior can indicate whether project beneficiaries are satisfied and supportive of the project or whether they oppose it. Surveys, interviews, and focus groups are also effective ways to determine if stakeholders are satisfied and supportive or if they oppose the project and its deliverables.<br>A review of the project issue register and risk register can identify challenges associated with individual stakeholders. |

# Team Performance Domain



## TEAM PERFORMANCE DOMAIN

The Team Performance Domain addresses activities and functions associated with the people who are responsible for producing project deliverables that realize business outcomes.

Effective execution of this performance domain results in the following desired outcomes:

- Shared ownership.
- A high-performing team.
- Applicable leadership and other interpersonal skills demonstrated by all team members.

Stakeholders, Teams

# Project Team Management and Leadership

- Project management entails applying knowledge, skills, tools, and techniques for management activities as well as **leadership** activities.
- Management activities focus on the means of meeting project objectives, such as having effective processes, planning, coordinating, measuring, and monitoring work, among others.
- **Leadership** activities focus on **people**.
- Leadership includes influencing, motivating, listening, enabling, and other activities having to do with the project team.
- Both are important in delivering the intended outcomes.

# Project Team Management and Leadership

- Centralized Management and Leadership
  - While leadership activities should be practiced by all project team members, management activities may be centralized or distributed.
  - In an environment where management activities are centralized, accountability (being answerable for an outcome), is usually assigned to one individual, such as the project manager or similar role.
  - In these situations, a project charter (see example in notes below) or other authorizing document can provide approval for the project manager to form a project team to achieve the project outcomes.

# Project Team Management and Leadership

- Distributed Management and Leadership
  - Sometimes project management activities are shared among a project management team, and project team members are responsible for completing the work.
  - There are also situations where a project team may self-organize to complete a project.
  - Rather than having a designated project manager, someone within the project team may serve as facilitator to enable communication, collaboration, and engagement.
  - This role may shift among project team members.

# Project Team Management and Leadership

| DECENTRALIZED | CENTRALIZED |
| --- | --- |
| Middle and Low Level Managers have decision making power | A few upper management members have decision making power |
| Authority is given to those who are closer to stakeholders | Authority is given to those who are at the top of the chain of command |
| Organizations are self-sufficient | More standardization |
| Faster decision making | More control |
| More expensive | Less expensive |
| More creativity | Limited creativity |

# Project Team Management and Leadership

- Common Aspects of Team Development
  - Regardless of how the management activities are structured, there are common aspects of project team development that are relevant for most project teams.
  - These include:
    - Vision and objectives.
    - Roles and responsibilities.
    - Project team operations.
    - Guidance.
      - Guidance can be directed to the overall project team to keep everyone headed in the right direction.
      - Individual project team members may also provide guidance on a particular task or deliverable.
    - Growth.
      - Identifying areas where the project team is performing well and pointing out areas where the project team can improve helps the project team to grow.
      - Working collaboratively, the project team can identify goals for its improvement and take steps to meet those goals.

# Project Team Culture

- Each project team develops its own team culture.
- The project team's culture may be established deliberately by developing project team norms, or informally through the behaviors and actions of its project team members.
- The project team culture operates within the organization's culture but reflects the project team's individual ways of working and interacting.

# Project Team Culture

- The project manager is key in establishing and maintaining a safe, respectful, nonjudgmental environment that allows the project team to communicate openly.
- One way to accomplish this is by modeling desired behaviors, such as:
  - Transparency
  - Integrity
  - Respect
  - Positive discourse
  - Support
  - Courage
  - Celebrating success

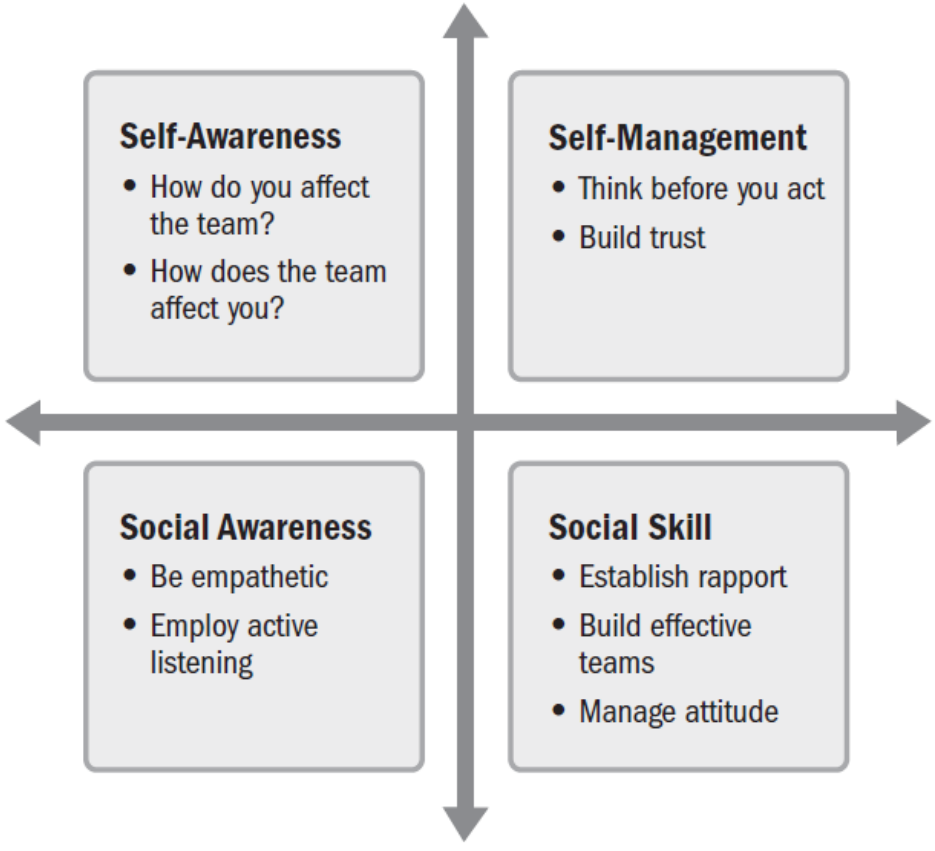
# High-Performing Project Teams

- The list below identifies some of the factors associated with high-performing project teams.
  - Open communication
  - Shared understanding
  - Shared ownership
  - Trust
  - Collaboration
  - Adaptability
  - Resilience
  - Empowerment
  - Recognition

# Leadership Skills

- Establishing and Maintaining Vision
- Critical Thinking
- Motivation
- Interpersonal Skills

# Components of Emotional Intelligence



# Tailoring Leadership Styles

- leadership styles (ex: autocratic, democratic, laisser-faire, transactional, servant, etc.) are tailored to meet the needs of the project, the environment, and the stakeholders.
- Some of the variables that influence tailoring of leadership styles include:
  - Experience with the type of project
  - Maturity of the project team members
  - Organizational governance structures
  - Distributed project teams

# Checking Outcomes—Team Performance Domain

| Outcome | Check |
| --- | --- |
| Shared ownership | All project team members know the vision and objectives. The project team owns the deliverables and outcomes of the project. |
| A high-performing team | The project team trusts each other and collaborates. The project team adapts to changing situations and is resilient in the face of challenges. The project team feels empowered and empowers and recognizes members of the project team. |
| Applicable leadership and other interpersonal skills are demonstrated by all project team members | Project team members apply critical thinking and interpersonal skills. Project team member leadership styles are appropriate to the project context and environment. |

# Development Approach and Life Cycle Performance Domain

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## DEVELOPMENT APPROACH AND LIFE CYCLE PERFORMANCE DOMAIN

The Development Approach and Life Cycle Performance Domain addresses activities and functions associated with the development approach, cadence, and life cycle phases of the project.

Effective execution of this performance domain results in the following desired outcomes:

- Development approaches that are consistent with project deliverables.
- A project life cycle consisting of phases that connect the delivery of business and stakeholder value from the beginning to the end of the project.
- A project life cycle consisting of phases that facilitate the delivery cadence and development approach required to produce the project deliverables.

# Development Approach and Life Cycle Performance Domain

- The following definitions are relevant to the Development Approach and Life Cycle Performance Domain:
  - Deliverable
    - Any unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project.
  - Development Approach.
    - A method used to create and evolve the product, service, or result during the project life cycle, such as a predictive, iterative, incremental, adaptive, or hybrid method.
  - Cadence.
    - A rhythm of activities conducted throughout the project.
  - Project Phase.
    - A collection of logically related project activities that culminates in the completion of one or more deliverables.
  - Project Life Cycle.
    - The series of phases that a project passes through from its start to its completion.

# Development, Cadence, and Life Cycle

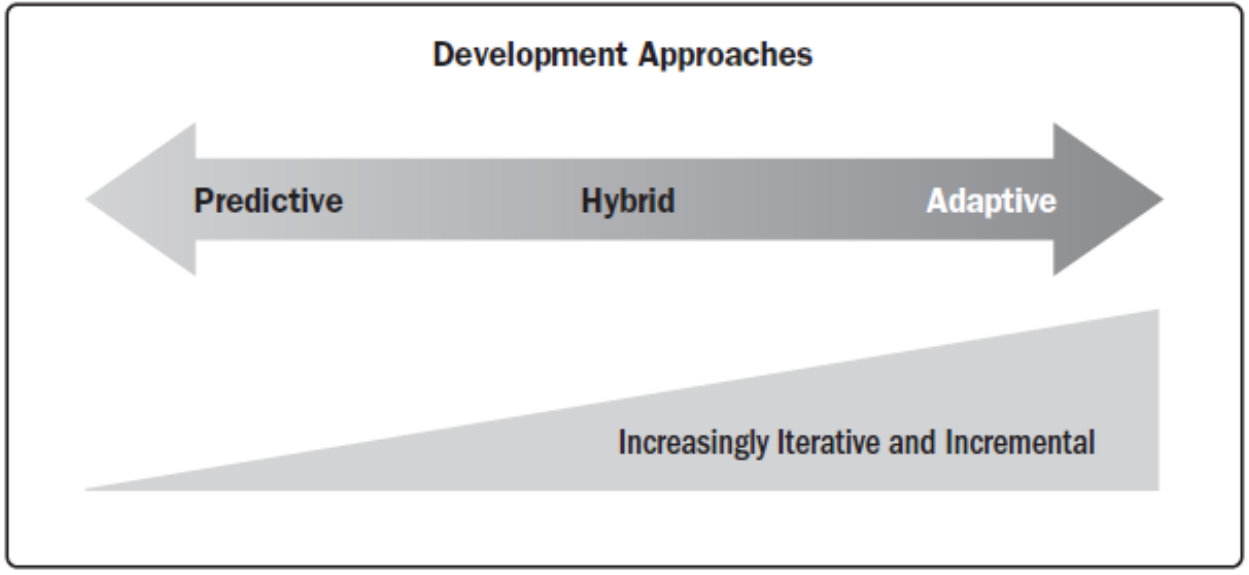
- The type of project deliverable(s) determines how it can be developed.
- The type of deliverable(s) and the development approach influence the number and cadence for project deliveries.
- The deliverable approach and the desired delivery cadence determine the project life cycle and its phases.
- Delivery cadence refers to the timing and frequency of project deliverables.
- Projects can have a single delivery, multiple deliveries, or periodic deliveries.

# Delivery Cadence

- For digital products, another delivery option is called continuous delivery.
- Continuous delivery is the practice of delivering feature increments immediately to customers, often through the use of small batches of work and automation technology.
- From the product management perspective, the emphasis is on delivering benefits and value throughout the product life cycle.
- This allows the team to respond to market trends and stay focused on value delivery.
- This practice is included in several approaches such as DevOps, #noprojects and Continuous Digital, for example.

# Development Approaches

- A development approach is the means used to create and evolve the product, service, or result during the project life cycle.
- There are different development approaches, and different industries may use different terms to refer to development approaches.
- Three commonly used approaches are
  - predictive,
  - hybrid, and
  - adaptive.



# Development Approaches

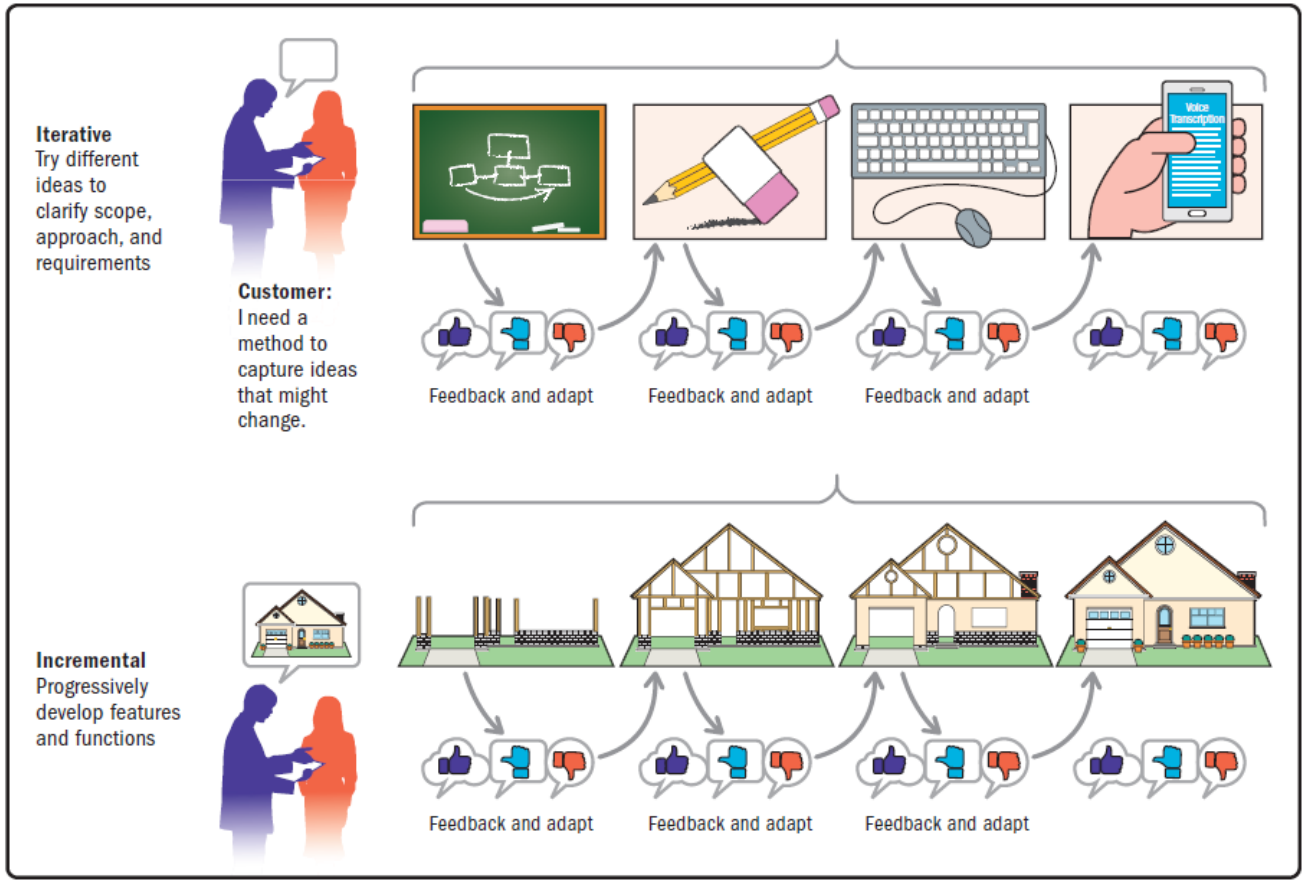
- Predictive approach
  - A predictive approach is useful when the project and product requirements can be defined, collected, and analyzed at the start of the project. (Waterfall approach)
  - May also be used when there is a significant investment involved and a high level of risk that may require frequent reviews, change control mechanisms, and replanning between development phases.
  - The scope, schedule, cost, resource needs, and risks can be well defined in the early phases of the project life cycle, and they are relatively stable.
  - This development approach allows the project team to reduce the level of uncertainty early in the project and do much of the planning upfront.

# Development Approaches

- Hybrid approach
  - A hybrid development approach is a combination of adaptive and predictive approaches.
  - This means that some elements from a predictive approach are used and some from an adaptive approach are used.
  - This development approach is useful when there is uncertainty or risk around the requirements.
  - Hybrid is also useful when deliverables can be modularized, or when there are deliverables that can be developed by different project teams.

# Development Approaches

- Hybrid approach



# Development Approaches

- Adaptive approach
  - Adaptive approaches are useful when requirements are subject to a high level of uncertainty and volatility and are likely to change throughout the project.
  - A clear vision is established at the start of the project, and the initial known requirements are refined, detailed, changed, or replaced in accordance with user feedback, the environment, or unexpected events.
  - Adaptive approaches use iterative and incremental approaches. However, on the far side of the adaptive methods, the iterations tend to get shorter and the product is more likely to evolve based on stakeholder feedback.

# Development Approaches

- Adaptive approach
  - While agility is a wide mindset that is broader than a development framework, agile approaches can be considered adaptive. Some agile approaches entail iterations that are 1 to 2 weeks in duration with a demonstration of the accomplishments at the end of each iteration.
  - The project team is very engaged with the planning for each iteration.
  - The project team will determine the scope they can achieve based on a prioritized backlog, estimate the work involved, and work collaboratively throughout the iteration to develop the scope.

# Considerations for Selecting Approaches

- There are many variables associated with the nature of the product or service that influence the development approach.
  - Degree of innovation
  - Requirements certainty
  - Scope stability
  - Ease of change
  - Delivery options
  - Risk
  - Safety requirements
  - Regulations

# Considerations for Selecting Approaches

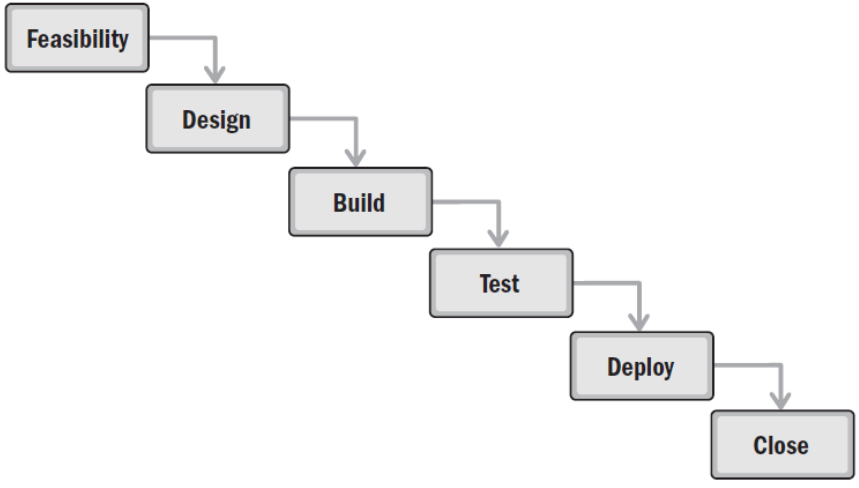
- Project variables that influence the development approach are centered around stakeholders, schedule constraints, and funding availability.
  - **Stakeholders**
    - Projects that use adaptive methods require significant stakeholder involvement throughout the process.
    - Certain stakeholders, such as the product owner, play a substantial role in establishing and prioritizing work.
  - **Schedule constraints**
    - If there is a need to deliver something early, even if it is not a finished product, an iterative or adaptive approach is beneficial.
  - **Funding availability**
    - Projects that work in an environment of funding uncertainty can benefit from an adaptive or iterative approach.
    - A minimum viable product can be released with less investment than an elaborate product.
    - This allows for market testing or market capture with minimum investment.

# Considerations for Selecting Approaches

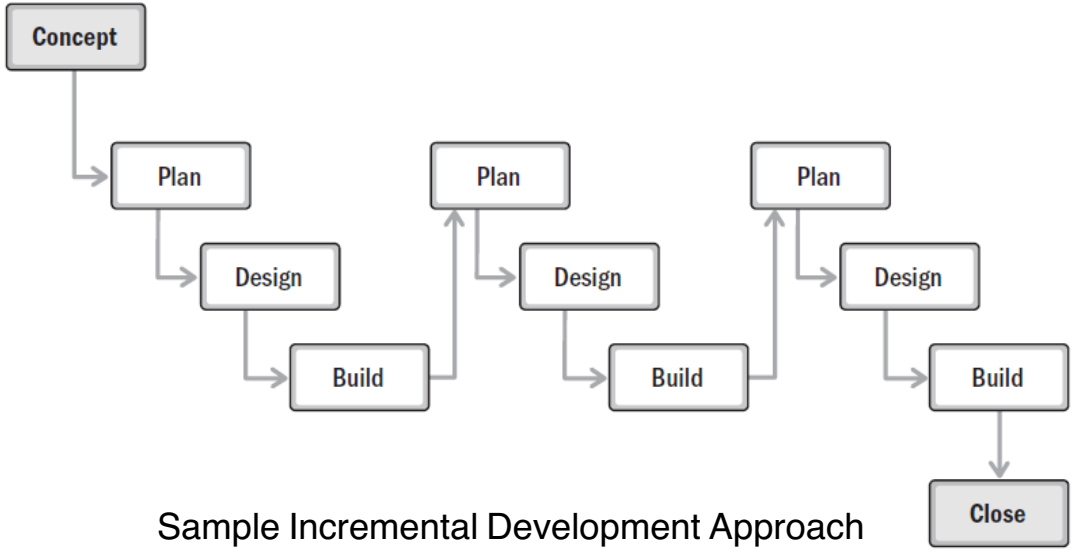
- The Organization
  - Organizational variables such as the structure, culture, capability, project team size, and location influence the development approach.
    - Organizational structure
    - Culture
    - Organizational capability
    - Project team size and location

# Life Cycle and Phase Definition

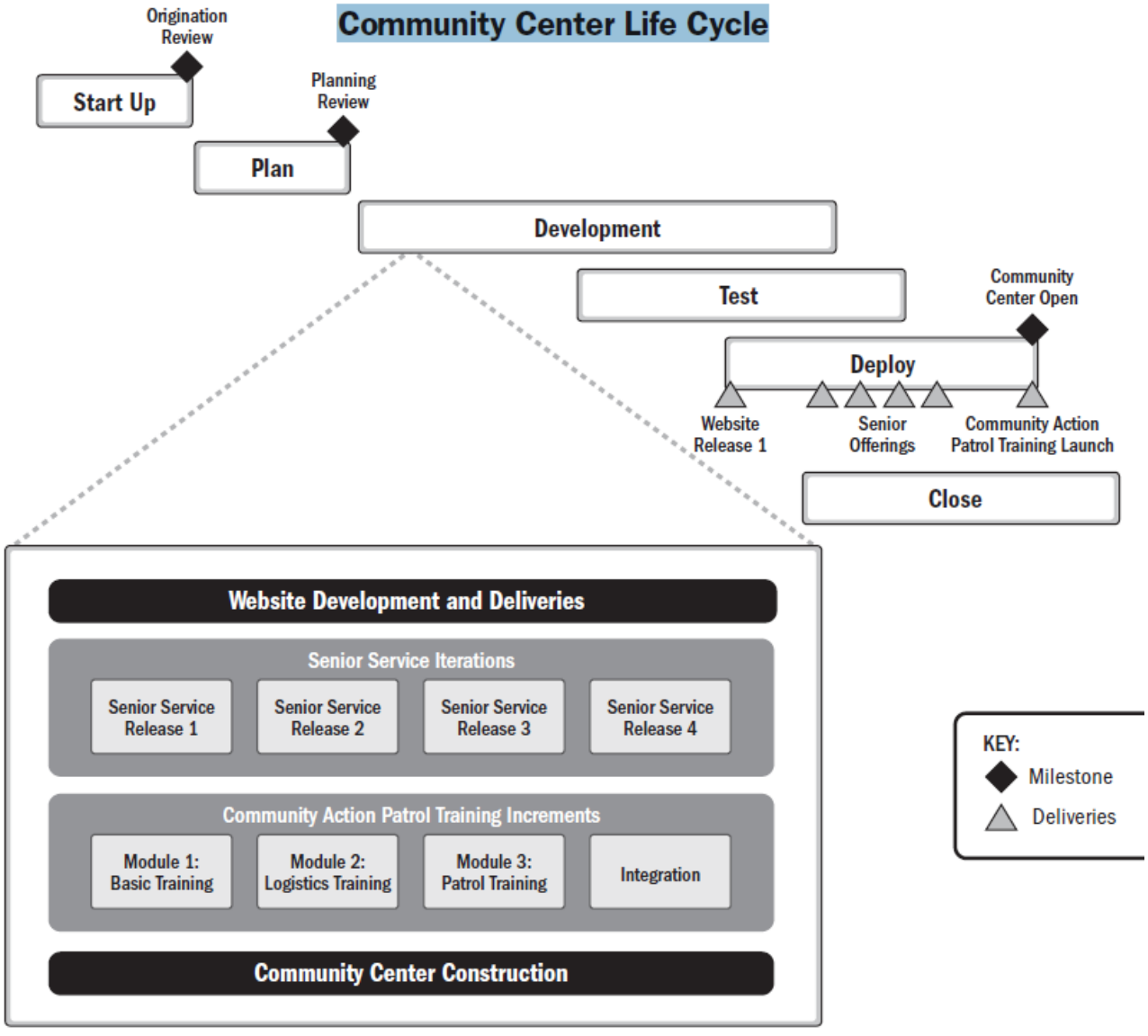
- Project phases often have a phase gate review (also known as stage gate) to check that the desired outcomes or exit criteria for the phase have been achieved before proceeding to the next phase.
- Exit criteria may tie to acceptance criteria for deliverables, contractual obligations, meeting specific performance targets, or other tangible measures.




Sample Predictive Life Cycle




Sample Incremental Development Approach


Community Center Life Cycle
Origination Review
Start Up
Planning Review
Plan
Development
Test
Community Center Open
Deploy
Website Release 1
Senior Offerings
Community Action Patrol Training Launch
Close
Website Development and Deliveries
Senior Service Iterations
Senior Service Release 1
Senior Service Release 2
Senior Service Release 3
Senior Service Release 4
Community Action Patrol Training Increments
Module 1: Basic Training
Module 2: Logistics Training
Module 3: Patrol Training
Integration
Community Center Construction
KEY:
Milestone
Deliveries

# Checking Outcomes—Development Approach and Life Cycle Performance Domain

| Outcome | Check |
| --- | --- |
| Development approaches that are consistent with project deliverables | The development approach for deliverables (predictive, hybrid, or adaptive) reflects the product variables and is appropriate given the project and organizational variables. |
| A project life cycle consisting of phases that connect the delivery of business and stakeholder value from the beginning to the end of the project | Project work from launch to close is represented in the project phases. Phases include appropriate exit criteria. |
| Project life cycle phases that facilitate the delivery cadence and development approach required to produce the project deliverables | The cadence for development, testing, and deploying is represented in the life cycle phases. Projects with multiple deliverables that have different delivery cadences and development methods are represented by overlapping phases or phase repetitions, as necessary. |

# Planning Performance Domain



## PLANNING PERFORMANCE DOMAIN

The Planning Performance Domain addresses activities and functions associated with the initial, ongoing, and evolving organization and coordination necessary for delivering project deliverables and outcomes.

Effective execution of this performance domain results in the following desired outcomes:

- The project progresses in an organized, coordinated, and deliberate manner.
- There is a holistic approach to delivering the project outcomes.
- Evolving information is elaborated to produce the deliverables and outcomes for which the project was undertaken.
- Time spent planning is appropriate for the situation.
- Planning information is sufficient to manage stakeholder expectations.
- There is a process for the adaptation of plans throughout the project based on emerging and changing needs or conditions.

# Planning Performance Domain

- The following definitions are relevant to the Planning Performance Domain:
  - **Estimate**
    - A quantitative assessment of the likely amount or outcome of a variable, such as project costs, resources, effort, or durations.
  - **Accuracy** Correctness.
    - Within the quality management system, accuracy is an assessment of correctness: Reflects how well your plan predicts reality (If you estimate a project will cost $100K and it ends up costing $102K, your estimate was accurate)
  - **Precision** exact
    - Within the quality management system, precision is an assessment of exactness: Reflects the level of detail and consistency in your planning assumptions (if your estimates are based on a precise breakdown of the costs): An estimate can be precise because all the details are taken into account but not accurate if the project ends up costing much more or much less.

# Planning Overview

- The purpose of planning is to proactively (مسبقًا) develop an approach to create the project deliverables.
- High-level planning may begin prior to project authorization.
- The project team progressively elaborates initial project documents, such as a vision statement, project charter, business case, or similar documents to identify or define a coordinated path to achieve the desired outcomes.
- It is becoming more common for initial planning to consider social and environmental impacts in addition to the financial. Such as a product life cycle assessment which evaluates the potential environmental impacts of a product, process, or system (impacts of materials and processes with regards to sustainability, toxicity, and the environment).

# Planning

- Planning begins with understanding the business case, stakeholder requirements, and the project and product scope.
- Product scope defines the features and functions that characterize a product, service, or result.
- Project scope also defines the work performed to deliver a product, service, or result with the specified features and functions.

# Delivery

- In predictive planning approaches
  - start with the high-level project deliverables upfront and decompose them into more detail.
  - Employ a scope statement and/or a work breakdown structure (WBS) to decompose the scope into lower levels of detail.
- In Iterative and Incremental planning
  - can have high-level themes or epics that are decomposed into features, which are then further decomposed into user stories and other backlog items.
  - Work that is unique, significant, risky, or novel can be prioritized to reduce the uncertainty associated with project scope at the start of the project before significant investment has taken place.
  - Project teams plan routine work based on the concept of last responsible moment.
  - This approach defers a decision to allow the project team to consider multiple options until the cost of further delay would exceed the benefit.

# Estimating

- Planning entails developing estimates for work effort, duration, costs, people, and physical resources.
- Estimates are a quantitative assessment of the likely amount or outcome of a variable, such as project costs, resources, effort, or duration.
- As the project evolves, the estimates can change based on current information and circumstances.

# Schedules

- A schedule is a model for executing the project's activities, including durations, dependencies, and other planning information.
- Schedule planning can use predictive or adaptive approaches.
- Predictive approaches follow a stepwise process as follows:
  - Step 1. Decompose the project scope into specific activities.
  - Step 2. Sequence related activities.
  - Step 3. Estimate the effort, duration, people, and physical resources required to complete the activities.
  - Step 4. Allocate people and resources to the activities based on availability.
  - Step 5. Adjust the sequence, estimates, and resources until an agreed-upon schedule is achieved.

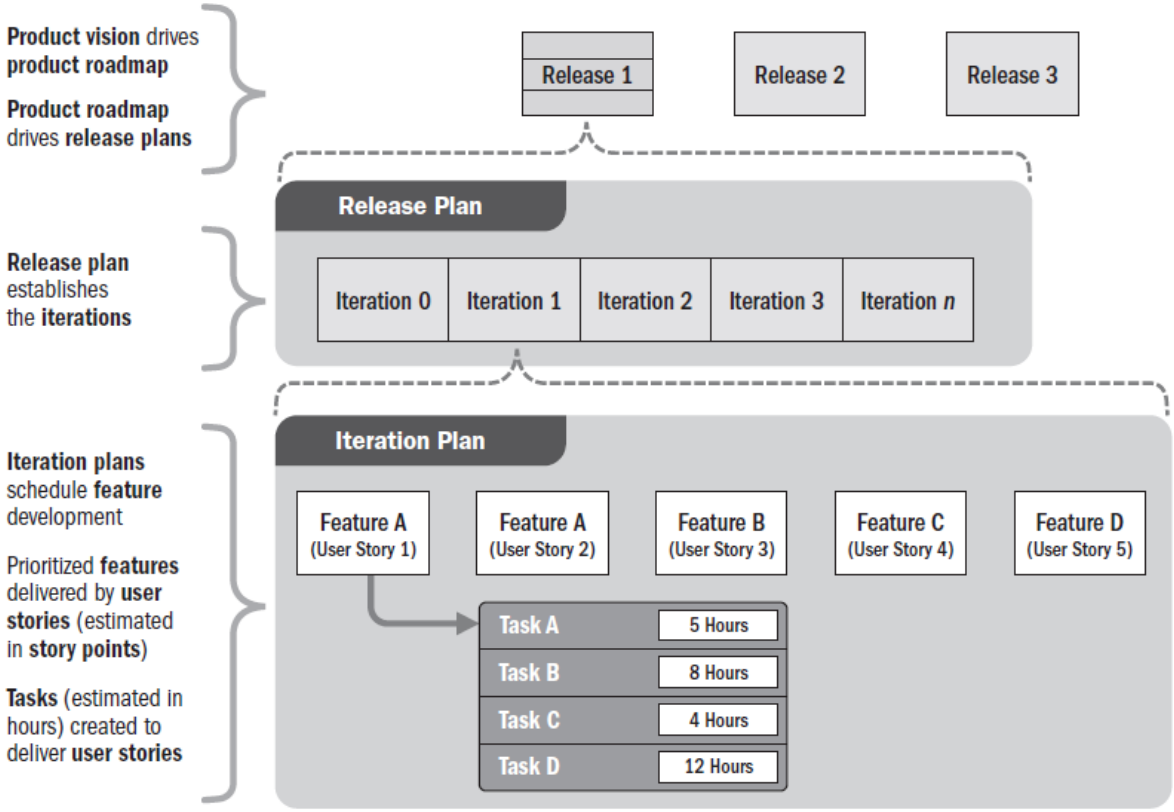
# Schedules

- The four types of dependencies are:
  - Mandatory dependency
    - A relationship that is contractually required or inherent in the nature of the work. This type of dependency usually cannot be modified.
  - Discretionary dependency
    - A relationship that is based on best practices or project preferences. This type of dependency may be modifiable.
  - External dependency
    - A relationship between project activities and non-project activities. This type of dependency usually cannot be modified.
  - Internal dependency
    - A relationship between one or more project activities. This type of dependency may be modifiable.

# Schedules

- Adaptive schedule planning uses incremental planning.
- One such scheduling approach is based on iterations and releases.
- A high-level release plan is developed that indicates the basic features and functionality to be included in each release.
- Within each release, there will be two or more iterations.
- Each iteration adds business and/or stakeholder value.
- Value may include features, risk reduction, experimentation, or other ways of delivering or protecting value.
- The planning for the work in future releases is kept at a high level so the project team does not engage in planning that could change based on feedback from earlier releases.

# Schedules (Release and Iteration Plan)



# Schedules

- Adaptive approaches often use timeboxes.
- The work in each timebox is based on a prioritized backlog.
- The project team determines the amount of work they can do in each timebox, estimates the work, and self-manages to accomplish the work.
- At the end of the timebox, the project team demonstrates the work completed.
- At that point, the backlog and estimates of work available to be done may be updated or reprioritized for the next timebox.

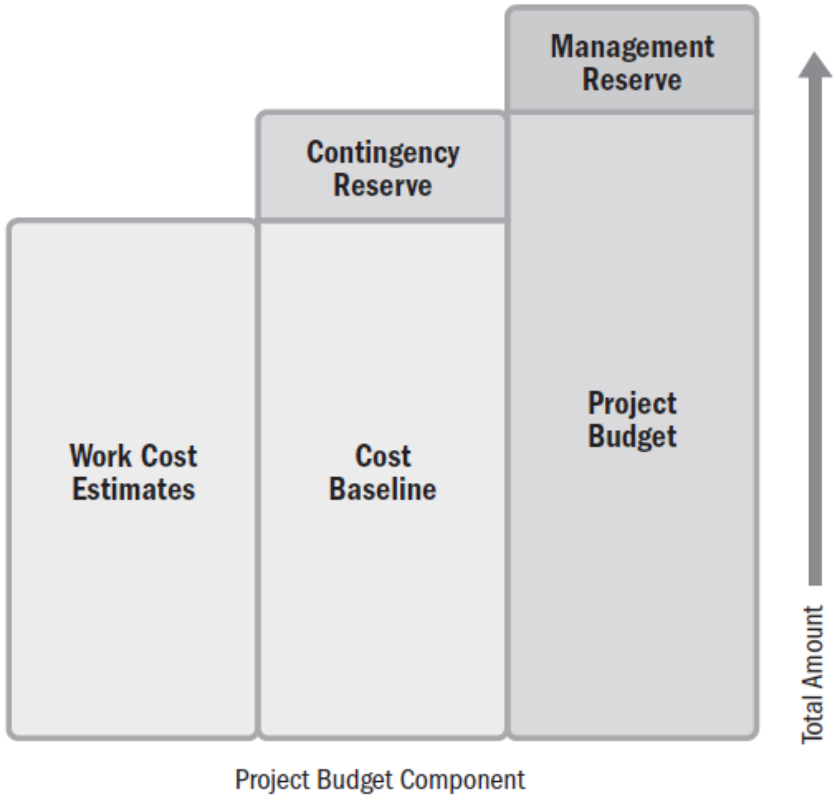
# Budget

- The project budget evolves from the agreed estimates for the project.
- Cost estimates are then aggregated to develop the cost baseline.
- The **cost baseline** (time-phased budget) is often allocated across the project schedule to reflect when the costs will be incurred.
- This practice allows project managers to balance the funds approved in a specific budget period with the scheduled work.
- If there are funding limitations for a budget period, the work may need to be rescheduled to meet those limitations.

# Budget

- The project budget should include contingency reserve funds to allow for uncertainty.
- Contingency reserves are set aside to implement a risk response or to respond to risk events should they occur (for identified risks, controlled by PM).
- Management reserves are set aside for unexpected activities related to in-scope work (for unknown risks, usually controlled by upper management).
- Depending on the organization's policies and organizational structure, management reserves may be managed by the project, the sponsor, product owner, or the PMO at the program and portfolio level.

# Budget Build Up



# Physical Resources

- Physical resources apply to any resource that is not a person.
- It can include materials, equipment, software, testing environments, licenses, and so forth.
- Planning for physical resources entails estimating, as well as supply chain, logistics, and management.
- Projects with significant physical resources, such as engineering and construction projects, will need to plan for procurement activities to acquire the resources.
- Planning for physical resources includes taking into account lead time for delivery, movement, storage, and disposition of materials, as well as a means to track material inventory from arrival on site to delivery of an integrated product.

# Procurement

- Procurement can happen at any time during a project. However, upfront planning helps to set expectations that ensure the procurement process is performed smoothly.
- Once the high-level scope is known, project teams conduct a make-or-buy analysis.
- This includes identifying those deliverables and services that will be developed in-house, and those that will be purchased from external sources.
- This information impacts the project team and the schedule.

# Metrics

- There is a natural linkage between planning, delivering, and measuring work.
- That linkage is metrics.
- Establishing metrics includes setting the thresholds that indicate whether work performance is as expected, trending positively or negatively away from expected performance, or unacceptable.
- Deciding what to measure and “how often” is best informed by the phrase “only measure what matters.”

# Checking Outcomes—Planning Performance Domain

| Outcome | Check |
|---|---|
| The project progresses in an organized, coordinated, and deliberate manner. | A performance review of project results against the project baselines and other measurement metrics demonstrates that the project is progressing as planned. Performance variances are within thresholds. |
| There is a holistic approach to delivering the project outcomes. | The delivery schedule, funding, resource availability, procurements, etc., demonstrate that the project is planned in a holistic manner with no gaps or areas of misalignment. |
| Evolving information is elaborated to produce the deliverables and outcomes for which the project was undertaken. | Initial information about deliverables and requirements compared to current information demonstrates appropriate elaboration. Current information compared to the business case indicates the project will produce the deliverables and outcomes it was undertaken to deliver. |
| Time spent planning is appropriate for the situation. | Project plans and documents demonstrate that the level of planning is appropriate for the project. |
| Planning information is sufficient to manage stakeholder expectations. | The communications management plan and stakeholder information indicate that the communications are sufficient to manage stakeholder expectations. |
| There is a process for the adaptation of plans throughout the project, based on emerging and changing needs or conditions. | Projects using a backlog show the adaptation of plans throughout the project. Projects using a change control process have change logs and documentation from change control board meetings that demonstrate the change control process is being applied. |

# Project Work Performance Domain



## PROJECT WORK PERFORMANCE DOMAIN

The Project Work Performance Domain addresses activities and functions associated with establishing project processes, managing physical resources, and fostering a learning environment.

Effective execution of this performance domain results in the following desired outcomes:

- Efficient and effective project performance.
- Project processes are appropriate for the project and the environment.
- Appropriate communication with stakeholders.
- Efficient management of physical resources.
- Effective management of procurements.
- Improved team capability due to continuous learning and process improvement.

# Project Work Performance Domain

- The following definitions are relevant to the Project Work Performance Domain:
  - Bid Documents
    - All documents used to solicit information, quotations, or proposals from prospective sellers.
  - Bidder Conference
    - The 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.
  - Explicit Knowledge
    - Knowledge that can be codified using symbols such as words, numbers, and pictures.
  - Tacit Knowledge
    - Personal knowledge that can be difficult to articulate and share  such as beliefs, experience, and insights.

# Project Work Performance Domain

- Project work keeps the project team focused and project activities running smoothly.
- This includes but is not limited to:
  - Managing the flow of existing work, new work, and changes to work;
  - Keeping the project team focused;
  - Establishing efficient project systems and processes;
  - Communicating with stakeholders;
  - Managing material, equipment, supplies, and logistics;
  - Working with contracting professionals and vendors to plan and manage procurements and contracts;
  - Monitoring changes that can affect the project; and
  - Enabling project learning and knowledge transfer.

# Project Processes

- The project manager and the project team establish and periodically review the processes the project team is using to conduct the work.
- This can take the form of reviewing task boards to determine if there are bottlenecks in the process, if work is flowing at the expected rate, and if there are any impediments that are blocking progress.

# Project Processes

- Process tailoring can be used to optimize the process for the needs of the project.
- In general, large projects have more process compared to small projects, and critical projects have more process than less significant projects.
- Tailoring takes into consideration the demands of the environment.
- Ways of optimizing the processes for the environment include:
  - Lean production methods.
  - Retrospectives or lessons learned.
  - Where is the next best funding spent?

# Project Processes

- Reviewing processes can entail determining if processes are efficient, or if there is waste in the process that can be eliminated.
- Time spent tracking conformance to process is time the project team cannot spend on delivering the outcomes for which the project was commissioned.
- Therefore, project teams utilize just enough time reviewing process conformance to maximize the benefits delivered from the review while still satisfying the governance needs of process.

# Balancing Competing Constraints

- Successfully leading a project includes understanding the constraints associated with the work.
- Constraints can take the form of fixed delivery dates, compliance to regulatory codes, a predetermined budget, quality policies, and so forth. The constraints may shift and change throughout the project.
- A new stakeholder requirement may entail expanding the schedule and budget.
- A reduction in budget may entail relaxing a quality requirement or reducing scope.

# Balancing Competing Constraints

- Balancing these shifting constraints, while maintaining stakeholder satisfaction, is an ongoing project activity.
- At times, it may include meeting with the customer, sponsor, or product owner to present alternatives and implications.
- Other times, the decisions and potential variances may be within the project team's authority to make trade-offs to deliver the end result.

# Working with Procurement

- Many projects involve some form of contracting or procurement.
- Procurement can cover everything from material, capital equipment, and supplies to solutions, labor, and services.
- In most organizations, project managers do not have contracting authority.
- Rather, they work with contracting officers or other people with expertise in contracts, laws, and regulations.

# Working with Procurement

- Organizations usually have rigorous policies and procedures associated with procurements. The policies identify who has authority to enter into a contract, the limits of authority, and the processes and procedures that should be followed.
- Prior to conducting a procurement, the project manager and technically qualified project team members work with contracting professionals to develop the request for proposals (RFP), statement of work (SOW), terms and conditions, and other necessary documents to go out to bid.

# The Bid Process

- The bid process includes developing and publicizing bid documents, bidder conferences, and selecting a bidder.
- Bid documents can include:
  - Request for information (Example: A company wants to build a new software platform but isn't sure what technologies or vendors are out there. They issue an RFI to learn about different capabilities and approaches.)
  - Request for proposal (Example: After reviewing RFIs, the company decides on a specific type of software and issues an RFP to invite vendors to bid on building it.)
  - Request for quote (Example: A company needs 500 laptops with specific specs. They issue an RFQ to multiple vendors asking for their best price and delivery timeline.)

# Learning Through the Project

- Knowledge Management
- Explicit and Tacit Knowledge

| Outcome | Check |
|---|---|
| Efficient and effective project performance | Status reports show that project work is efficient and effective. |
| Project processes that are appropriate for the project and the environment | Evidence shows that the project processes have been tailored to meet the needs of the project and the environment. Process audits and quality assurance activities show that the processes are relevant and being used effectively. |
| Appropriate communication and engagement with stakeholders | The project communications management plan and communication artifacts demonstrate that the planned communications are being delivered to stakeholders. There are few ad hoc requests for information or misunderstandings that might indicate engagement and communication activities are not effective. |
| Efficient management of physical resources | The amount of material used, scrap discarded, and amount of rework indicate that resources are being used efficiently. |
| Effective management of procurements | A procurement audit demonstrates that appropriate processes utilized were sufficient for the procurement and that the contractor is performing to plan. |
| Effective handling of change | Projects using a predictive approach have a change log that demonstrates changes are being evaluated holistically with consideration for scope, schedule, budget, resource, stakeholder, and risk impacts. Projects using an adaptive approach have a backlog that shows the rate of accomplishing scope and the rate of adding new scope. |
| Improved capability due to continuous learning and process improvement | Team status reports show fewer errors and rework with an increase in velocity. |

# Delivery Performance Domain



## DELIVERY PERFORMANCE DOMAIN

The Delivery Performance Domain addresses activities and functions associated with delivering the scope and quality that the project was undertaken to achieve.

Effective execution of this performance domain results in the following desired outcomes:

- Projects contribute to business objectives and advancement of strategy.
- Projects realize the outcomes they were initiated to deliver.
- Project benefits are realized in the time frame in which they were planned.
- The project team has a clear understanding of requirements.
- Stakeholders accept and are satisfied with project deliverables.

# Delivery Performance Domain

- The following definitions are relevant to the Delivery Performance Domain:
  - Definition of Done (DoD)
    - A checklist of all the criteria required to be met so that a deliverable can be considered ready for customer use.
  - Quality
    - The degree to which a set of inherent characteristics fulfills requirements.
  - Cost of Quality (COQ)
    - All costs incurred over the life of the product by investment in preventing nonconformance to requirements, appraisal (تقييم) of the product or service for conformance to requirements, and failure to meet requirements.

# Delivery of Value

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- Projects that use a development approach that supports **releasing deliverables throughout the project life cycle** can start delivering value to the business, customer, or other stakeholders during the project.
- Business value often continues to be captured long after the initial project has ended.
- A business case document often provides the business justification and a projection of anticipated business value from a project.
- The format of this business case varies based on the development approach and life cycle selected.

# Quality

- Delivery is more than just scope and requirements.
- Scope and requirements focus on what needs to be delivered.
- Quality focuses on the performance levels that are required to be met.
- Quality requirements may be reflected in the completion criteria, definition of done, statement of work, or requirements documentation.

# Quality

- Much of the costs associated with quality are born by the sponsoring organization and are reflected in policies, procedures, and work processes.
- For example, organizational policies that govern how work is performed and procedures that prescribe work processes are often part of the organization's quality policy.
- The cost of overhead, training, and process audit are born by the organization, though they are employed by the project.
- Inherent in projects is balancing the quality needs of the processes and products with the costs associated with meeting those needs.
- The cost of quality methodology is used to find the appropriate balance for investing in quality prevention and appraisal to avoid defect or product failures.

# Suboptimal Outcomes

- All projects attempt to deliver outcomes, though some may fail to do so or may produce suboptimal outcomes.
- The potential for suboptimal outcomes exists in every project.
- In the case of a fully experimental project, the organization is attempting to achieve a breakthrough, such as the creation of a completely new technology, for example.
- This requires deliberate investment in an uncertain outcome.
- Companies that produce new medicines or compounds may experience several failures before finding a successful formula.
- Some projects may fail to deliver outcomes because the market opportunity has passed or competitors were first to market with their offering.
- Effective project management can minimize negative outcomes, but such possibilities are part of the uncertainty of attempting to produce a unique deliverable.

# Checking Outcomes—Delivery Performance Domain

| Outcome | Check |
|---|---|
| Projects contribute to business objectives and advancement of strategy | The business plan and the organization's strategic plan, along with the project authorizing documents, demonstrate that the project deliverables and business objectives are aligned. |
| Projects realize the outcomes they were initiated to deliver | The business case and underlying data indicate the project is still on track to realize the intended outcomes. |
| Project benefits are realized in the time frame in which they were planned | The benefits realization plan, business case, and/or schedule indicate that the financial metrics and scheduled deliveries are being achieved as planned. |
| The project team has a clear understanding of requirements | In predictive development, little change in the initial requirements reflects understanding. In projects where requirements are evolving, a clear understanding of requirements may not take place until well into the project. |
| Stakeholders accept and are satisfied with project deliverables | Interviews, observation, and end user feedback indicate stakeholder satisfaction with deliverables. Levels of complaints and returns can also be used to indicate satisfaction. |

# Measurement Performance Domain

## MEASUREMENT PERFORMANCE DOMAIN

The Measurement Performance Domain addresses activities and functions associated with assessing project performance and taking appropriate actions to maintain acceptable performance.

Effective execution of this performance domain results in the following desired outcomes:

- A reliable understanding of the status of the project.
- Actionable data to facilitate decision making.
- Timely and appropriate actions to keep project performance on track.
- Achieving targets and generating business value by making informed and timely decisions based on reliable forecasts and evaluations.

# Measurement Performance Domain

- The following definitions are relevant to the Measurement Performance Domain:
  - Metric
    - A description of a project or product attribute and how to measure it (ex: work progress %).
  - Baseline
    - The approved version of a measure used as a basis for comparison to actual results (cost of a project, duration).
  - Dashboard
    - A set of charts and graphs showing progress or performance against important measures of the project.

# Measurement Performance Domain

- Measures are used for multiple reasons, including:
  - Evaluating performance compared to plan;
  - Tracking the utilization of resources, work completed, budget expended, etc.;
  - Demonstrating accountability;
  - Providing information to stakeholders;
  - Assessing whether project deliverables are on track to deliver planned benefits;
  - Focusing conversations about trade-offs, threats, opportunities, and options; and
  - Ensuring the project deliverables will meet customer acceptance criteria.

# Measurement Performance Domain

- The value of measurements is not in the collection and dissemination of the data, but rather in the conversations about how to use the data to take appropriate action.
- It helps to ensure the right things are measured and reported to stakeholders.
- Effective measures allow for tracking, evaluating, and reporting information that can communicate project status, help improve project performance, and reduce the likelihood of performance deterioration.

# Establishing Effective Measures

- Key Performance Indicators (KPIs)
  - Leading indicators (**proactive** metrics)
    - predict changes or trends in the project
    - Ex:
      - Rate of scope change requests (frequent changes may hint at poor planning)
      - Team workload balance (overloaded teams may lead to burnout or missed deadlines)
  - Lagging indicators (reactive or Backward-looking)
    - measure project deliverables or events
    - They provide information after the fact
    - Ex:
      - Cost variance (budget overrun or underrun)
      - Number of deliverables completed
      - Customer satisfaction scores

# Establishing Effective Measures

- Effective Metrics
  - Measuring takes time and effort, which could otherwise be spent on other productive work; therefore, project teams should only measure what is relevant and should ensure that the metrics are useful.
  - Characteristics of effective metrics (or SMART criteria) include:
    - Specific
    - Meaningful
    - Achievable
    - Relevant
    - Timely

# What to Measure

- What is measured, the parameters, and the measurement method depend on the project objectives, the intended outcomes, and the environment in which the project takes place.
- Common categories of metrics include:
  - Deliverable metrics,
  - Delivery,
  - Baseline performance,
  - Resources,
  - Business value,
  - Stakeholders, and
  - Forecasts.

# What to Measure

- Deliverable metrics
  - Information on errors or defects, Measures of performance, Technical performance measures
- Delivery
  - Work in progress, Lead time (total elapsed time between the identification of a need and the delivery of the result), Cycle time, Process efficiency
- Baseline performance
  - Start and finish dates, Effort and duration, Schedule variance

# What to Measure

- Resources
  - Planned resource utilization compared to actual resource utilization, Planned resource cost compared to actual resource cost
- Business value
  - Cost-benefit ratio, Return on investment (ROI), Net present value (NPV)
- Stakeholders
  - Net Promoter Score (NPS), Mood chart, Morale, Turnover
- Forecasts
  - Estimate to complete (ETC), Estimate at completion (EAC), Variance at completion (VAC)

# Stakeholder and Team Health Dashboard

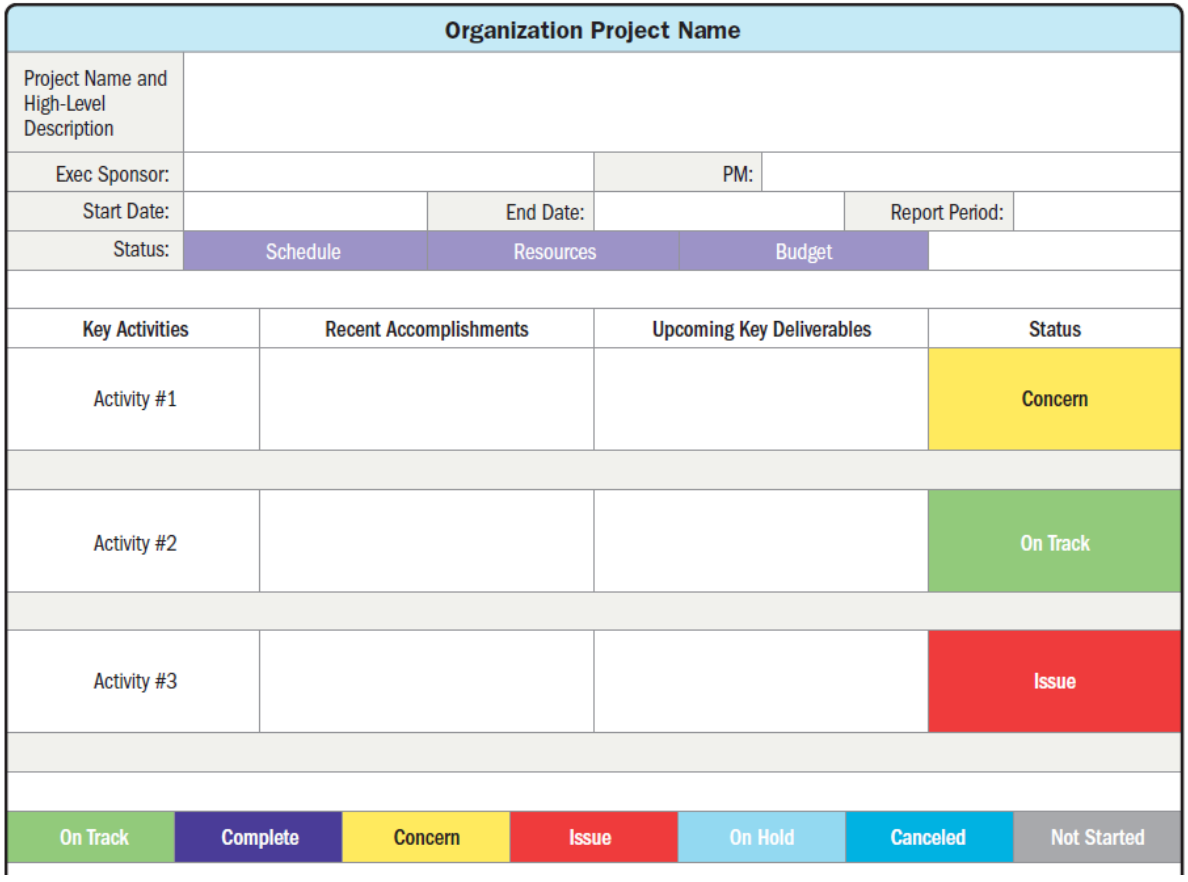
| Metric | Description | Current Value | Trend | Status |
|---|---|---|---|---|
| Stakeholder Engagement | % of active stakeholder participation | 82% | ↑ | 🟢 |
| Net Promoter Score (NPS) | Stakeholder satisfaction score | +45 | >30 | 🟢 |
| Mood Chart | Team emotional trend (weekly) | 😊😊😐😟 | ↓ | 🟡 |
| Morale Index | Team morale rating (survey-based) | 7.2/10 | >8 | 🟡 |
| Turnover Rate | % of team members leaving | 12% | <10% | 🔴 |

# Presenting Information

- Dashboards
- Information Radiators
- Visual Controls

# Presenting Information

- Dashboards



| Organization Project Name | | | | | | |
|---|---|---|---|---|---|---|
| Project Name and High-Level Description | | | | | | |
| Exec Sponsor: | | | PM: | | | |
| Start Date: | | End Date: | | Report Period: | | |
| Status: | Schedule | Resources | Budget | | | |

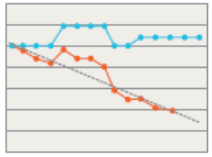
| Key Activities | Recent Accomplishments | Upcoming Key Deliverables | Status |
|---|---|---|---|
| Activity #1 | | | Concern |
| Activity #2 | | | On Track |
| Activity #3 | | | Issue |

| On Track | Complete | Concern | Issue | On Hold | Canceled | Not Started |
|---|---|---|---|---|---|---|

# Presenting Information

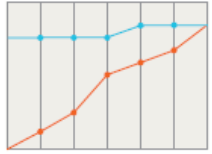
- Information Radiators

**Burndown Chart**



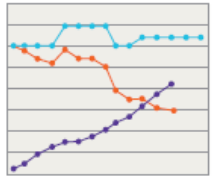
Shows how much work is yet to be completed

**Burnup Chart**



Shows how much work has been completed

**Combined Burn Chart**



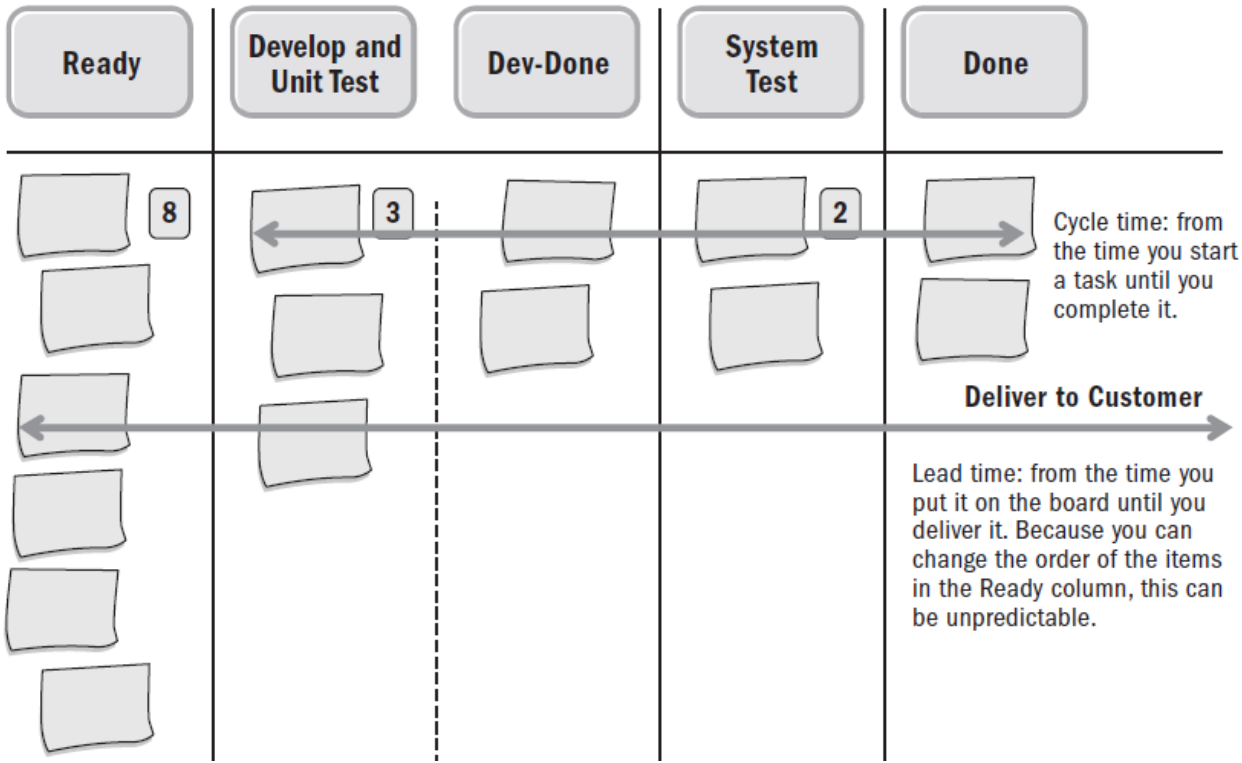
Shows how much work has been completed and how much remains

| Reference | Risk Description | Date | Likelihood | Impact | Risk Rating | Response | Owner |
|---|---|---|---|---|---|---|---|
| 1 | The main supplier cannot deliver on time because of other commercial commitments | 03/21 | Likely | High | **High** | Include financial penalties in contract; build contingency into the schedule; monitor contractor performance | Annie |
| 2 | The lead time for the leased line exceeds 90 days | 03/21 | Unlikely | Medium | **Medium** | Order leased line earlier than necessary; incur additional rental fees | Jim |
| 3 | Release of the new system is delayed because user acceptance testing commences after the planned start | 03/21 | Very likely | High | **High** | Employ temporary staff to free up resources for testing; revise project schedule | Mark |
| 4 | There is insufficient capacity to create additional database instances for data migration and testing | 04/18 | Very unlikely | Medium | **Low** | Prioritize projects; temporarily remove alternative development instance | Jim |

**Risk Log**

# Presenting Information

- Visual Controls
  - Task boards
  - Burn charts
  - Other types of charts



# Checking Outcomes—Measurement Performance Domain

| Outcome | Check |
|---|---|
| A reliable understanding of the status of the project | Audit measurements and reports demonstrate if data is reliable. |
| Actionable data to facilitate decision making | Measurements indicate whether the project is performing as expected or if there are variances. |
| Timely and appropriate actions to keep project performance on track | Measurements provide leading indicators and/or current status leads to timely decisions and actions. |
| Achieving targets and generating business value by making informed and timely decisions based on reliable forecasts and evaluations | Reviewing past forecasts and current performance demonstrates if previous forecasts reflect the present accurately. Comparing the actual performance to the planned performance and evaluating business documents will show the likelihood of achieving intended value from the project. |

# Uncertainty Performance Domain



## UNCERTAINTY PERFORMANCE DOMAIN

The Uncertainty Performance Domain addresses activities and functions associated with risk and uncertainty.

Effective execution of this performance domain results in the following desired outcomes:

- An awareness of the environment in which projects occur, including, but not limited to, the technical, social, political, market, and economic environments.
- Proactively exploring and responding to uncertainty.
- An awareness of the interdependence of multiple variables on the project.
- The capacity to anticipate threats and opportunities and understand the consequences of issues.
- Project delivery with little or no negative impact from unforeseen events or conditions.
- Opportunities are realized to improve project performance and outcomes.
- Cost and schedule reserves are utilized effectively to maintain alignment with project objectives.

# Uncertainty Performance Domain

- The following definitions are relevant to the Uncertainty Performance Domain:
  - Uncertainty
    - A lack of understanding and awareness of issues, events, paths to follow, or solutions to pursue.
  - Ambiguity
    - A state of being unclear, having difficulty in identifying the cause of events, or having multiple options from which to choose.
  - Complexity
    - A characteristic of a program or project or its environment that is difficult to manage due to human behavior, system behavior, and ambiguity.
  - Volatility
    - The possibility for rapid and unpredictable change.
  - Risk
    - An uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives.

# Uncertainty Performance Domain

- Uncertainty in the broadest sense is a state of not knowing or unpredictability.
- There are many nuances to uncertainty, such as:
  - Risk associated with not knowing future events,
  - Ambiguity associated with not being aware of current or future conditions, and
  - Complexity associated with dynamic systems having unpredictable outcomes.

# Uncertainty Performance Domain

- Successfully navigating uncertainty begins with understanding the larger environment within which the project is operating.
- Aspects of the environment that contribute to project uncertainty include, but are not limited to:
  - Economic factors such as volatility in prices, availability of resources, ability to borrow funds, and inflation/deflation;
  - Technical considerations such as new or emerging technology, complexity associated with systems, and interfaces;
  - Legal or legislative constraints or requirements;
  - Physical environment as it pertains to safety, weather, and working conditions;
  - Ambiguity associated with current or future conditions;
  - Social and market influences shaped by opinion and media; and,
  - Political influences, either external or internal to the organization.

# Ambiguity

- There are two categories of ambiguity:
  - Conceptual ambiguity
    - The lack of effective understanding—occurs when people use similar terms or arguments in different ways.
    - For example, the statement, “The schedule was reported on track last week,” is not clear.
    - It isn’t clear whether the schedule was on track last week or whether it was reported on last week.
  - Situational ambiguity
    - Surfaces when more than one outcome is possible.
    - Having multiple options to solve a problem is a form of situational ambiguity.

# Complexity

- Complexity is a characteristic of a program, project, or its environment, which is difficult to manage due to human behavior, system behavior, or ambiguity.
- Complexity exists when there are many interconnected influences that behave and interact in diverse ways.

# Complexity

- In complex environments, it is not uncommon to see an aggregation of individual elements leading to unforeseen or unintended outcomes.
- The effect of complexity is that there is no way of making accurate predictions about the likelihood of any potential outcome or even of knowing what outcomes might emerge.
- There are numerous ways to work with complexity; some of them are systems-based, some entail reframing, and others are based on process.

# Systems-Based Complexity

- Examples of working with complexity that is systems based include:
  - Decoupling
    - Disconnecting parts of the system to both simplify the system and reduce the number of connected variables.
    - Determining how a piece of a system works on its own reduces the overall size of the problem.
  - Simulation
    - There may be similar though unrelated scenarios that can be used to simulate components of a system.
    - A project to build a new airport that includes an area with shopping and restaurants can learn about consumer buying habits by seeking out analogous information on shopping malls and entertainment establishments.

# Reframing Complexity

- Examples of working with complexity that entail reframing are:
  - Diversity
    - Complex systems require viewing the system from diverse perspectives.
    - This can include brainstorming with the project team to open up divergent ways of seeing the system.
    - It can also include Delphi-like processes to move from divergent to convergent thinking.
  - Balance
    - Balancing the type of data used rather than only using forecasting data or data that report on the past or lagging indicators provides a broader perspective.
    - This can include using elements whose variations are likely to counteract each other's potential negative effects.

# Process-Based Complexity

- Examples of working with complexity that is process based include:
  - Iterate
    - Build iteratively or incrementally.
    - Add features one at a time. After each iteration, identify what worked, what did not work, customer reaction, and what the project team learned.
  - Engage
    - Build in opportunities to get stakeholder engagement.
    - This reduces the number of assumptions and builds learning and engagement into the process.
  - Fail safe
    - For elements of a system that are critical, build in redundancy or elements that can provide a graceful degradation of functionality in the event of a critical component failure.

# Volatility

- Volatility exists in an environment that is subject to rapid and unpredictable change.
- Volatility can occur when there are ongoing fluctuations in available skill sets or materials.
- Volatility usually impacts cost and schedule.

# Volatility

- Alternatives analysis and use of cost or schedule reserve address volatility.
  - Alternatives analysis
    - Finding and evaluating alternatives, such as looking at different ways to meet an objective, such as using a different mix of skills, resequencing work, or outsourcing work
  - Reserve
    - Cost reserve can be used to cover budget overruns due to price volatility.

# Risk

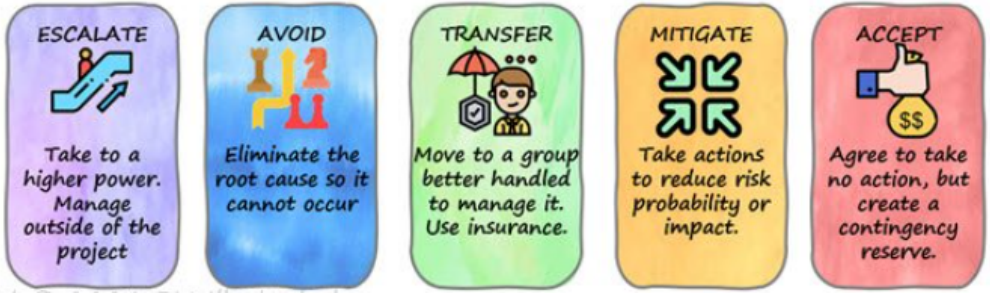
- Risks are an aspect of uncertainty.
- A risk is an uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives.
- Negative risks are called threats, and positive risks are called opportunities.
- All projects have risks since they are unique undertakings with varying degrees of uncertainty.

# Risk

- Overall risk is often a function of complexity, ambiguity, and volatility. Responses to overall project risk are the same as for individual threats and opportunities, though responses are applied to the overall project rather than to a specific event.
- If the overall risk on the project is too high, the organization may choose to cancel the project.

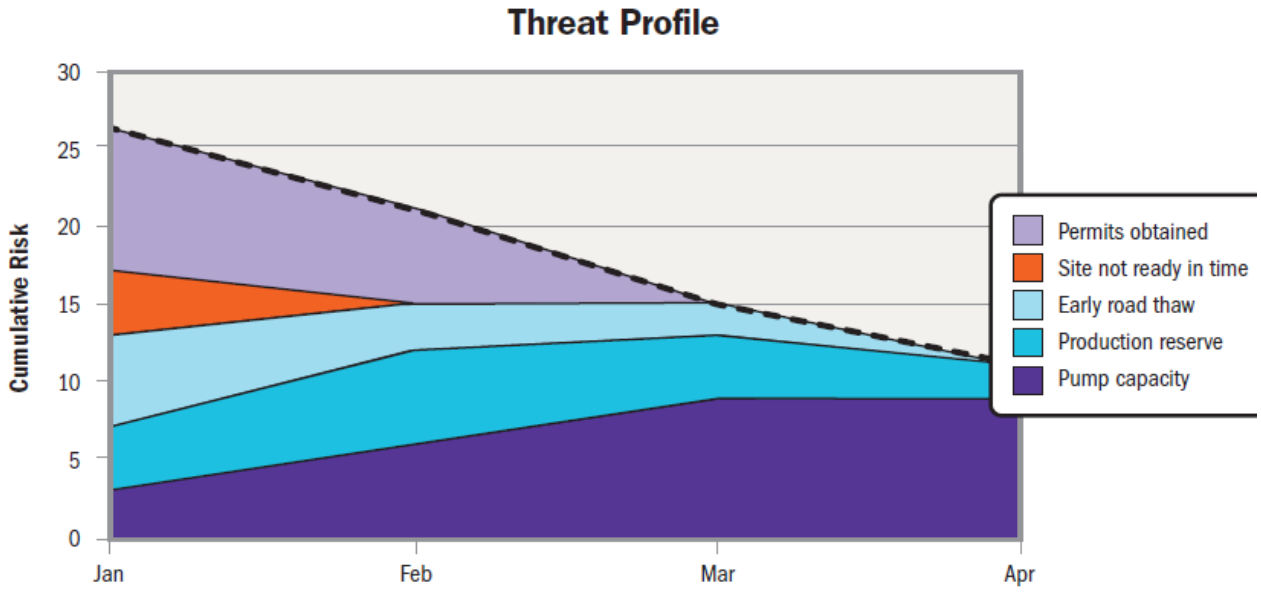
# Risk (Threat)

- A threat is an event or condition that, if it occurs, has a negative impact on one or more objectives.
- Five alternative strategies may be considered for dealing with threats, as follows:
  - Avoid
  - Escalate
  - Transfer
  - Mitigate
  - Accept



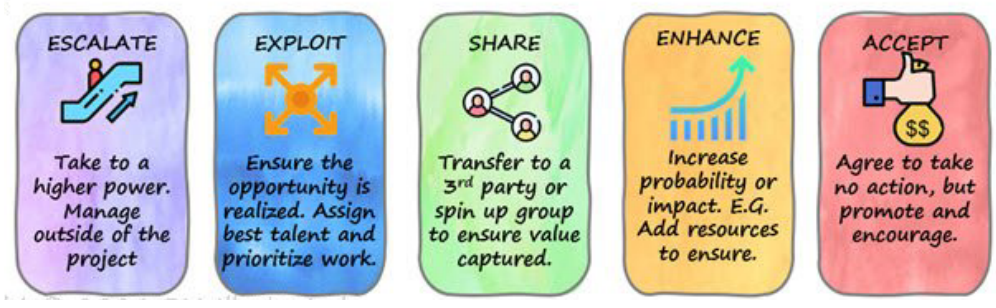
# Risk Reduction over Time

| | | Jan | | | Feb | | | Mar | | | Apr | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ID | Short Risk Name | Impact | Probability | Severity | Impact | Probability | Severity | Impact | Probability | Severity | Impact | Probability | Severity |
| 1 | Permits obtained | 3 | 3 | 9 | 3 | 2 | 6 | 3 | 0 | 0 | 3 | 0 | 0 |
| 2 | Site not ready in time | 2 | 2 | 4 | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 |
| 3 | Early road thaw | 3 | 2 | 6 | 3 | 1 | 3 | 2 | 1 | 2 | 3 | 0 | 0 |
| 4 | Production reserve | 2 | 2 | 4 | 2 | 3 | 6 | 2 | 2 | 4 | 2 | 1 | 2 |
| 5 | Pump capacity | 3 | 1 | 3 | 3 | 2 | 6 | 3 | 3 | 9 | 3 | 3 | 9 |



# Risk (Opportunities)

- An opportunity is an event or condition that, if it occurs, has a positive impact on one or more project objectives.
- An example of an opportunity could be a time and materials-based subcontractor who finishes work early, resulting in lower costs and schedule savings.
- Five alternative strategies may be considered for dealing with opportunities, as follows:
  - Exploit
  - Escalate
  - Share
  - Enhance
  - Accept



# Risk (Management and Contingency Reserve)

- Reserve is an amount of time or budget set aside to account for handling risks.
- Contingency reserve is set aside to address identified risks should they occur.
- Management reserve is a budget category used for unknown events such as unplanned, in-scope work.

# Risk (Risk Review)

- Establishing a frequent rhythm or cadence of review and feedback sessions from a broad selection of stakeholders is helpful for navigating project risk and being proactive with risk responses.
- Daily standup meetings can be used in any project and are a source for identifying potential threats and opportunities.
- Reports of blockers or impediments could become threats if they continue to delay progress.
- Likewise, reports of progress and breakthroughs might point toward opportunities to be further leveraged and shared.
- Frequent demonstrations of increments of the product or service, interim designs, or proof of concepts can surface threats and opportunities.

| Outcome | Check |
| --- | --- |
| An awareness of the environment in which projects occur, including, but not limited to, the technical, social, political, market, and economic environments | The team incorporates environmental considerations when evaluating uncertainty, risks, and responses. |
| Proactively exploring and responding to uncertainty | Risk responses are aligned with the prioritization of project constraints, such as budget, schedule, and performance. |
| An awareness of the interdependence of multiple variables on the project | Actions to address complexity, ambiguity, and volatility are appropriate for the project. |
| The capacity to anticipate threats and opportunities and understand the consequences of issues | Systems for identifying, capturing, and responding to risk are appropriately robust. |
| Project delivery with little or no negative impact from unforeseen events or conditions | Scheduled delivery dates are met, and the budget performance is within the variance threshold. |
| Realized opportunities to improve project performance and outcomes | Teams use established mechanisms to identify and leverage opportunities. |
| Cost and schedule reserves used effectively to maintain alignment with project objectives | Teams take steps to proactively prevent threats, thereby limiting use of cost or schedule reserve. |