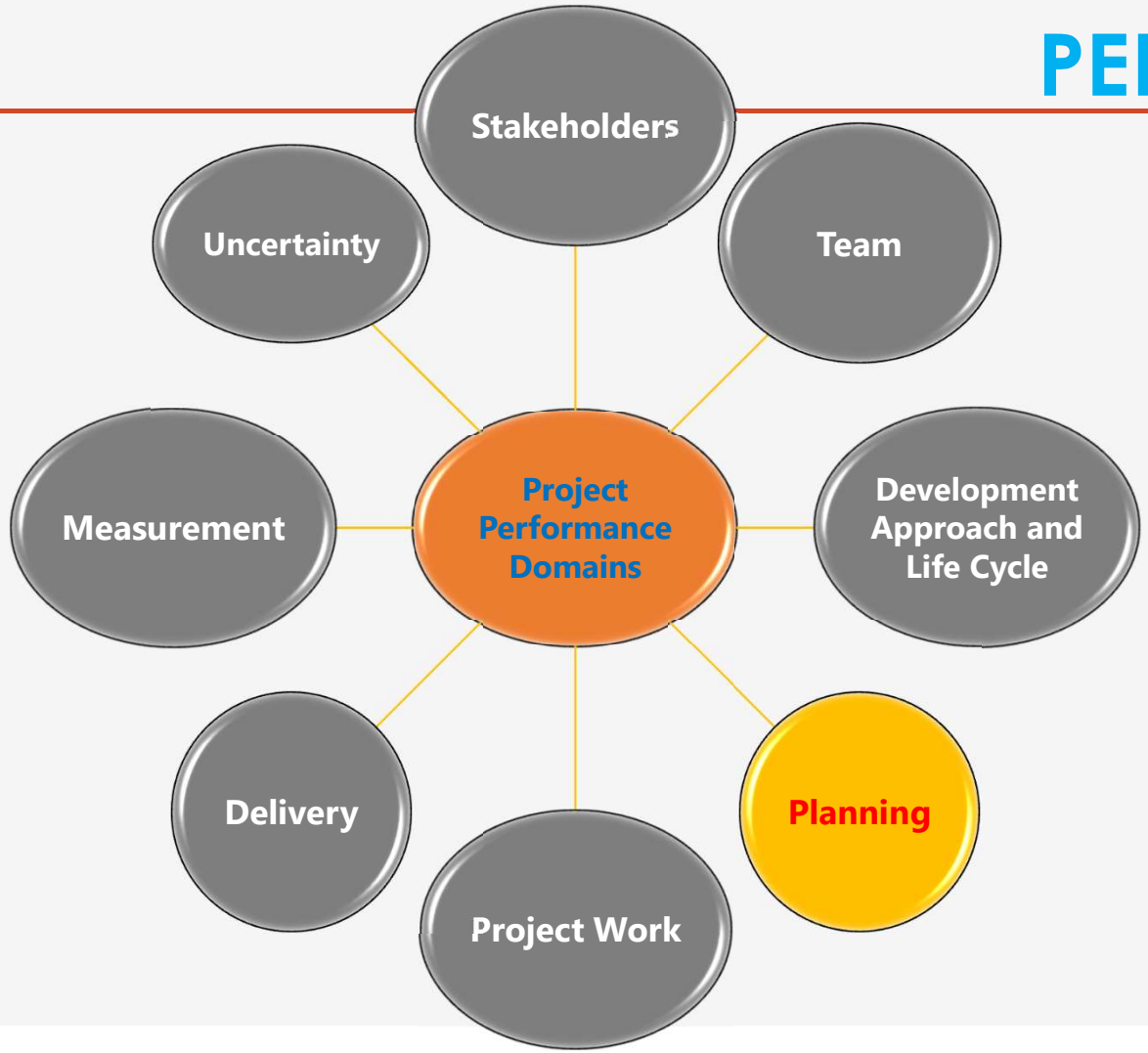
PLANNING

PERFORMANCE DOMAIN

PROJECT MANAGEMENT PROFESSIONAL CLASS

(PMBOK 7TH EDITION)

PROJECT PERORMANCE DOMAINS



PLANNING PERFORMANCE DOMAIN

Planning organizes, elaborates, and coordinates project work throughout the project

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.
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PLANNING PERFORMANCE DOMAIN

The following definitions are relevant to the Planning Performance Domain:

Estimate. An A quantitative assessment of the likely amount or outcome of a variable, such as project costs, resources, effort, or durations.

Accuracy. Within the quality management system, accuracy is an assessment of correctness.

Precision. Within the quality management system, precision is an assessment of exactness.

Crashing. A method used to shorten the schedule duration for the least incremental cost by adding resources.

Fast Tracking. A schedule compression method in which activities or phase normally done in sequence are performed in parallel for at least a portion of their duration.

Budget. The approved estimate for the project or any work breakdown structure (WBS) component or any schedule activity.

PLANNING OVERVIEW

The purpose of planning is to proactively develop an approach to create the project deliverables. The project deliverables drive the outcomes the project was undertaken to achieve. High level planning may begin prior to project authorization.

It is becoming more common for initial planning to consider social and environmental impacts in addition to the financial impacts (sometimes referred to as the triple bottom line). This may take the form of a product life cycle assessment which evaluates the potential environmental impacts of a product, process, or system. The product life cycle assessment informs the design of products and processes. It considers the impacts of materials and processes with regards to sustainability, toxicity, and the environment.

The amount of time spent planning, both up front and throughout the project, should be determined by the circumstances. It is inefficient to spend more time planning than is needed. Therefore, the information gained from planning should be sufficient to move forward in an appropriate manner but not more detailed than necessary.

PLANNING VARIABLES

No project is same entirely, hence project is unique, the amount, timing, and frequency of planning varies. Variables that influence how project planning is conducted include, but are not limited to:

Development approach. The development approach can influence *how*, *how much*, and *when planning* is conducted. Examples include:

- A specific phase for planning or organizing early in the life cycle. In these situations, much of the *planning is performed up front*. The initial plans are progressively elaborated with more detail throughout the project, but there is little change to the original scope.
- An approach with *high level planning up front*, followed by a design phase where prototyping is used. After the project team and stakeholders agree to the design, the project team completes more detailed planning.
- *Adaptive approaches where the project team conducts iterations*. Some planning occurs up front to establish release plans and further planning occurs at the beginning of each iteration.

PLANNING VARIABLES

Project deliverables. Often the project deliverables necessitate planning in a specific way. Construction projects require significant up front planning to account for design, approvals, materials purchasing, logistics, and delivery.

Organizational requirements. Organizational governance, policies, procedures, processes, and culture may require project managers to produce specific planning artifacts.

Market conditions. Product development projects can take place in a highly competitive environment. In these situations, project teams can undertake a minimum amount of up front planning as the emphasis is on speed to market. The cost of delay that extensive planning entails exceeds the risk of potential rework.

Legal or regulatory restrictions. Regulatory agencies or statues may require specific planning documents before granting an authorization to proceed or to secure approval to release the project deliverable into the market.

DELIVERY

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

Predictive planning approaches start with the high level project deliverables up front and decompose them into more detail. This approach can employ a scope statement and/or a work breakdown structure (WBS) to decompose the scope into lower levels of detail.

Projects that use iterative or incremental approaches can have high level themes or epics that are decomposed into features, which are then further decomposed into user stories and other backlog items.

ESTIMATING

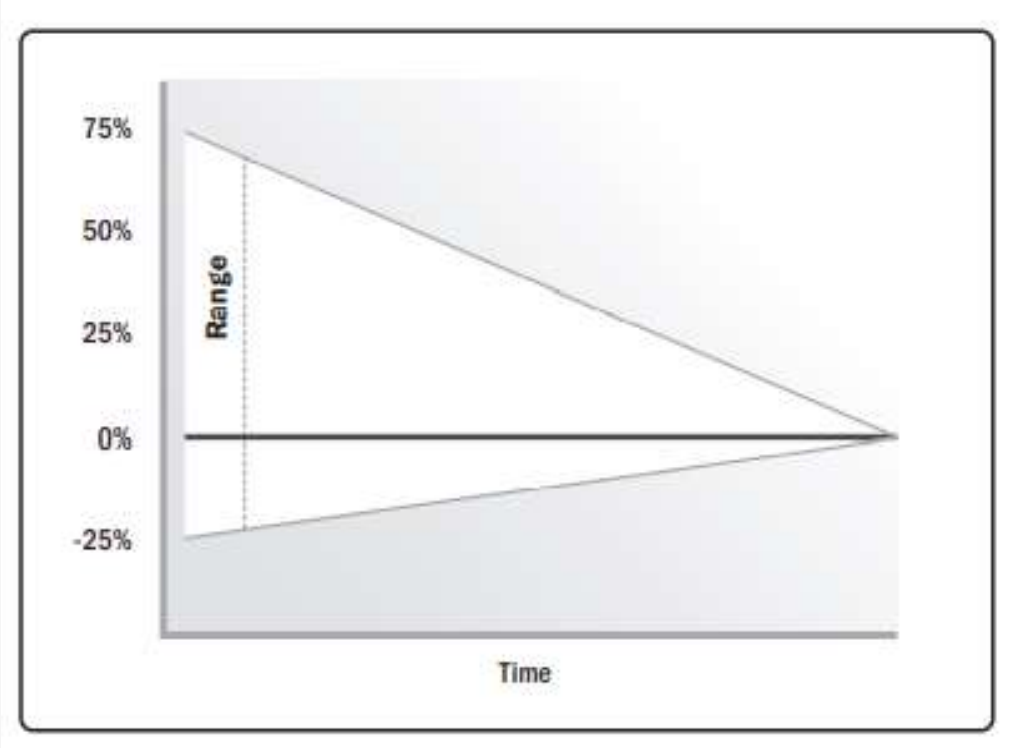
Planning entails developing estimates for work effort, duration, costs, people, and physical resources. Estimates are a quantitative assessment of the likely amount or outcome of a variable, such as project costs, resources, or duration. As the project evolves, the estimates can change based on current information and circumstances. The project's phase in the life cycle impacts four aspects associated with estimating;

Range. Estimates tend to have a broad range at the start of the project when there is not much information about the project and product scope, stakeholders, requirements, risks, and other information. A range of -25 to +75% at the start of exploring a project opportunity. Projects that are well along in their life cycle may have an estimating range of -5 to +10%.

Accuracy. Accuracy refers to the correctness of an estimate. Accuracy is like to range in that the lower the accuracy, the larger the potential range of value.

Precision. Precision is different from accuracy. Precision refers to the degree of exactness associated with the estimate. For example, an estimate of 2 days is more precise than "sometime this week." The precision of estimates should be compatible with the desired accuracy.

ESTIMATING

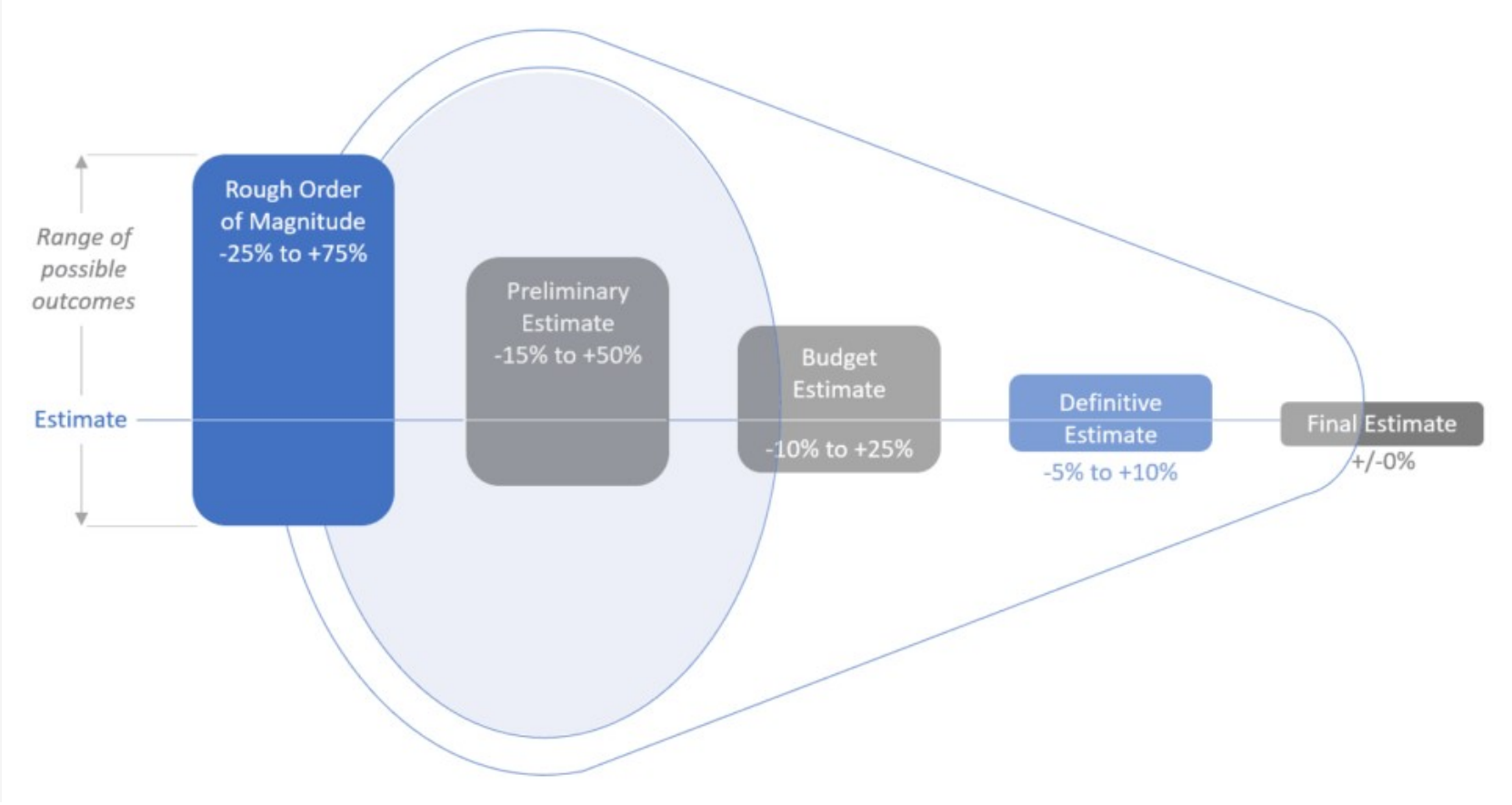


Estimate Range Decrease over Time

Estimate Cost: Quality/Accuracy

Estimate	Accuracy	
Rough Order of Magnitude (ROM)	+/- 50%	• Most difficult to estimate as very little project info is available, made during **initiating process**
Budget Estimate	-10% +25%	• Used to finalize the Request for Authorization (RFA), and establish commitment, made during **planning phase**
Definitive Estimate	-5% 10%	• **During the project** and refined

Estimate Cost: Quality/Accuracy



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Confidence. Confidence increases with experience. Experience working on a previous, similar project can help with the level of confidence required. For new and evolving technology components, the confidence in estimates is expected to be low.

Deterministic and probabilistic estimating. Deterministic estimates, also known as point estimates, present a single number or amount, such as 36 months. Probabilistic estimates include a range of estimates along with the associated probabilities within the range. They can be developed manually by (a) developing a weighted average based on multiple likely outcomes, or (b) running a simulation to develop a probability analysis of a particular outcome, usually in terms of cost or schedule.

WAYS OF PRESENTING AND/OR ADJUSTING ESTIMATES

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Absolute and relative estimating. Absolute estimates are specific information and use actual numbers. An absolute estimate for effort might be shown as 120 hours of work. One person working full time could accomplish the work in 15 workdays, assuming 8 hours of productivity per workday.

While absolute estimates are specific, relative estimates are shown in comparison to other estimates. Relative estimates only have meaning within a given context.

Flow-based estimating. Flow based estimates are developed by determining the cycle time and throughput. Cycle time is the total elapse time it takes one unit to get through a process.

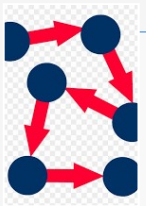
Adjusting estimates for uncertainty. Estimates are inherently uncertain. Uncertainty by definition is associated with risk. key deliverable dates or budge estimates may be adjusted, or contingency time or funds may be added, based on the outcomes of a situation conducted to establish the range of uncertainty for these parameters.

SCHEDULES

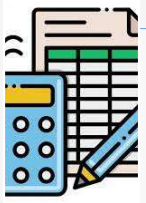
A schedule is a model for executing the project's activities. Including durations, dependencies, and other planning information. Schedule planning can use predictive or adaptive approaches.

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 COMPRESSION TECHNIQUES

If the schedule model does not meet the initial desired end date, *schedule compression methods* are applied.

Crashing is a schedule compression method that seeks to shorten the duration for the least incremental cost. Crashing can include adding people to activities, working overtime, or paying to expedite deliveries.

Fast tracking is a schedule compression method in which activities or tasks that are normally done in sequence are performed in parallel, at least for a portion of their duration. Fast tracking often entails applying *leads* and *lags* along a network path. A lead is where the work of a successor activity is accelerated, such as starting a successor activity before the predecessor has finished. In the figure below (next slide), there is a lead between the finish of Task 2 and the start of Task 4.

SCHEDULES COMPRESSION TECHNIQUES

A *lag* is a delay of a successor activity. An example of using a lag would be changing the type of relationship between activities, and then applying a lag. For example, rather than waiting for an activity to finish before the next one starts (a finish-to-start-relationship), change the relationship to have the end of the successor activity finish a determined amount of time after the end of the predecessor (a finish-to-finish-relationship).

The network logic would show a lag between the finish of the predecessor and the finish of the successor activities.

There is an example of a finish-to-finish relationship with a lag in figure below between Task 8 and Task 7. A *lag* can also be applied between the start of one activity and the start of another activity (a start-to-start relationship).

SCHEDULES COMPRESSION TECHNIQUES

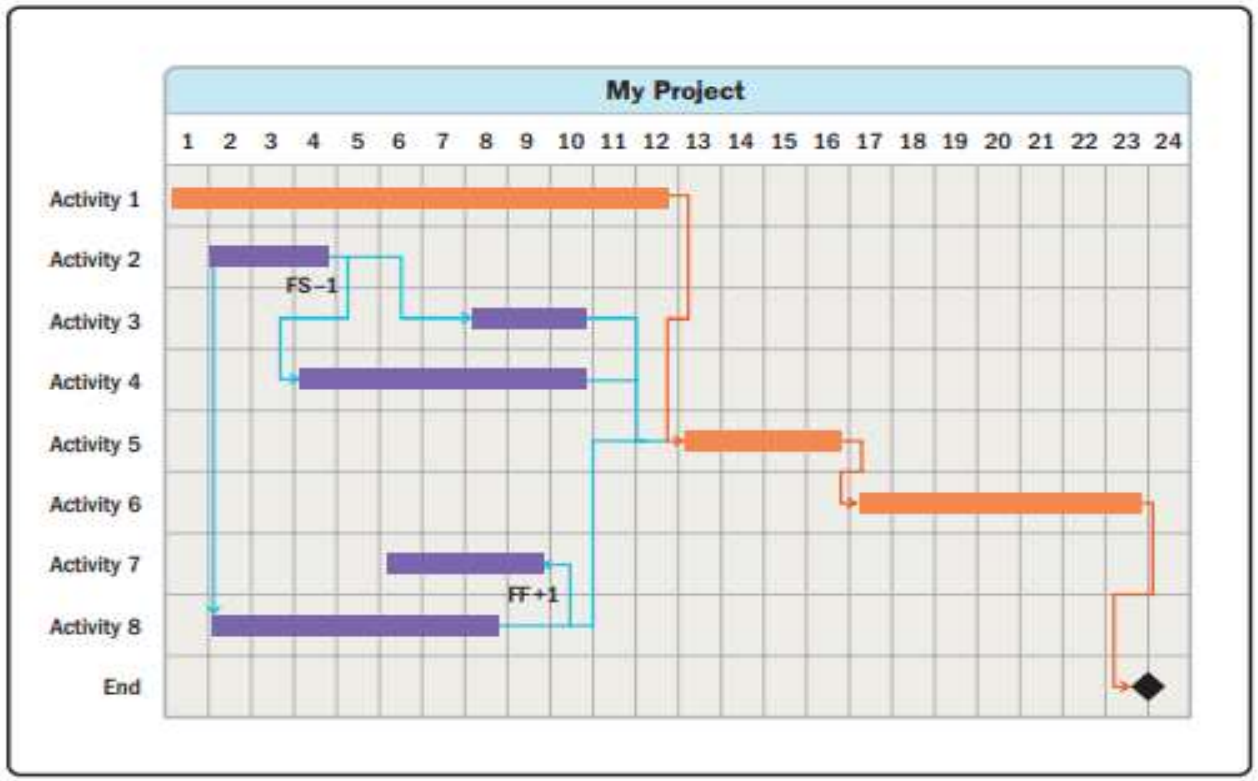


Figure 2-16. Fast Tracking Examples

SCHEDULES COMPRESSION TECHNIQUES

When compressing the schedule, it is important to determine the nature of the dependencies between activities. Some activities cannot be fast tracked due to the nature of the work – other can. 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

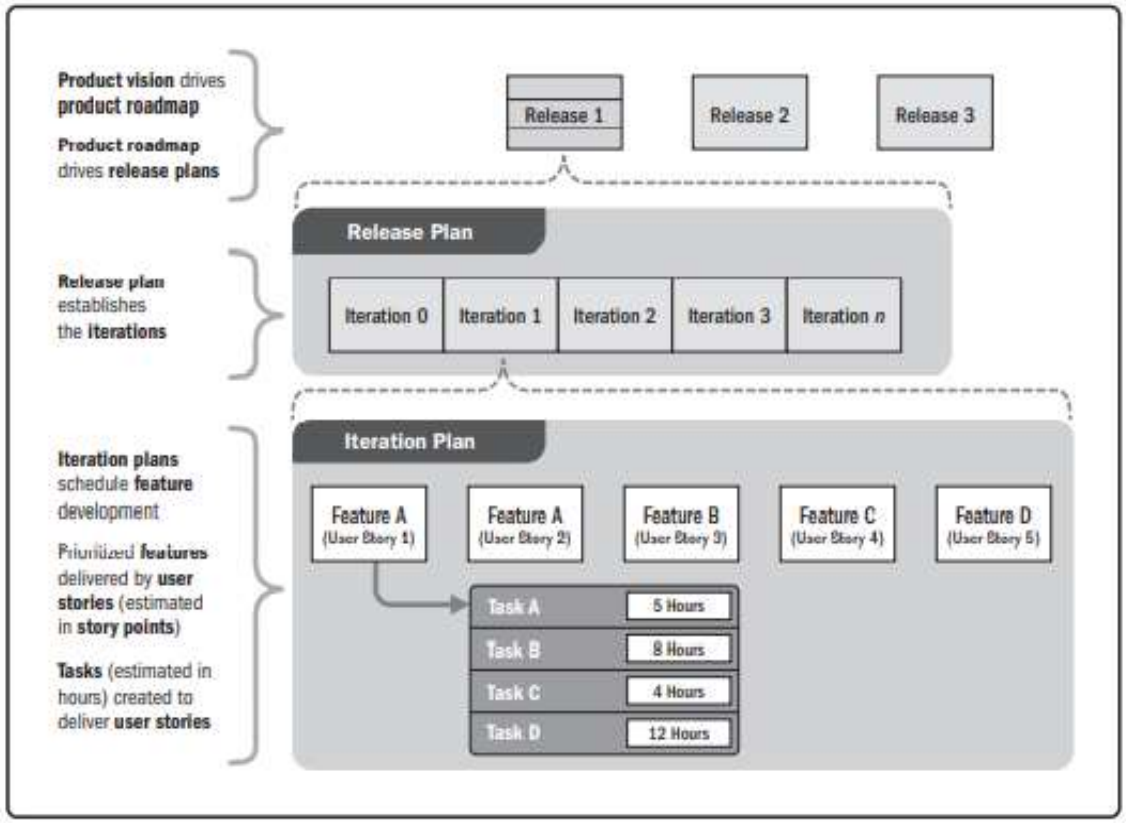


Figure 2-17. Release and Iteration Plan

SCHEDULES

Adaptive approaches often use time boxes. The work in each time box is based on a prioritized backlog. The project team determines the amount of work they can do in each time box, estimates the work, and self-manages to accomplish the work. At the end of the time box, 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 time box.

Determining the schedule involves using the information is the estimating section to determine overall duration and effort estimates. Regardless of the scheduling approach used, the relationship between effort and duration needs to be addressed. Some activities are effort driven, which means that the duration can be reduced by adding people. This approach can work up to a point, after which adding people might actually extend duration.

BUDGET

The project budge evolves from the agreed estimates for the project. The information the previous section on Estimating is applied to project costs to develop cost estimates. Cost estimates are then aggregated to develop the cost baseline. The cost baseline is often allocated across the project schedule to reflect when the costs will be incurred.

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 shout they occur.

Management reserves are set aside for unexpected activities related to in-scope work. 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. Figure 2-18 shows the budget build up.

WHAT IS CHANGING IN THE EXAM

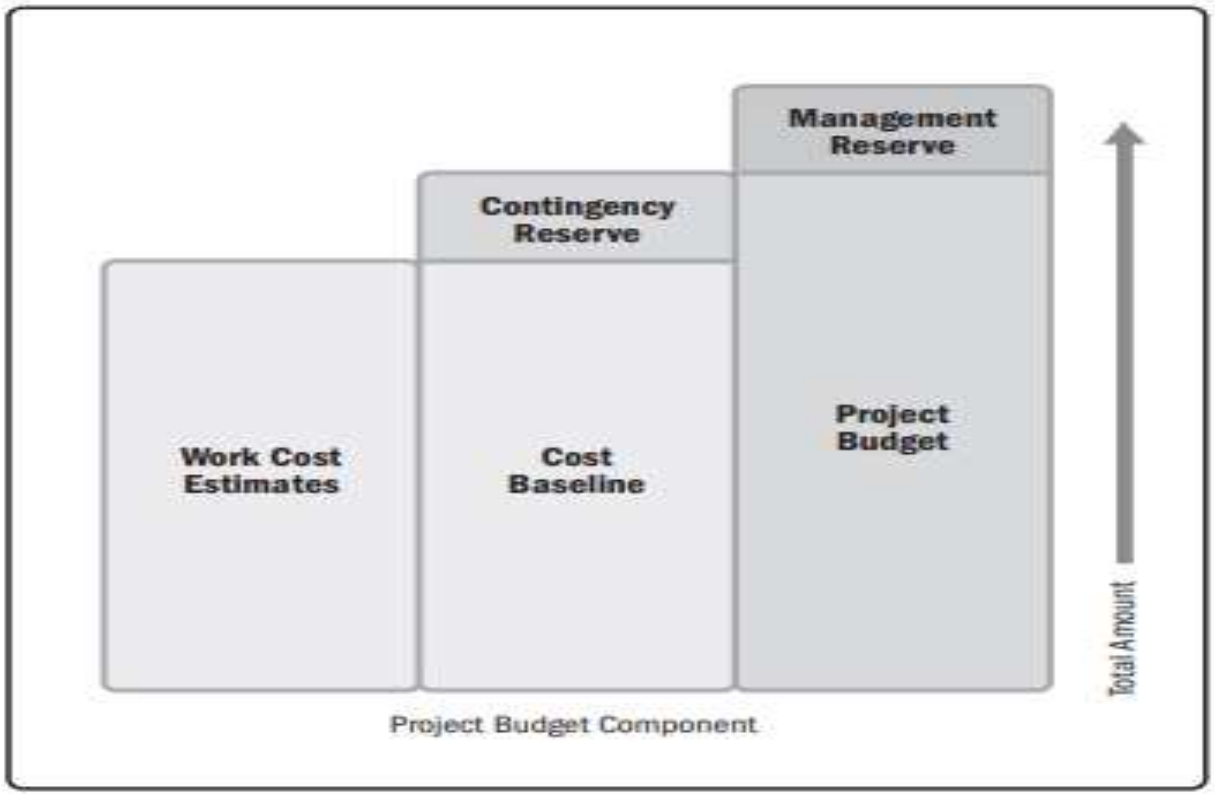


Figure 2-18. Budget Build Up

PROJECT TEAM COMPOSITION AND STRUCTURE

Planning for project team composition begins with identifying the skill sets required to accomplish the project work. This entails evaluating not only the skills, but also the level of proficiency and years of experience in similar projects.

There are different cost structures associated with using internal project team members versus securing them from outside the organization. The benefit that outside skills bring to the project are weighed against the costs that will be incurred.

When planning for the project team, the project manager considers the ability and necessity for the project team to work in the same location. Small project teams that can work in the same room are able to take advantage of osmotic communication and can solve problems as they arise.

COMMUNICATION

Communication planning overlaps with stakeholder identification, analysis, prioritization, and engagement as described in the Stakeholder Performance Domain. Communication is the most important factor in engaging with stakeholders effectively. Planning communication for the project entails considering the following

- **Who** needs information?
- **What** information does each stakeholder need?
- **Why** should information be shared with stakeholders?
- **What** is the best way to provide information?
- **When** and how often is information needed?
- **Who** has the information needed?

COMMUNICATION

There may be different categories of information, such as *internal* and *external*, *sensitive* and *public*, or *general* and *detailed.* Analyzing the stakeholders, information needs, and categories of information provides the foundation for establishing the communications processes and plans for the project.

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 described in *ESTIMATING* section, as well as supply chain, logistics, and management.

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

Procurements can happen at any time during a project. However, up-front 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.

CHANGES

There will be changes throughout the project. Some changes are a result of a risk event occurring or a project environment change, some are based on developing a deeper understanding of requirements, and others are due to customer requests or other reasons.

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.”

As part of planning, the metrics, baselines, and thresholds for performance are established, as well as any test and evaluation processes and procedures that will be used to measure performance to the specification of the project deliverable. The metrics, baselines, and tests are used as the basis to evaluate variance of actual performance as art of the Measurement Performance Domain

ALIGNMENT

Planning occurs throughout the project and integrates with each performance domain. At the start of the project, the expected outcomes are identified and high-level plans to achieve them are developed. Depending on the selected development approach and life cycle, intensive planning may be conducted up front, and then plans may be adjusted to reflect the actual environment. Other life cycles encourage just enough planning at various points throughout the project with the expectation that plans will evolve.

INTERACTION WITH OTHER PERFOMANCE DOMAIN

Planning activities and artifacts need to remain integrated throughout the project. This means that planning for the performance in terms of scope and quality requirements aligns with delivery commitments, allocated funds, type and availability of resources, the uncertainty inherent in the project, and stakeholder needs. Project teams can require additional planning artifacts depending on the type of project. For example, logistics plans will need to integrate with material and delivery needs, testing plans will need to align with quality and delivery needs and so forth.

CHECKING RESULTS

Checking Outcomes –Planning Performance Domain

Outcome	Check
The project progresses in an organized, coordinated, and deliberate manger	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.

CHECKING RESULTS

Checking Outcomes –Planning Performance Domain

Outcome	Check
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 meeting that demonstrates the change control process is being applied.

Q & A?