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Document Purpose

This Practices Guide is a brief document that provides an overview describing the best practices, activities, attributes, and related templates, tools, information, and key terminology of industry-leading project management practices and their accompanying project management templates.

Background

The Department of Health and Human Services (HHS) Enterprise Performance Life Cycle (EPLC) is a framework to enhance Information Technology (IT) governance through rigorous application of sound investment and project management principles, and industry best practices. The EPLC provides the context for the governance process and describes interdependencies between its project management, investment management, and capital planning components. The EPLC framework establishes an environment in which HHS IT investments and projects consistently achieve successful outcomes that align with Department and Operating Division goals and objectives.

The Project Management Institute's Project Management Body of Knowledge defines a project schedule as the planned dates for performing schedule activities and the planned dates for meeting schedule milestones. A schedule milestone is defined as a significant event in the project schedule, such as an event restraining future work or marking the completion of a major deliverable. This Practices Guide is for a specific tool rather than a particular project management practice. This Practices Guide focuses on best practice approaches to using Microsoft's Project scheduling tool.

A successful project schedule requires proper estimation of the effort, definition of staffing needs and resource requirements, and the identification of work durations.

In order to build a project schedule the project work defined in the Work Breakdown Structure (WBS) work packages must be further decomposed into smaller, more manageable components referred to as schedule activities. These schedule activities are then sequenced in order to build a project schedule. The ultimate goal of this effort is to build an effective project schedule that answers questions such as:

- What will be accomplished?
- When it will be accomplished?
- Who will accomplish it?
- How it will be accomplished?

Practice Overview

A project schedule is developed by further decomposing WBS work packages and analyzing activity sequences, durations, resource requirements, and project constraints to create a formal list of project activities and an outline of which order they should be performed. The processes for accomplishing this include the following project scheduling practices:

- *Activity definition* focuses on identifying and documenting the planned work.
- *Activity sequencing* focuses on identifying and documenting relationships among scheduled activities.
- *Resource and duration estimating* focuses on determining what resources are required, in what quantities, and for how long, to complete the project work as planned.
- *Schedule development* focuses on determining schedule activity start and finish dates.
- *Schedule control* focuses on influencing factors that create project schedule change.

In some instances, projects are so tightly structured that the steps of creating a project schedule can be performed by a single individual. However, in most cases, representatives from across the organization,

and most certainly the project team, will be involved in different aspects of the schedule development process.

Activity Definition
For scheduling purposes, WBS work packages are decomposed into even smaller components known as schedule activities. This process is referred to as activity definition. Schedule activities are work defined to a level that can be easily estimated, scheduled, executed, and monitored and controlled. Good project planning practice is to define these activities to a level no smaller than one full work day (~8hrs) and no larger than ten full work days (~2wks). Anything more than ten working days most likely can be better managed if further decomposed. Anything less than one working day is usually too detailed to be managed effectively.

To facilitate this effort a project manager may seek out examples of similar projects, review project templates, reuse all or some part of schedules from past projects, solicit feedback from subject matter experts, the project team, etc. The ultimate goal is to develop a list of schedule activities and to identify any dependencies or conflicts that may exist between them. If prospective conflicts do exist, work on resolving them as early in the project life cycle as possible utilizing the project's defined schedule control process.

Activity Sequencing
Many times schedule activities have inherent interdependencies, resource limitations, date constraints, etc. that all need to be considered when outlining how project work aligns in the form of a defined project schedule. The project schedule links schedule activities together in a manner that creates a timeline of work throughout the project's life. Some activities need to be conducted early in the project and some activities are dependent upon other tasks scheduled to be completed later in the project. Activity sequencing should accommodate such dependencies.

During the practice of activity sequencing the project manager aligns the sequence of schedule activities in a way to best avoid any factors that may limit how quickly project work can be completed. To facilitate this effort a project manager may use project scheduling tools such as Microsoft Project or advanced sequencing techniques using various diagramming methods and/or applying scheduling leads or lags to individual tasks. The ultimate goal is to structure the sequence of schedule activities in a way that completes the project as quickly as possible.

Contained within all schedules is a critical path. The critical path generally, but not always, is the sequence of scheduled activities that determines the duration of the project. Generally, it is the longest path through the project. In other words, there is no slack between critical tasks, if one task slips, the entire schedule slips. Understanding and effectively managing the schedule's critical path is vital to completing a project as planned.

Resource and Duration Estimating
The practice of estimating involves determining quantity of a resource that is required to complete a task or activity. Resources could include people, equipment, material, etc. Estimates are usually provided by the person or group on the project team who is most familiar with the nature of the work to be estimated. Details regarding the actual practice of developing estimates for schedule activities are detailed in the Estimating Practices Guide.

Once work effort estimates have been developed, determining the time duration of how that effort will be distributed throughout the project's life is known as duration estimating. The Project Management Institute's Project Management Body of Knowledge defines duration as the total number of work periods required to complete a schedule activity or WBS component, usually expressed as work days or work weeks. Duration estimates are determined by identifying when the required project resource is needed and then adjusting the project schedule to accommodate for its actual availability. Most project management software for scheduling can handle this automatically.

Schedule Development
Developing a project schedule is the responsibility of the project manager. Project Management Institute's Project Management Body of Knowledge defines a project schedule as the planned dates for performing schedule activities and the planned dates for meeting schedule milestones. The practice of schedule development leverages knowledge gained from activity definition, sequencing, and estimating to create a

formal sequence of project activities, the project schedule, that outlines when required work should start, when it is expected to be completed, and who will do the work.

The project schedule serves as a master plan which the project team, management, customers, and other stakeholders look to for an up-to-date picture of how project work is progressing. The project schedule should clearly define:

- A direct relationship to the WBS
- Major events and dates
- Sequence of work
- Interrelationships between tasks
- Task constraints
- Resources required to complete each schedule activity

To effectively develop a reasonably accurate project schedule, input from functional managers, knowledge experts, consultants, and project team members from across the organization can be leveraged.

One approach to schedule development is known as rolling wave planning. Rolling wave planning is a form of progressive elaboration planning where the work to be accomplished in the near term is planned in detail at a low level of the WBS, while the work far in the future is planned at a relatively high level of the WBS, but the detailed planning of the work to be performed for one or two periods in the near future is done as work is being completed during the current period.

Once complete, the initial project schedule is baselined and is used to track project progress. A baselined project schedule is the original approved project plan used to track progress on a project. The baselined schedule is a snapshot of the schedule, at the time that the baseline was saved, and includes baselined information about tasks, resources, and assignments.

The result of defining a detailed project schedule also produces updates to other project areas and/or documents such as resource requirements, project calendars, performance measurements and reports, change control, organizational processes, PMP, etc. These updates should be reflected in these areas by utilizing any defined update procedures.

Each activity is now clearly defined and scheduled, and responsibility for completion assigned and communicated. As project work progresses the project schedule should be adjusted to reflect actual work completed and planned work remaining.

Schedule Control

Schedule control is primarily concerned with influencing and/or managing the factors that create schedule change. This is done by monitoring such things as project variances, external factors, project progress, etc. The activities that control changes to the project schedule are often outlined as part of the Project Management Plan (PMP).

One important activity required for controlling project schedules is resource leveling. Resource leveling involves leveling out the workload of resources assigned in the schedule by bringing the workload of those resources within the range of their availability. A resource with too many assigned tasks scheduled at the same time, may require that work be re- assigned to another resource or tasks have to be rescheduled to a later in time and delay the completion of the project.

Best Practices

- **Collaborate** – Input from knowledge experts and other stakeholders from across the organization are best leveraged to develop an accurate project schedule.
- **Decompose** – Decompose schedule activities to no less than ~8hrs and no more than ~80 hrs of work effort.
- **Leverage Past Work** – When creating the project schedule review examples of similar projects, project templates, expert judgment, etc.
- **Review** – Review the completed schedule with project stakeholders before baselining and continuously review the schedule and update stakeholders as part of the project status reporting.
- **Maintain up-to-date** – Project changes are processed as change requests and reflected in the WBS and/or the WBS Dictionary.

- **No Acronyms** – Use actual system names and nomenclature instead of acronyms to avoid confusion.

Practice Activities

Requirements Definition

The practice of project scheduling is mainly conducted in the planning phase and involves the following activities:

- Define the planned work by decomposing WBS work packages into schedule activities
- Sequence schedule activities in the order in which they will be performed
- Identify resources needed to complete the work
- Estimate the level of effort required to complete the work utilizing the available resources
- Develop a project schedule. Ensure that adjustments are made to the sequence of activities that account for resource availability
- Control the schedule by identifying, monitoring, and influencing factors that cause schedule change