

How to develop a MODEL Standard Operating Procedure (SOP) for Scheduling ¹

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ABSTRACT

An effective Standard Operating Procedure (SOP) for scheduling practices shows the procedures which are accepted and actually followed for schedule development related to Owner organizations and Contractors. In this paper, the author described scheduling practices from the tender stage to Asset realization, which involves Owner organizations' and contractors' procedures. The SOP shows the step by step procedures to develop a schedule and its associated areas. In this paper, how the contract department deals with scheduling practices initially then how the contractors develop Performance Measurement Baseline (PMB) for the comparison of actuals progress. Subsequently, the process flow from the Owner PMO department roles to Owner Finance Department until the Asset realization and start depreciation of Asset. By following the effective SOPs, the errors in the process can reduce and improve the productivity of the organizations.

Keywords: Standard operating procedure (SOP), Scheduling, procedures

INTRODUCTION

Very few people use SOPs for routine tasks. Why? This is quite an interesting question, and there are many reasons for it. Some reasons are the SOP may write badly, the process is cumbersome, It may difficult to locate the right procedure, it may be out of date, lack of awareness that SOP exists in the company , people may rely on their skills and experience rather than rely on SOPs and so on. Six "Sigma studies suggest the bottom-line impact of failing to use effective SOPs can range from 15-30% of the total operational cost of the business, and expose the organization and its management to significant reputational risk, penalties (particularly safety and environmental) and the cost of lost opportunity"². From facts, it is important to develop effective SOPs and ensure that the right process performers apply new SOPs in the right way.



¹ How to cite this paper: Kurien, T. (2020). How to develop a MODEL Standard Operating Procedure (SOP) for Scheduling; *PM World Journal*, Vol. IX, Issue II, February.

² Mosaic Projects. (2012, October 22). The value of Standard Operating Procedures. Retrieved from https://mosaicprojects.com.au/WhitePapers/WP1086_Standard_Operating_Procedures.pdf

To systemize the business documenting routine tasks and activities can be a complete nightmare. In many companies, there should not be documentation on practice to perform any task. Experts in the company can do their work without reviewing the documents, though in the case of a new employee to an industry may not know the procedures to do their work efficiently. During these cases, it is important to have step by step procedures, documented to execute the task with complete information. So it works as guideline for the performer to execute the task. Standard Operating Procedure (SOP) is a step by step procedure to execute a particular task or series of tasks. "Standard operating procedure (SOP), also called standing operating procedure, set of written guidelines or instructions for the completion of a routine task, designed to increase performance, improve efficiency, and ensure quality through systemic homogenization."³ "Written procedure prescribed for repetitive use as a practice, in accordance with agreed-upon specifications aimed at obtaining a desired outcome."⁴ "A Standard Operating Procedure (SOP) is a set of written instructions that document a routine or repetitive activity followed by an organization."⁵ The term was first used in the mid-20th century. Initially, an SOP used by army based publications and later on it is modified and start used for private operational purposes. An SOP is a procedure specific to an operation that describes the activities necessary to complete tasks following industry regulations, provincial laws, or even just your standards for running your business. SOP lists all the tasks essential to carried out to attain the desired result, and it also mentioned how to do these tasks and who is responsible for the tasks listed.

"SOPs are utilized in various contexts by a vast array of entities, including those in the areas of business, education, government, health care, industry, and the military. Although categorical variations are inevitable, all SOPs have in common the systematization of the individual steps performed in the implementation of a repetitive task to create an overall quality system. SOPs first identify and summarize a task, describe its purpose, and specify when and by whom it is to be performed while simultaneously defining uncommon or specialized terms and addressing potential concerns (e.g., necessary equipment or supplies, health, and safety cautions, etc.). They then describe the sequential procedures to be followed, often utilizing activity checklists and graphic illustrations (e.g., charts, tables, photographs, diagrams, etc.) to help ensure that the procedures are being performed accurately and in order.

SOPs can also provide many other benefits, such as minimizing the chance of miscommunication, affording comparability, and ensuring regulatory compliance. However, they must be periodically assessed and modified to maintain the currency, thus enabling them to improve final

³ Encyclopedia Britannica. (n.d.). Standard operating procedure. Retrieved from <https://www.britannica.com/topic/standard-operating-procedure>

⁴ Business Dictionary. (n.d.). Good one to know! Retrieved from <http://www.businessdictionary.com/definition/standard-operating-procedure-SOP.html>

⁵ US Environmental Protection Agency. (n.d.). Guidance for Preparing Standard Operating Procedures (SOPs). Retrieved from <https://www.epa.gov/sites/production/files/2015-06/documents/g6-final.pdf>

results further. The disadvantages of SOPs include excessive paperwork and a reduction in workplace individuality.”⁶

Any document that is a “how-to” falls into the category of procedures. In a manufacturing environment, the most obvious example of an SOP is the step by step production line procedures used to make products as well as train staff. In this paper, the author writes a Standard Operating Procedure (SOP) on CPM Scheduling will give a clear understanding to develop a schedule by the step by step procedures to be followed. Productivity will improve to perform the task with a clear step by step written procedures. An SOP can reduce the learning curve and training time for new employees.

An SOP defines expected practices in all businesses where quality standards exist. SOPs play an important role in any business. SOPs are policies, procedures, and standards you need in the operations, marketing, and administration disciplines within your business to ensure success. By developing an SOP, there are many advantages to enhance performance, thereby, efficiency and profitability improved. The consistency and reliability in doing tasks will increase. By adopting a proper procedure to execute the task, then happening errors in the process will reduce. It helps to resolve the conflicts between performers if they have a common procedure to follow. It surely gives a value-added to business by executing tasks efficiently. In this paper, the author researches to answer the below specific points.

What are the contents to be included in the SOP?

How to develop a Standard Operating Procedure (SOP) for scheduling that people will READ and FOLLOW?

Step 1- PROBLEM DEFINITION

There are a lot of issues that evolve when a schedule is prepared. In this context, it is helpful to prepare an SOP for Schedule Development. It will be a guideline for the practitioners who are on the lookout for it, thereby reducing errors in the process and increasing productivity. Developing an SOP is about systemizing all of your processes and documenting them. Every business has a unique market, every entrepreneur has his/her leadership style, and every industry has its own best practices.

Step 2- “ELEMENTS OF A WELL WRITTEN SOP”

Based on the literature review, these are the elements that need to be included in an SOP that is going to be accepted and followed.

⁶ Encyclopedia Britannica. (n.d.). Standard operating procedure. Retrieved from <https://www.britannica.com/topic/standard-operating-procedure>

✓ **“1. Name the procedure correctly**

The aim of compiling a procedure is to lead you from point A to point B. It tells you how to do something. A good title will describe this, eg. “How to create an invoice”, “How to answer a sales call”, or “How to sign up a new client.” A name that does not reflect what the procedure is about is not helpful and can confuse.

✓ **2. Include a description at the top of what the procedure is about**

This can be very brief. A sentence will do. The aim is for the person reading the procedure to immediately understand what it is that they are doing, and how it fits into the overall context of the business.

✓ **3. List the expected outcome**

This tells the reader what they should expect once they have completed all the steps in the procedure. If they don't reach the expected result, something is not right. Either the procedure is faulty, or they have not executed it properly.

✓ **4. Create a procedure template**

Start with the same consistent template. Later all the standard operating procedures can fit into a Standard Operations Manual easily. This increases the intellectual property of your business. You will also save a huge amount of time in the long run because you have a business that runs on systems and procedures.”⁷

As a minimum, the procedure should contain the following key elements:

✓ **“Title Page –**

This includes the title of the procedure, a unique document identification number, a date of issue, and a revision number. The name of the company or division/department or Project the SOP applies to, and the signatures of those who prepared and approved of the SOP.

✓ **Table Of Contents –**

This is only necessary if your SOP is quite long, allowing for ease of reference. A simple standard outline is what you'd find here.

✓ **The Step-by-Step Information on How to Execute a Task or Series of Tasks –**

This is to explain, prescribe, and define what the practitioner is required to do; it is the body of the procedure.

✓ **Quality Assurance / Quality Control –**

A procedure is not a good procedure if it cannot be checked. Have the necessary materials and details provided so the reader can make sure they've obtained the desired results. This may or may not include other documents, like performance evaluation samples.

⁷ Ms.Vorster. (2016, September 27). How to document your procedures. Retrieved from <https://virtualproductivitysolutions.co.za/2012/10/31/how-to-document-your-procedures/>

✓ **References –**

Be sure to list all cited or significant references. If you reference other SOPs, be sure to attach the necessary information in the Appendix.

To create the procedure, the following elements, at a minimum, need to be documented within the Specific How-To-Do-It section:

✓ **Purpose –**

A brief narrative to explain why this procedure is necessary and what it will achieve for the user.

✓ **Introduction –**

A brief outline of the subject and the need for the procedure.

✓ **Responsibilities –**

Narrative to explain who is required to do what.

✓ **The Step-by-Step Information on How to Execute a Task or Series of Tasks –**

The detailed description of what is to be carried out.

✓ **Forms / Templates –**

Where forms, reports, or templates are references in the above text, the samples should include so that all documents or reports follow the same format and consistently include all necessary or prescribed data.

✓ **Internal And External References –**

This section is used to list all controlled internal references (e.g., other procedures, etc.) and external references referred to within the text of the procedure.”⁸

Step 3- MODEL SCHEDULING SOP THAT MEETS THE “BEST TESTED AND PROVEN.”

Standard Operating Procedure for Scheduling Practices

Purpose

The purpose of this Standard Operating Procedure (SOP) is to describe the standard procedures to be followed for developing and maintaining a schedule, which incorporates the scheduling best practices to prepare a high quality, reliable schedule.

Introduction

The Project Schedules submitted to the Company should be complied with best tested and proven practices. It will provide a guideline for fellow contractors to develop and maintain a high

⁸ Guild of Project Controls. (2015, November 2). GUILD OF PROJECT CONTROLS COMPENDIUM and REFERENCE (CaR). Retrieved from <http://www.planningplanet.com/guild/gpccar/develop-planning-scheduling-policies-procedures-manual>

quality, reliable schedule. It is a good practice to follow the step by step procedures to get the desired result.

Responsibilities

Contracts Engineer

They are responsible for preparing and drafting tenders and include scheduling specification and scheduling manual as part of tenders and later in the contract also.

Scheduler

It is the prime responsibility of a scheduler to prepare a high quality, reliable schedule for the performance measurement. The steps described in the procedure to be followed for schedule development and communication.

Project Controls Manager

The PCM responsibility to validate the schedule with the procedures and ensure that the procedures were followed by the Scheduler when prepares it.

Project Manager

Project Manager responsible for review the recommendations and suggestions from PMO and take further steps of actions.

Accountant /Finance Controller

The accountant/finance controller responsibility for paying the approved invoices to contractors, record all overhead expenses a, liabilities, convert to the asset after completion, and start depreciation on the asset.

Project Control Engineer at PMO

Review and approve the baselines, monitoring, and analyzes the monthly/weekly progress report, review and approve progress payments and disseminate to high approval.

Procedures for Scheduling

The below-mentioned steps to be followed to prepare a high quality, reliable schedule for the performance measurement and reporting.

OWNERS CONTRACT DEPARTMENT Step 1. Prepare Bidding Documents

During the bidding stage, the Contract Personnel includes a robust Scheduling Specification and best tested and proven standards as Scheduling manual, which provides a very clear understanding that “How to develop a schedule which complies with Best Practices in Scheduling?”

OWNERS CONTRACT DEPARTMENT Step 2. Advertise the Bid

Ensure that the specification and manual included in the tender documents are about to publish with tenders.

OWNERS CONTRACT DEPARTMENT Step 3. Receive/Analyze the BIDS

The schedule in the bids is to analyze and ensure the compliance of scheduling specifications and manuals.

OWNERS CONTRACT DEPARTMENT Step 4. Negotiate and Select Winning Bidder

Negotiate with selected bidders if any changes in the clauses included and reach consensus with the contractor before the award of contract.

OWNERS CONTRACT DEPARTMENT Step 5. Issue the Notice to Proceed

Based on the acceptance of the contract, NTP can issue to start the project.

CONTRACTORS Step 1. Identify /Capture and Breakdown all activities

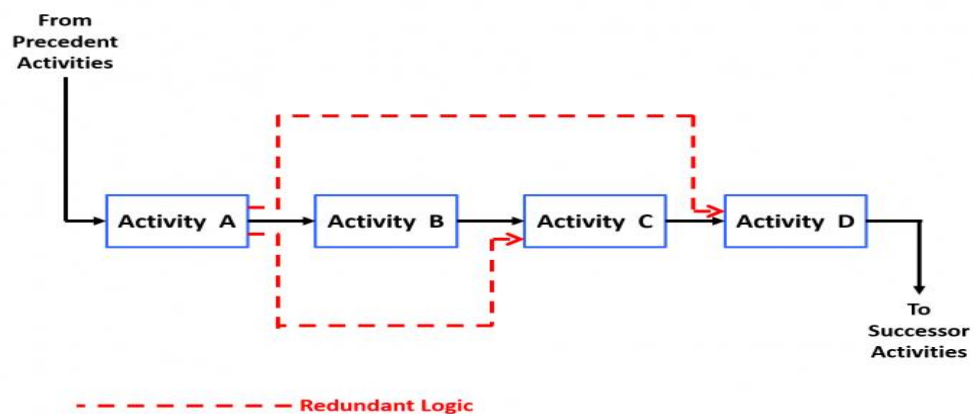
- In the first step, as per the scope of work prescribed in the contract, identify and develop WBS, and decompose the WBS in activities. Schedule development meetings to be conducted to engage stakeholders, project management team for their inputs in the schedule.
- The next step is to determine the Level of Schedule, Check contract if anything mentioned about the level of schedule then follows the as per contract. If not, then according to the frequency of progress, reporting Level of schedule can be selected.
- Consider all constraints and other parameters that affect the schedule.
- The finalization of WBS and control accounts is the next step, which shows the scope is arranged in a hierarchical WBS level.
- A full list of activities to be prepared by considering the level of detail and phasing of the project an activity listing accommodated 100% of the scope. Milestones also identified at this stage, check the contract for that or consensus with the owner for that.
- The activity name to be given for all activities, including summary, milestone, and detailed activities, should be unique and descriptive. "Activity names should be phrased in the present tense with verb-noun combinations."⁹
For Eg: Install Firewater pump, pumping station.
- The activity code can be assigned to the activities for the ease of sorting and filtering.

⁹ U.S. Government Accountability Office. (2015). *GAO Schedule Assessment Guide Best Practices for Project Schedules*.

Step 2. Create Logical relationship and sequence activities

- For sequencing the work, the scheduler can refer to any historical data available and, if for the same work can be adopted that sequence. The task is going to perform newly, then discuss the sequence of work with the field staff who performs the tasks or expert opinion that can be taken from the experienced staff.
- “There are “rules of thumb” to be followed in predecessor and successor logic
 - Only one activity has no Predecessor that is Start Milestone
 - Only one activity has no Successor that is Finish Milestone
 - All other activities have at least one, ideally not more than three but if that is not possible, then as few as possible PREDECESSORS
 - All other activities have at least one, ideally not more than three, but if that is not possible, then as few as possible SUCCESSORS.”¹⁰
- Remember to follow that in a detailed schedule, Use majority logical relationship as the finish to start (FS) relationship.
- “The schedule does not contain start-to-finish logic relationships, and it has a bizarre effect of directing a successor activity not to finish until its predecessor activity starts, in effect reversing the expected flow of sequence logic.”¹¹
- Another common mistake made by schedulers is to include more logic than is necessary. That is known as Redundant Logic. This practice also to be avoided.

E.g.:



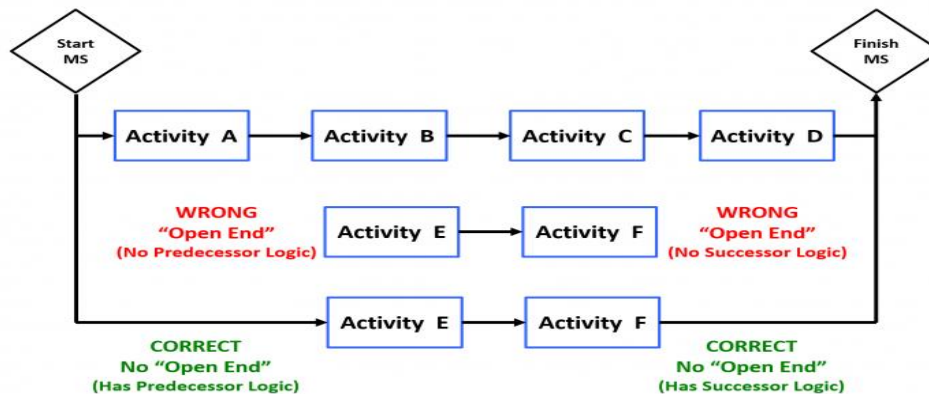
¹⁰ Guild of Project Controls. (2015, November 2). GUILD OF PROJECT CONTROLS COMPENDIUM and REFERENCE (CaR). Retrieved from <http://www.planningplanet.com/guild/gpccar/create-logical-relationships-sequence-activities>

¹¹ U.S. Government Accountability Office. (2015). *GAO Schedule Assessment Guide Best Practices for Project Schedules*.

Redundant Logic¹²

- The schedule contains no dangling logic, ensure all activities have relevant predecessors and successors. Activities that have either no predecessor or no successor are known as “Open Ends,” “Danglers,” or “Hangers.”

E.g.:



Dangling Logic¹³

- In some scheduling software packages, summary activities as an option. Summary activities are not to be linked logically, and its start and finish dates are rolled up from the lower-level activities.
- Using date constraints in the schedule should keep minimum or not because constraints override the “logic and restrict how planned dates respond to actual accomplished effort or resource availability, they should be used only when necessary and only if they are justified in the schedule documentation.”¹⁴

¹² Guild of Project Controls. (2015, November 2). GUILD OF PROJECT CONTROLS COMPENDIUM and REFERENCE (CaR). Retrieved from <http://www.planningplanet.com/guild/gpccar/create-logical-relationships-sequence-activities>

¹³ Guild of Project Controls. (2015, November 2). GUILD OF PROJECT CONTROLS COMPENDIUM and REFERENCE (CaR). Retrieved from <http://www.planningplanet.com/guild/gpccar/create-logical-relationships-sequence-activities>

¹⁴ U.S. Government Accountability Office. (2015). *GAO Schedule Assessment Guide Best Practices for Project Schedules*.

Constraint Types								
Constraint Name	As Soon As Possible	As Late as Possible	Start No Earlier Than	Start No Later Than	Finish No Earlier Than	Finish No Later Than	Must Start On	Must Finish On
Constraint Acronym	ASAP	ALAP	SNET	SNLT	FNET	FNLT	MSO	MFO
Works on.....	Forward Pass	Backwards Pass	Forward Pass	Backwards Pass	Forward Pass	Backwards Pass	Forward & Backwards Pass	Forward & Backwards Pass
What it does.....	Causes activity to start on the early dates or on the current data date, whichever is later	Causes activity to start on the late dates or the current data date, which is later.	Forces activity to start on or after a specific date but no earlier	Forces activity to start on or before a specific date but no later	Forces activity to finish on or after a specific date but no earlier	Forces activity to finish on or before a specific date but no later	Forces an activity to start on a specific date but no earlier or no later	Forces an activity to finish on a specific date but no earlier or no later
What is it used for?	Generate the Early Date S Curve	Generate the Late Date S Curve	Use this constraint to ensure that a task does not start before a specified date.	Use this constraint to ensure that a task does not start after a specified date.	Use this constraint to ensure that a task does not finish before a certain date.	Use this constraint to ensure that a task does not finish after a certain date.	Use this constraint to "anchor" or "lock" an activity to start on a specific date	Use this constraint to "anchor" or "lock" an activity to finish on a specific date

Constraint Types¹⁵

- In scheduling a lag denotes the passage of time between two activities. Rather than using lags, it can be replaced with activities. Using Negative lags in the schedule is not recommended. With an FS relationship, lags should not be used.

Step 3. Assigning resources to all activities

- According to productivity norms, assign resources to all activities. It contains labor and non-labor categories.
- “Resources are either labor or non-labor, where labor refers to humans, and non-labor can refer to subcontracts, consumable material, machines, and other purchased equipment. Resources are identified as fixed or variable.
- Significant material and equipment resources are captured within the schedule, along with other equipment resources that facilitate the project.
- Budgets for direct labor, overhead, and material are assigned to both work and planning packages so that total costs to complete the program are identified at the outset.
- If EVM is used to monitor the program, the fully loaded schedule, including materials, equipment, direct labor, overhead, and LOE activities, is the basis for the PMB.
- Activity owners are able to explain the logic behind their resource estimates.

¹⁵ Guild of Project Controls. (2015, November 2). GUILD OF PROJECT CONTROLS COMPENDIUM and REFERENCE (CaR). Retrieved from <http://www.planningplanet.com/guild/gpccar/create-logical-relationships-sequence-activities>

- Once the schedule is resource loaded, total resources in the schedule are crosschecked with the program budget, and contractual cost constraints.
- Resource peaks are examined for the feasibility of the available budget, the availability of resources, and the timeliness of the peaks.
- If the cumulative overlay of resources against major milestones shows resource peaks just beyond major milestone points, resources may have to be reallocated.
- Managers and planners have assessed whether bow waves exist in the high-level resource allocation profile.
- Resource leveling has been performed—that is, the scheduled time of activities or the assignment of resources has been adjusted to account for the availability of resources.”¹⁶

Step 4. Calculate duration for all activities

- Activity durations are related to the available resources and quantum of work. As a rule of thumb for detailed activity, the duration is shorter than two reporting periods.
- Long durations should be broken into shorter activities if logical breaks can be identified in work being performed. If it is not practical to divide the work into smaller activities or insert intermediate milestones, a justification for long durations is provided in the schedule baseline document.
- The LOEs in the schedule should not include in the critical path and derive the duration from the discrete activities.
- For activity durations, the units preferred in the schedule are days.
- Consider all holidays and other constraints in the calendar, specify with valid working time.

Step 5 Calculating Float and The Critical Path

- The critical path is the longest continuous sequence of activities in the schedule. The schedule’s critical path is valid and does not include LOE activities, summary activities. It is a continuous path from the status date to the finish milestone, and that does not include constraints that cause the unimportant activities to drive the finish milestone.
- The critical path has no lags or leads.
- In the schedule, near-critical activities also to be identified. As a rule of thumb, for weekly reporting, the activities have total float between 0 and 7 days, and for monthly reporting, the activities have a total of less than 30 calendar days or 22 days would be considered as near critical.

¹⁶ Guild of Project Controls. (2015, November 2). GUILD OF PROJECT CONTROLS COMPENDIUM and REFERENCE (CaR). Retrieved from <http://www.planningplanet.com/guild/gpccar/assigning-resources-to-all-activities>

- The schedule does not allow the negative float. If assign date constraints cause negative float.
- The schedule has to validate the critical path before the schedule is baselined and after every status update.

Step 6 Validate Horizontal and Vertical Integration

- “The schedule is horizontally traceable. That is, the schedule
 - depicts logical relationships between different program elements and product hand-offs and clearly shows when major deliverables and hand-offs are expected;
 - includes complete logic from program start to program finish and fully integrates the entire scope of work from all involved in the program;
 - includes milestones representing key decisions or deliverables with traced and validated predecessor activities to ensure that they are directly related to completing the milestone;
 - clearly identifies and logically links giver/receiver milestones between schedules that are defined in the schedule basis document;
 - dynamically reforecasts the date of a key milestone through network logic if activities related to accomplishing the milestone are delayed;
 - is affected by activities whose durations are extended by many days.
- The schedule is vertically traceable. That is, it
 - demonstrates that data are consistent between summary, intermediate, and detailed levels including dates that are frequently validated through a process;
 - allows activity owners to trace activities to higher-level milestones with intermediate and summary schedules;
 - allows lower-level schedules to be rolled up into the overall program schedule, which includes government activities, other contractor schedules, and interfaces with external parties.”¹⁷

Step 7 Conducting Schedule Risk Analysis (SRA)

- A schedule risk analysis (SRA) shall conduct to determine the likelihood of the project completion date, how much the schedule risk contingency is required to provide the acceptable certainty of completion by a specific date. Which are the risks most likely to delay the program? The schedule shall assess against best practices before the simulation is conducted.

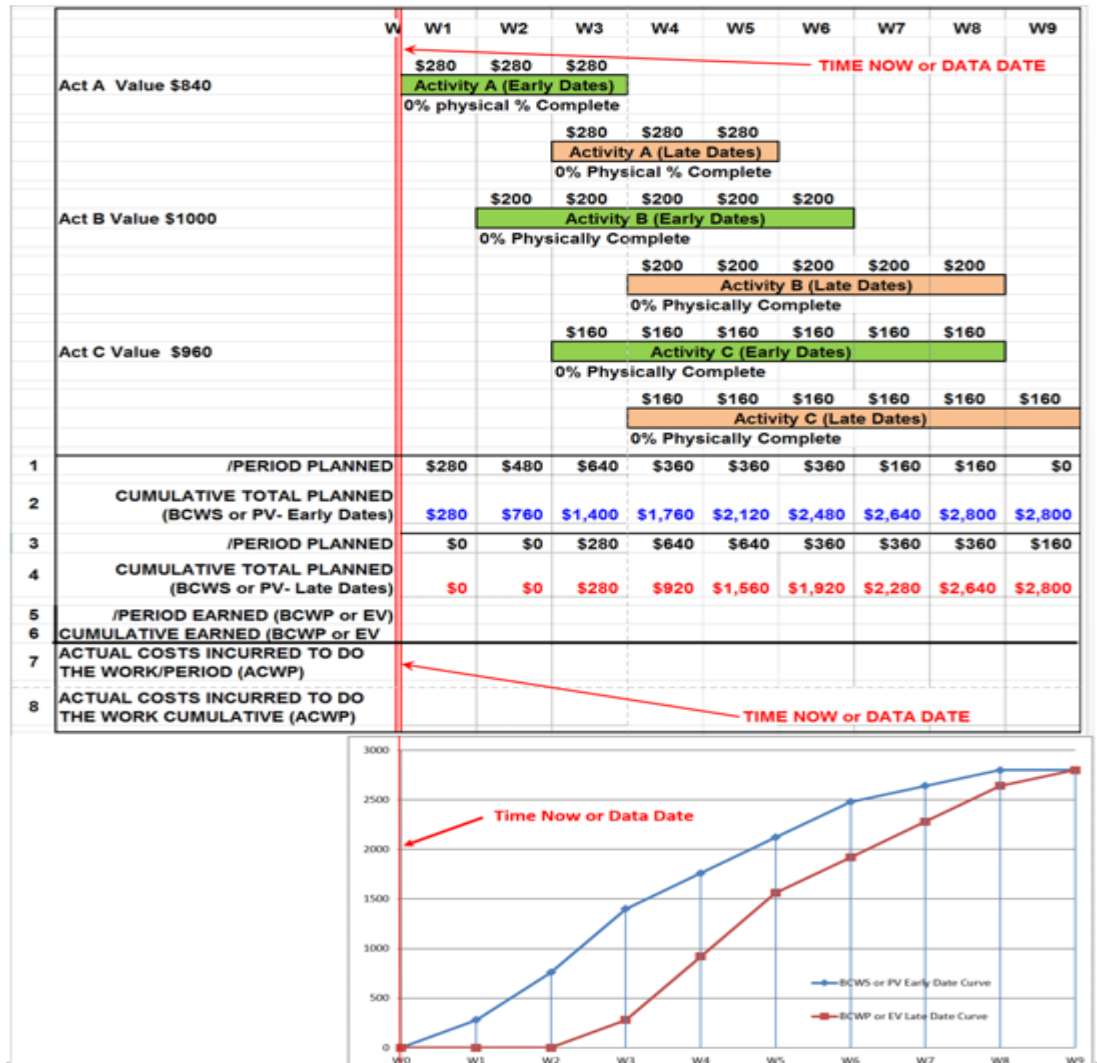
¹⁷ U.S. Government Accountability Office. (2015). *GAO Schedule Assessment Guide Best Practices for Project Schedules*. Best Practices checklist (pp73-74).

Step 8 Submit Schedule for review and approval

- After completing up to Step 7, the schedule shall submit for owner review and approval.
- If the schedule is approved, convert the schedule to Performance Measurement Baseline (PMB) for the performance measurement of the project.
- If not approved by the owner, then address the comments given on the schedule and resubmit it.

Step 9 Baseline and Communicating the Schedule

- After conducting all the above steps, a schedule shall submit to the owner for review and approval. Once after the approval from the owner, the contractor can convert the schedule as Performance Measurement Baseline (PMB), and progress update shall be compared against the PMB. Along with the schedule, a narrative report/schedule basis document shall be submitted that includes the below attributes;
 - describes the logic of the network;
 - describes the basic approach to managing resources; provides a basis for all parameters used to calculate dates;
 - describes the general approach to the project;
 - defines how to use the schedule file; describes the schedule's unique features;
 - describes the schedule change management process;
 - contains a dictionary of acronyms and custom fields;
 - gives an overview of the assumptions and ground rules, including justification for - calendars, - lags, - date constraints, - long activity durations, and - calendars and working times;
 - describes the use and assignments of resources within the schedule in appropriate detail;
 - describes the critical risks prioritized in a schedule risk analysis as well as schedule contingency;
 - discusses the derivation of the critical paths, longest path, and total float for the program;
 - is considered a living document that reflects updates to the baseline schedule.
- Any changes to the baseline schedule are reviewed and approved according to the change control process.
- Schedule progress is recorded regularly, and the updated schedule shall submit to the owner according to the reporting period.
- The scheduling option available in scheduling software is retained logic, progress override, and actual dates. Retained logic shall use to run the schedule.
- When the schedule updates progress, out of sequence activities shall generate there. The out of sequence activities in the schedule shall correct by fixing with proper logic.



Properly Cost Loaded Performance Measurement Baseline (PMB)¹⁸

OWNERS PMO DEPARTMENT Step 1. Review the Proposed Baseline

When received, the submitted schedule from the contractor, PMO, has to review the proposed baseline in compliance with scheduling best practices, which mentioned the scheduling specification and scheduling manual.

OWNERS PMO DEPARTMENT Step 2. Accept/Reject the Proposed Baseline

Based on the review on the submitted schedule, PMO DEPARTMENT accepts or rejects the schedule. If the schedule accepts, then convert it as the “APPROVED BASELINE” for the

¹⁸ Guild of Project Controls. (2015, November 2). GUILD OF PROJECT CONTROLS COMPENDIUM and REFERENCE (CaR). Retrieved from <http://www.planningplanet.com/guild/gpccar/introduction-to-managing-project-progress>

performance measurement. If the PMO rejects the schedule, then transmit it to the contractor to incorporate the suggestion/comments for the rejection.

OWNERS PMO DEPARTMENT Step 3. Authorize Work to Commence

Acceptance on the schedule the PMO gives an official notification for the commencement of work.

OWNERS PMO DEPARTMENT Step 4. Review Monthly Progress vs. Plan

When the works progress, the contractor submits monthly/weekly progress reports for the PMO review and PMO's responsibility to make a comparison with the "APPROVED BASELINE" for the performance measurement.

OWNERS PMO DEPARTMENT Step 5. Accept or Require Remedial/Corrective Actions

Based on the monthly/weekly report's review, then feedback shall give by the PMO for acceptance of the report and advice the Contractor /Project Team any corrective or preventive actions required to perform on the schedule.

OWNERS PMO DEPARTMENT Step 6. Approve Progress Payments based on Earned Value

PMO responsibility to approve the progress payments of the contractor based on Earned Value

OWNERS FINANCE/ACCOUNTING DEPARTMENT Step 1. Record Approved Payments in Accounts Payable

By using "Chart of Accounts," the Accounting Department should record the Approved Progress Payment of the Contractors. For, e.g.;

Account #	Account Title
1	Assets
40	Liabilities
69	Equity
96	Revenue
113	Expenses
114	Expenses Classified By Function
115	Cost Of Revenue
116	Cost Of Goods Sold
117	Cost Of Services Rendered
118	Other Costs Of Sales
119	Selling, General, Administrative
120	Selling And Marketing
121	General, Administrative Expenses
122	Other Operating Expenses
123	Doubtful Accounts
124	Expenses Classified By Nature
125	Merchandise, Material, Supplies And Utilities
126	Employee Benefits
127	Services
128	Rent, Depreciation, Amortization And Depletion
129	Taxes And Fees
130	Other Expenses
131	Other Revenue, Expenses, Gains And Losses
148	Income Tax (Benefit)

GAAP OWNER’S “Chart of Accounts” During Project Execution¹⁹

During the project execution period, the Finance Department has to record liabilities such as accounts payable based on progress payment and capture periodically all other overhead costs incurred to the project. For Eg.; Owner’s Project Manager/Project Controls team, Security, QA/QC, Owner-Supplied Equipment or Materials.

OWNERS FINANCE/ACCOUNTING DEPARTMENT Step 2. Pay Contractors Promptly

According to the Approved Progress Payment Finance Department shall pay the invoices to the contractor as per the agreed payment terms.

¹⁹ Giammalvo, P.D. (2018). Mapping ERP “Chart of Accounts” to Building Information Modeling Software Using Omniclass Coding Structures and Activity Based Costing/Management- A CONTRACTOR’S perspective, PM World Journal, Vol. VII, Issue IV – April.

OWNERS FINANCE/ACCOUNTING DEPARTMENT Step 3. Upon Completion Record Asset Value and Start Depreciating the Asset

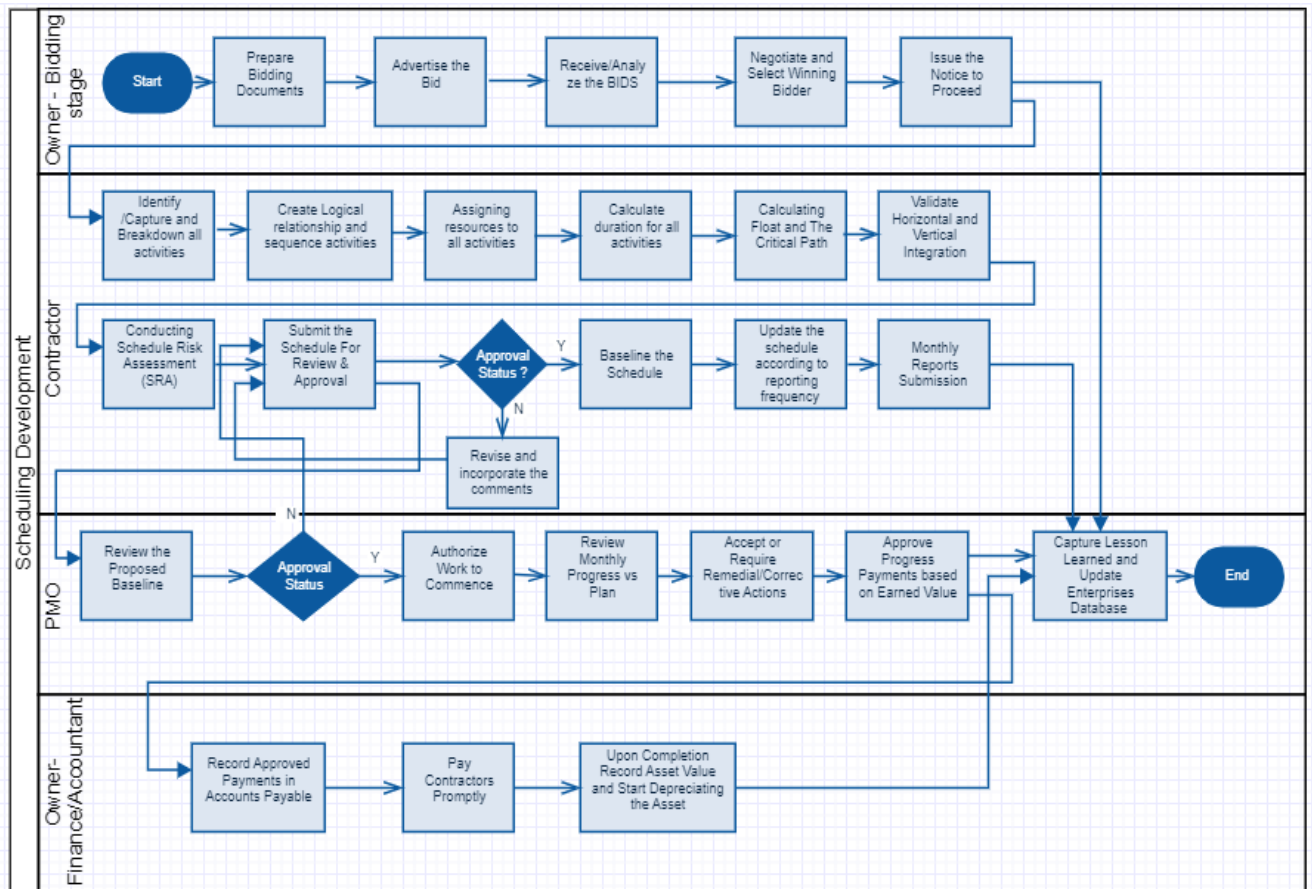
It is the responsibility of the Finance Department once the work is completely accomplished to record the Asset value in the company database.

Then start to record the Depreciation of Asset and further report the break-even point when it covered all expenses to the project.

Reference

- GAO Schedule Assessment Guide (2015), Best Practices for Project Schedules, United States
- GUILD OF PROJECT CONTROLS COMPENDIUM and REFERENCE (CaR). (2015, November 2). Retrieved from <http://www.planningplanet.com/guild/gpccar/purpose>
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Step 4- PROCESS FLOW CHART



Flowchart Scheduling Procedures Bidding to Asset realization ²⁰

Step 5- BENEFITS OF SOP IMPLEMENTATION

In this SOP Scheduling practices that to be followed by the Owner company from the bidding stage to asset realization and the contractor from project initiation to closing are narrated. The procedures depicted in the SOP is relevant to follow by the Owner and the contractor to obtain the desired result. The owner has to include the scheduling specification and scheduling manual with bidding documents, and that should advertise with the tenders. In the bidding stage inclusion of scheduling specification and scheduling, manual will give the bidder a clear understanding of the procedures that the bidder should follow from the bidding stage, after awarding the contract and until the end of the project.

After the award of the contract, the contractor shall submit the schedule, which should be complied with best practices for the schedule development and communication, and the contractor cannot show any non-compliance since it is a part of the contract. The SOP shows the procedures follow by the Owner PMO department deals with the schedule from the contractor

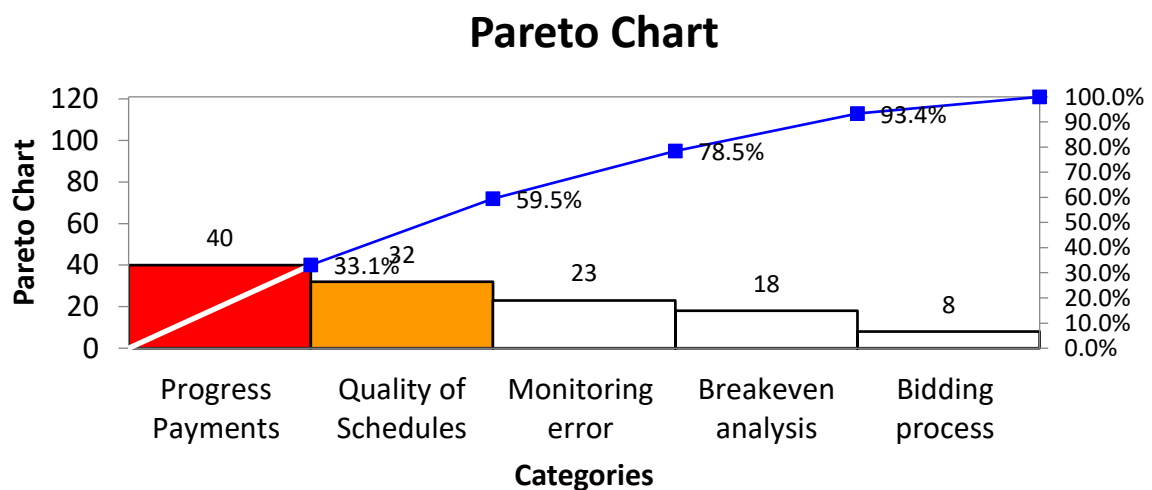
²⁰ By Author

and which gives an outline for their activities need to perform. Thereby the PMO department can define the involvement in the process since they are the audit authority in this context. PMO Department should have competency in deals with schedule and earned value analysis. Since the monthly progress payment based on the Earned Value (BCWP or EV) obtained by the contractor.

Then the Owner Finance Department plays the remaining roles the releasing the payment promptly to the contractor according to the agreed payment terms. Further, their responsibility to capture all actual overhead expenses, liabilities during the project execution period. When after the construction phase, the asset turned over to operations that the actual cost of the project turned as an asset and started to determine the depreciation on the asset. Finally, capture the lessons learned from all departments and archived in the enterprise's database as a historical record for future reference.

Step 6- DEMONSTRATE USING BEFORE PARETO ANALYSIS

Once SOP is implemented in the organizations, we can realize the transitions which is expected. A Pareto chart analysis will show what is the case before using this SOP. The Pareto law tells us 80% of the problems come from 20% of the potential causes. Through an audit, find out the facts which are failing due to lack of effective SOPs in usage, as in the figure below.



Pareto Analysis²¹

These problems, which show in the Pareto chart, can reduce by using an effective Standard Operating Procedure (SOP) in place. There is a limitation to perform “After Pareto analysis.” when the paper is writing. Once the written Model SOP in the paper shall implement in the

²¹ By Author

Owner organizations and a survey to conduct for the After Pareto analysis. Then a comparative study with the Before and After Pareto analysis and demonstrates how effectively it works.

CONCLUSIONS AND RECOMMENDATIONS

The purpose of this paper to find answers;

1. What are the contents to be included in the SOP?
2. How to develop a Standard Operating Procedure (SOP) for scheduling that people will READ and FOLLOW?

The contents in the SOP were researched, and according to the adopted template, all relevant matters included to make an SOP effective.

Based on the research, it is identified that an effective SOP will read and follow by the people. Incorporating adequate step by step procedures which exactly to follow the process in schedule development from end to end, and which refers to “Best tested and proven practices” in scheduling. Such a practice to follow an effective SOP will enhance the performance of the organization in the specified tasks.

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