

Scheduling Best Practices

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The fourth article in the Scheduling Best Practices series is “How Many Activities are Right for Your Schedule”. Our colleague, Marc Johnson an Executive Consultant in Warner’s Disputes Resolution Group, shares his experiences in the process and power industries. Marc has over twenty-eight years of experience in risk management, cost control, planning and scheduling, estimating and procurement. He provides the benefit of many lessons learned in chemical and polymer, hydrocarbon, pharmaceutical, power generation, and environmental and infrastructure facilities. *Andy Mottrom*

How Many Activities Are Right for Your Schedule

by Marc Johnson, Executive Consultant

The above mentioned subject is certainly a “hot bed” for varying opinions relative to this subject matter without any definitive resolution in sight. Nonetheless, it is almost certain that the three activity schedule of start project, continue project and complete project is almost always an inappropriate number of schedule activities by which to manage, monitor, adjust and complete the Work on-time. While it sounds as if one is going “out on the limb” in making the above statement, we all have heard at least one project manager or superintendent make that statement that all he needs is a three activity schedule; especially in the infancy of planning and scheduling vs as we know it today.

In determining the right number of activities for your schedule, certain considerations must be evaluated that determine the scheduling approach for the specific project at hand; thus lending itself to defining and quantifying a reasonable and manageable number of schedule activities. Such considerations/influences include:

- Project Size;
- Contract Requirements;
- Scope of Work;

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- Construction Execution Approach;
- Project Work Breakdown Structure;
- Project Budget Appropriated to Planning and Scheduling; and,
- Other Reports and Useful Project Data.

The follow on discussion will address each of these considerations/influences on number of schedule activities and how they play in determining how many activities are indeed appropriate for your schedule. While these will be discussed individually, they should be considered collectively.

Considerations/Influences that Determine the Number of Schedule Activities

Project Size

Project size refers to the dollar value of the Project or the portion of the Project which the contractor is to perform. As the Project size or dollar value increases, the number of schedule activities required to depict the entire scope of work, its timing, construction approach and status typically increases. For example, a schedule for a ten million dollar project typically has a substantially fewer number of activities than a schedule for a one hundred million dollar project.

That is not to say that the ten million dollar project couldn't have close to the same number of activities but it does say that if it did, the level of detail would not be manageable or prudent given the other project parameters.

Contract Requirements

As planning and scheduling has evolved over the last forty years, it is notable that Engineering, Procurement and Construction (E-P-C) project planning and scheduling requirements have become more sophisticated and rigorous.

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Today it is not uncommon to see requirements as to the Level of Detail of the Project plan and schedule, and multiple schedule requirements including look ahead, summary and executive summary schedules. It is important to recognize that the number of activities required to satisfy a contract requirement for a Level IV schedule are certainly higher than what would be required for a Level III schedule.

Additionally, the frequency of updates to the Project schedule, have increased. While in the past, the mid-size to large project were required to be updated monthly, the trend observed lately is that this is now weekly. Hence, this magnifies the importance of developing a schedule that fits the Project with a manageable level of detail.

In some cases, maximum length activity durations are stated. This too has an influence as to the number of activities contained in the schedule network. In most instances this is a beneficial requirement as activities with significantly long durations are difficult to readily determine if the projected completion date is reasonable.

These contract requirements also state that all engineering, procurement, construction and start-up/commissioning activities must be depicted on the project schedule.

All of these requirements influence the quantity of schedule activities and must be considered in determining the appropriate number of schedule activities.

Scope of Work

Inherent in the process of schedule development is that the Project schedule must reflect the entire scope of work. The number of activities that it takes to depict the Work within a manageable level of detail is the appropriate amount of activities. These activities must be identifiable and clear as to the work being performed, be progressable, and able to demonstrate Project status.

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Construction Execution Approach

A schedule that does not depict how the Project is being built in the field does not support the project in the manner for which it is required. The number of schedule activities it takes to clearly depict the construction execution approach so that it is apparent in the schedule must be considered as a scheduling best practice and an influence on the number of activities.

Project Work Breakdown Structure

Typically, the contractor develops a work breakdown structure for the Project. The project complexity, contract requirements, and contractor's own work breakdown practices/corporate preferences all influence the number of scheduling activities that are employed in preparation of the Project schedule.

The more complex the project, the more complex the work breakdown structure, the more schedule detail and activities required.

Project Budget Appropriated to Planning and Scheduling

Consistent with the project size and Contract requirements is the contractor's budget to provide planning and scheduling services throughout the duration of the Project. Given the above, the activity size of the schedule should be manageable within the budget. In other words, the schedule should be able to be prepared, monitored, updated and controlled within the man-hour/dollar limitations of the budget estimate.

Other Reports and Useful Project Data

In some cases other project reports or data can be used as schedule activity support detail instead of duplicating the same information provided by the report as Project schedule activities. One of the best examples of this involves the procurement phase of a project.

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Typically, when scheduling and monitoring the procurement of engineered tagged items such as mechanical equipment, electrical equipment and instrumentation, a detailed tracking of the activities generally involves the monitoring of as many as fifteen or so activities per requisition commencing with specification development, various approvals/revisions, purchase order, vendor drawings, inspections, and delivery to the project site. Most E-P-C contractors have various project reports that track this information and the reports are updated regularly. By employing the use of this report, these activities can be grouped and summarized into a smaller number of activities for scheduling purposes, thus keeping it to a reasonable level of detail. The schedule can be progressed utilizing the reports which generally come from the design disciplines and the procurement department to ensure an accurate schedule forecast.

Conclusion

While there is no specific number of activities that one can say is all you need to have for your specific project schedule, it is with great certainty that the answer is more than three. When preparing your project schedule, there are indeed certain considerations and influences that must be considered in determining the appropriate schedule activity count. These considerations and influences include: project size, contract requirements, scope of work, project work breakdown structure, project budget dedicated to the planning and scheduling effort and the ability to use other data in support of schedule detail.

The bottom line is that the number of activities that are right for your schedule is a finite number that depicts the complete project scope of work, the construction execution approach, has the sufficient activity detail that satisfies the contractual requirements, and whose activities are identifiable, progressable and clearly depict project status.