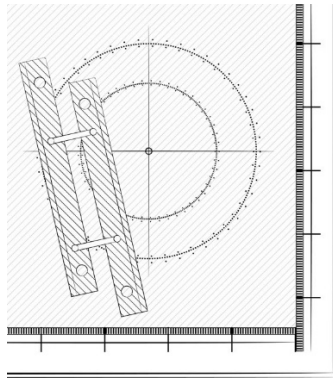


JEREMIE AVEROUS

With Thierry LINARES

Advanced Scheduling Handbook for Project Managers



A Practical Navigation Guide
on Large, Complex Projects





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Chapter 1:

Scheduling Golden Rules

The main objective of Scheduling management is to enable the Project Manager and its management to take decisions derived from an accurate current knowledge and understanding of reality, with the aim of reaching a successful project outcome.

From this broad objective, a number of Golden Rules describe the basic requirements of Schedule Management.

In all instances, 20 Golden Rules need to be followed when it comes to Project Scheduling.

1. **Accountability:** Budget Owners are ultimately accountable for their schedule (including update and forecast). Planners support and challenge Budget Owners. The Project Manager is ultimately accountable for the entire Project schedule and shall dedicate sufficient time and effort on this essential navigation tool.
2. **Project Scope, Cost & Schedule consistency:** the Project schedule is at all times consistent, comprehensive and intrinsically linked with the two other sides of the Project Triangle: the Project Scope, and the Project Cost. The Project Scope is described in the main Contract or specification, including Change Orders and approved Changes. In particular, the *Project Cost Model* (including cost time-phasing consistent with the Project schedule) is continuously updated by the Project Control team consistently with the schedule.

3. **Align with the Project strategy:** in addition to remaining consistent with cost and scope, the schedule responds to the Project strategy: contractual strategy with the Owner/ Client and suppliers, decision-making logic, and more generally, execution strategy of the Project and key success drivers.
4. **Develop schedules from the top down:** to ensure alignment with the Project intent and design of best execution strategies, develop schedules from the Project strategy and objectives i.e. from the top of the scheduling hierarchy, and not from Detailed Functional Schedules.
5. **Reflect reality candidly:** The schedule must reflect candidly the reality of the Project progress status and associated re-forecast, however difficult or annoying this reality could be.
6. **Immediacy principle:** It is essential to reflect significant new schedule variances as soon as their occurrence is known (e.g. internal or Owner's instruction to proceed), at least in terms of order of magnitude, even if their exact final duration has not been fully assessed. Subsequently, immediate notification of the other Party to the contract is also essential to protect one's commercial interest.
7. **Implement a Proper Schedule hierarchy and formats.** Different scales, details level and views are suitable for different usages. Build a consistent schedule hierarchy and make good use of the different detail levels. Use different schedule views for different purposes and users.
8. **Limit detail and complication of the Integrated Project Schedule.** It should focus on functional interface and critical areas. 2,000 to 2,500 activities would be a maximum, with an emphasis on links between functions, and a proper balance between Project phases and functions. Choices will have to be made. It is linked to the necessity to have a comprehensive schedule hierarchy to respond to the needs of all Project contributors and stakeholders.

9. **Increase the schedule robustness and resilience instead of minimizing the Critical Path.** Increase the float of non-critical sequence of events to ensure they will not become critical, and introduce allowances and a contingency managed by the Project Manager.
10. **Float and Buffers are to be owned by the Project Manager.** Float knowledge and ownership should not be spread through the Project team relinquishing effective control. It is an essential Project management tool.
11. **Fight the 'virtual' float creation.** When a schedule moves to the right because of delays, in effect it creates float for all activities that have to be performed. Avoid this pernicious effect by sticking to the discipline of Convergence Planning and updating your Integrated Project Schedule so that this 'virtual' float is not unduly created where it should not. Introduce explicit buffers if required that remain under the control of the Project Manager.
12. **Be disciplined in updating the Convergence Plan.** Don't change the dates of the gates and only show deliverables completed when they are 100% complete. And when there are deviations, actual or forecast, the Project Manager and the supporting organization must take the relevant recovery actions.
13. **Update the schedule bottom-up** based on the Project extended team's knowledge.
14. **Check regularly the quality of the schedule update** to make sure decisions are taken on a robust basis.
15. **Base the schedule re-forecast on a root cause analysis,** not a simple bottom up approach. Use Earned Schedule as a useful challenge. Don't forget to reforecast accordingly future activities that would be impacted by the same root cause.
16. **Reforecast future activities based on the knowledge acquired from ongoing and past activities.** This is too often forgotten in schedule updates.

17. **Accuracy over precision:** schedule updates should be accurate but not necessarily precise. This important distinction should focus the effort of the scheduling team (ref. to Chapter 7).
18. **Ensure full traceability of all schedule logic changes.** This will help to support or defend against future claims.
19. **Raise Extension of Time requests as soon as they are known,** through the proper channel as described in the Contract. This will avoid cumbersome debates in hindsight and will ground compensation decisions in current reality.
20. **Understand and compensate for the known psychological biases at play in Project schedules.**

Major psychological factors at work in project schedules

- **Parkinson's law:** work tends to fill the time available [if the task is planned for longer than it would take, work will still take at least that duration]
- **Student's syndrome:** if people have time to do a task they will always wait for the last possible moment to start
- **Commitment syndrome:** people will always 'pad' their duration estimates when they are asked (consciously or unconsciously) to commit to a duration. Hence they announce durations that can be much longer than what is achievable.
- **Planning Fallacy:** an optimistic bias on the duration of own's future tasks, irrespective of benchmark data on past duration distribution of similar tasks (Daniel Kahneman, Amos Tversky).
- **Lack of calibration of estimates:** when people have not calibrated their estimates comparing to actual durations, they will tend to be pessimistic (conservative) for usual tasks and optimistic for unknown tasks.

Chapter 2: The Schedule Hierarchy

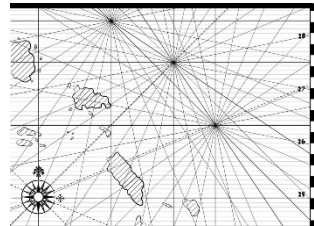
Chapter Key Points:

- Don't put all the details in a single schedule but implement a schedule hierarchy with various levels of details.
- The Integrated Project Schedule linking all E-P-C activities is the key piloting tool for the Project. It should not be too detailed and should be focused on the inter-relationships between functions.
- The Convergence Plan allows for a higher level control and communication with the team.
- Detailed schedules for specific functions or suppliers are required to have a sound baseline and track the details of the work.
- It can be required sometimes to operate with different schedules for different stakeholders. This should be avoided for the Integrated Project Schedule, and is permissible for lower level schedules within a strict framework.

Introduction

Project schedules are a bit like paper maps: depending on the usage you would not use the same scale and the same level of details. A 1/25,000 map is good for walking around but unusable for driving or flying; conversely a 1/10,000,000 map is good for looking at optimizing an inter-continental trajectory but not so much for local navigation.

With the scale comes a level of details that differs.



Oceangoing vessels are required to carry a full suite of nautical charts of various scales, complemented by books that give details as to navigational requirements and harbour details. Notices to Mariners, in addition, give updated information.

The Project Manager should focus on the overall route strategy and not spend time on the detailed Project maps, except when it comes to prepare a specifically sensitive situation such as a coast landing. Other participants to the Project should look into more details and should have higher resolution maps.

Like it is absurd to believe that a single map could be used for all phases of navigation, it is absurd to believe that a single schedule with the finest level of detail will do the job on a large Project – and for all contributors. This Chapter explains why and describes how to build a consistent hierarchy of schedules to keep control of the Project.

Recommended Schedule Hierarchy Overview

Different schedules are thus meant for different uses and different users. There are three main schedule levels:

- **Strategic level**, where the schedule provides an overview allowing long-term decisions and orientations: financing principles, contract placements, taskforce and key equipment localization and mobilization, etc.,
- **Project coordination level**, where the proper consolidation of available information from all project contributors (engineering capabilities, construction needs, external constraints, etc.) is performed. This allows logical Critical Path analysis, trending and reforecasting,
- **Operational level**, where the priorities decided by management are cascaded down in a detail that only the specific functions can have a real control on. This allows the management of the work at the lowest granularity. From those details, the operational level also allows to feed back up the

necessary statistical data for trends and reforecasting, as well as progress measurement.

Conventional Schedule Hierarchies

When executing a large and complex Project, a number of schedules are used with different levels of detail and scope. These different schedules need to remain consistent.

There are a number of more or less standardized schedule levels (ref. for example to AACE international's recommended practice):

- **Level 1:** high level schedule showing the major components and contractual milestones of the Project. It is generally a 1-2 pages schedule consisting of less than 100 activities,
- **Level 2:** a schedule that can be more detailed than the level 1, in particular regarding milestones and trade/ function-specific activities. Depending on the reference there might be a requirement for activity linkages and identification of a high level Critical Path, however generally this schedule is not logically linked. It is typically a schedule of less than 300 activities and is in effect rarely used by the Project manager. It can be used as a 'sign-off' schedule for contractual purposes,
- **Level 3: the Integrated Project Schedule:** a schedule that has a level of details and the adequate linkage so as to enable the identification of the Critical Path of the Project. It is used to monitor and control effectively the execution of the Project. It can be resource-loaded for specific critical resources. This allows for resource utilization analysis or resource-levelling if required,
- **Level 4-5: detailed work schedules** that show only one particular area of Project execution. They can be by trade/ function, work phase or by work area and are designed to be used directly by the site or function managers for their day-to-day execution planning, progress tracking and reporting. They should be resource-loaded for those critical resources to allow for resource utilization analysis or resource-levelling if required. They are not

necessarily developed using pure scheduling tools or logically linked, and can be shown in other systems e.g. document register.

This hierarchy of schedules is very general and does not relate to the usage made by the Project Manager of these schedules. Levels 1 and levels 2 are generally only used by senior management or for contractual purposes.

Appendix 5 explores in more detail the different schedule levels and how schedule levels need to be linked to the levels of the Project's Work Breakdown Structure (WBS).

Project Value Delivery's Recommended Project Execution Schedule Hierarchy

From the Project manager's perspective, during Project execution, the **'Integrated Project Schedule'** (level 3) is the key document. We discuss later the appropriate characteristics and level of detail of such schedule. However it is also important to keep a high level view of the entire Project schedule that can fit on one page, and ideally, shows a good representation of the main workflows, where they are supposed to converge, and of the most critical deliverables. This is the **'Convergence Plan'**, which has the advantage on being a better-adapted tool for complex projects' management than simple higher-level roll-up schedules.

The actual hierarchy of schedules recommended by Project Value Delivery to be used by the Project Manager during execution is thus the following:

- **Convergence Plan** – a graphical representation of the Project workstreams, convergence points, and key deliverables. It does not include linkages. It serves as a high level overview and is updated regarding progress. It is posted in the Project area for all to see and to monitor as part of Visual Management. On a large Project the Convergence Plan contains around 100 to 150 key deliverables for the entire Project,
- **Integrated Project Schedule** – a fully linked schedule covering the entire Project execution scope with an adequate level of detail to take decisions at

the Project Management Team level and identify the Project drivers. It also remains sufficiently high level to still allow agility to cater for changes due to unexpected circumstances and ensure proper, accurate update and forecasting on a monthly basis. In practical terms, this means that the Integrated Project Schedule should aim to have a size of 2,000 to 2,500 activities (without counting milestones etc.)

- **Simplified Project Schedule** – a fully-linked schedule covering the entire Project execution scope with 200 to 400 activities, that covers the Project's main drivers and interface points. It is not a level 2 schedule as per the usual definition because it is fully logically linked, and for that reason cannot also be just a summarized view of the Integrated Project Schedule. It is mainly used for scenario planning and Schedule Statistical Analysis. It may also be used as a support for Extension of Time negotiations at management level. It is maintained in parallel to the Integrated Project Schedule during the course of the Project,
- **Detailed Functional Schedules** – schedules or other tools involving delivery dates, that do not cover the entire Project scope but present much more detail as to the delivery of those scopes, down to the elementary deliverable as appropriate. They should be resource-loaded at least for critical resources to allow for resource utilization analysis or resource-leveling if required.

This hierarchy of schedules is summarized in the figure on the next page.

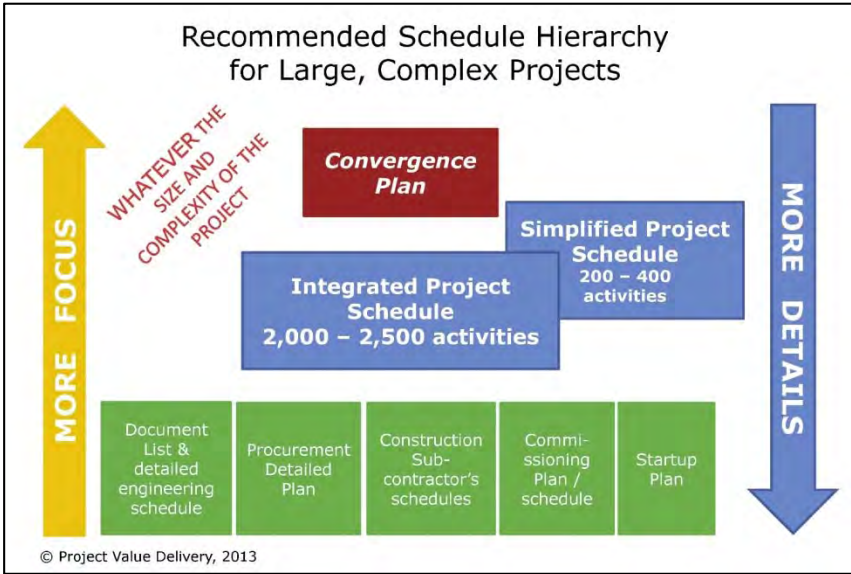


Figure 1: Recommended Schedule Hierarchy for Large, Complex Projects

Conventional levels	PVD's recommendation	Benefits
Level 1	Convergence Plan	A tool focusing on convergence issues rather than just a roll-up with activities covering the entire Project.
Level 2	Simplified Schedule	Contrary to usual "roll-up" level 2, a fully linked simplified schedule
Level 3	Integrated Project Schedule	Limit the size of the level 3 schedule to make it more accurate and agile
Level 4	Detailed Functional Schedules	Detailed schedule per function with substantial additional information compared to the Integrated Project Schedule.
Level 5	Further detailed schedules (as required)	Detail down to the single deliverable or basic task

Functional Usage of the Different Schedules

The different schedules in the schedule hierarchy respond to different functional needs. The table below summarizes this functional analysis.

	Usage for PMT	Internal Communication	External Communication
Convergence Plan	Project strategic planning, float monitoring, prioritisation. Key decision points.	Overview communication to team.	Overview communication to Senior Management.
Simplified Schedule	Schedule Statistical Analysis. Scenario analysis at PMT level.	Overall mobilization plan by operational center	Extension of Time explanation and presentation. Scenario analysis. Possible contractual schedule
Integrated Project Schedule	Progress monitoring. Critical Path identification. Float measurement and monitoring. Interface between functions and with stakeholders. Decision points. Schedule forecast.	Progress monitoring. Critical Activities identification. Interface between functions. Schedule Forecast.	Progress monitoring. Interface with free-issued items / stakeholders Schedule Forecast Extension of Time analysis and justification
Detailed schedules (1)	Support to analysis. Resources review and planning.	Detailed work assignments within the functions. Resource review and planning.	<i>Not applicable (except to support forensic analysis)</i>

(1) Detailed schedules can also be the Integrated Schedules of individual contractors and suppliers.

The Convergence Plan

In Projects there are general a few critical convergence points where many deliverables, parts and equipment must meet in a single location at the same time. In Complex Projects, failed convergence (the unavailability of one or several key deliverables at the moment required at a key convergence point) is the most common source of dramatic

consequences on the Project outcome, in terms of delays and cost overrun. It needs to really be avoided because of the disruption it creates. Sometimes, the unavailability of very simple parts can delay a billion dollar Project by several weeks. The Project leader and his team needs to be aware of this effect and focus on avoiding such an occurrence in particular if it is unanticipated.

The Convergence Plan should be the first plan to be established upon mobilization of the Project, within the first few days (with the proviso that exact dates can be finalized later after the Integrated Project Schedule has been approved). Its development will allow a meaningful conversation amongst the newly mobilized Project team about Project drivers, allow identification of key missing items in the plan, and otherwise help to drive the first critical activities until such time that the baseline Integrated Project Schedule is established (which will take up to a few months on a large Project, depending on the maturity of the schedule prepared at tendering/ feasibility stage).

The Convergence Plan is a proven key tool for the Project Management Team to identify and monitor the critical deliverables and convergence points of the Project. It has been developed initially in the automotive industry where it has been proven to ensure timely delivery of Projects – provided discipline is maintained in its implementation.

To achieve a proper convergence planning, the following logical steps need to be followed:

- Prepare a meaningful Convergence Plan:
 - Identify the key workstreams of the Project and where they converge,
 - Identify what are the key deliverables that are required for Project delivery (those without which the Project could not be delivered) and put them on a timeline, focusing on those early deliverables that are required in the first half of the Project,
 - Group these deliverables around critical convergence points of the Project,
- Monitor and take action on deviations:

- Monitor regularly the effective convergence of all those deliverables,
- Take massive actual action in case of deviation that might become critical.

It looks simple but is not so easy. In Chapter 3 we detail some practical recommendations to ensure the success of this process, both for at planning stage and for its ongoing utilization.

The Integrated Project Schedule

The Integrated Project Schedule is the schedule describing the entire Project scope. It is used by the Project Manager for forecasting and decision-making.

The Integrated Project Schedule needs to:

- Be fully linked with proper sequencing of activities and with minimum artificial constraints so as to enable determination of the Critical Path and ensure that actual progress (delays, completion in advance) will transfer into the network of future activities and impact all dates including the Project final delivery date,
- Include activities from all trades/ functions in a just sufficiently detailed manner to drive these trades' more detailed planning; and show a balance between all the Project functions such as engineering, procurement, construction, commissioning,
- Be adequately weighted for proper progress monitoring,
- Be adequately resourced for resources critical to the Project,
- Be updated to reflect at all times (or, at least once a month) the latest status of physical progress and the reforecast of the current and future activities,
- Enable changes to reflect actual execution changes, as well as scenario analysis to support decision-making.

Chapter 4 describes in detail how to develop an Integrated Project Schedule. The main highlights are:

- Ensure that the Integrated Project Schedule responds to the needs of Project execution and is aligned with the Project goals and execution strategy,
- Limit the size of the Integrated Project Schedule so as to keep it manageable for updates and changes,
- Ensure the Integrated Project Schedule is properly focused on the interfaces between the functions and is balanced between them,
- Ensure the Integrated Project Schedule is properly coded to allow Earned Value Management when appropriate, as well as to produce the different views needed by different Project contributors,
- Ensure the Integrated Project Schedule is properly resourced when resource availability is a constraint for Project execution.

The Simplified Project Schedule

One of our key recommendations is to produce a representative Simplified Project Schedule and update it regularly during Project execution. This schedule needs to be maintained entirely consistent, at all times, with the Integrated Project Schedule.

Producing the Simplified Project Schedule

It takes time and effort to produce a meaningful Simplified Project Schedule. Because it needs to be logically linked, and avoiding complicated Start-to-Finish links or other planner's tricks so as to be usable for Schedule Statistical Analysis, it cannot be just a filtered or rolled-up higher-level view of the Integrated Project Schedule.

It cannot either be just limited to a representation of the (current) Critical Path, because the goal is to identify those other near-critical or currently remotely critical chains of activities that might suddenly drive the entire schedule.

Because it requires an in-depth understanding of the Project's actual drivers, producing the Simplified Project Schedule cannot be left to the Project planners alone. It

requires the Project Manager's involvement and engagement, together with the key Project team members, preferably in a workshop. The exercise will actually be found to be very worthwhile at the start of the Project as this cognitive exercise will allow the team to have a deeper understanding of the success factors for the Project.

Maintaining the Simplified Project Schedule

The Simplified Project Schedule once produced can be updated regularly by the planning team, consistently with the latest Integrated Project Schedule update. Because the Simplified Project Schedule only consists of 200 to 400 activities, which might not be activities or groups of activities of the Integrated Project Schedule, the update is best done manually.

Using the Simplified Project Schedule

The Simplified Project Schedule is an asset for Project management. It is used to run Schedule Statistical Analysis that makes sense whenever needed (ref. Chapter 7). It can be used for quick scenario planning when issues arise that might require a re-baselining of the Project execution plan. It can be used to communicate on the reasons for a request for Extension of Time (ref. Chapter 12). Finally, it can be used as a communication tool with some stakeholders, in particular:

- The organization's management, who might even find useful to upload the Simplified Project Schedules of various Projects together as part of a consolidated portfolio or programme management schedule,
- Other parties to the Project who can use it as an easier way to understand the unfolding of Project events (authorities, lenders etc.).

The Lower-Level Functional Schedules

The lower level detailed functional schedules cover only a part of the scope, in a very detailed manner. They can be schedules linked logically or simply a set of activities or deliverables with associated dates (typically called a register).

Typical lower-level schedules include:

- An Engineering Master Document Register including the comprehensive list of documents to be produced, the associated forecast and actual dates (in large engineering organizations there can even be a fully linked detailed engineering schedule with all relevant documents and revisions, in particular when the engineering process is complicated, iterative and inter-related such as in process engineering),
- A Procurement plan including a comprehensive list of purchase orders and contracts for services, including associated bid, award and delivery dates,
- A Logistics plan (for remote sites) including logistics arrangement dates,
- A Construction schedule (possibly subdivided by area) detailing the construction activity details,
- A Commissioning schedule (possibly subdivided by systems) describing the detailed pre-commissioning and commissioning activities.

These detailed plans are often rolling plans with a high detail and accuracy of the coming weeks/ months and lesser detail and accuracy of later activities. They are generally produced and maintained by the personnel responsible for that particular area or function, who also directly ensure their update and use them for the planning of their resources. Planners can also be seconded to the functions / departments to help with the scheduling and maintain the consistency with the Integrated Project Schedule.

Interfaces between lower level schedules are guaranteed through the identification of interface milestones that can be found in several schedules including the Integrated Project Schedule. Key interface deliverables such as

Requisitions (between engineering and procurement), delivery dates / Required-On-Site dates (between procurement and construction), need to appear clearly in the Functional Schedules.

Maintaining Consistency in the Schedule Hierarchy

It is essential at all times to maintain consistency between the different schedules used in the Project. This works both ways:

- from the Integrated Project Schedule towards the lower-level detailed schedules when it comes to changes in Project strategy, scope or execution strategy, and the influence of other functions or of the progress of other related activities;
- from the lower-level detailed schedules towards the Integrated Project Schedule when it comes to updating based on the actual progress of activities, updated forecasts or changes in execution sequences.

Consistency at all times is important and needs to be ensured by the scheduling team. It should be one of their most important points of accountability. This requires a tight communication between the scheduling team and the functions and can be ensured by organizing daily or weekly regular meetings.

When Project Managers Use Different Schedules for Different Purposes

This is one of the dirty secrets of Project management. While theory and common sense calls for a single, consistent set of schedules, for management, political or commercial purposes Projects sometimes (actually, quite often) have to maintain different sets of schedules – or, worse, voluntarily leave inaccurate information in the main schedules.

Most schedule handbooks avoid this question, but it needs to be addressed: Project Managers need to know why it happens and what can be done and what can't be done.

The risk is to lose control over the Project by piling up inaccuracies or by using voluntarily skewed schedules for decision-making.

The following broad types of schedule ‘adaptations’ can be observed:

- The operational-related schedules are generally made challenging hence optimistic,
- The budget-related schedules are generally conservative i.e. pessimistic,
- Contractual-related tweaks might be inserted in schedules (depending on the contract type and the party).

The main effects that can be observed as being at the source of these different variations are:

- From the management perspective, specific functions such as engineering, construction, operations, etc. tend to challenge their teams with tighter schedules (or, seen in another way, use the ‘P10’ best-case schedules and durations). This is a very natural tendency because functional managers need to have ready resources and equipment for the next phase to avoid any stand-by (hence need a ‘soonest’ date) and generally, want to challenge their teams and avoid any complacency regarding the duration of activities,
- Management will generally show very voluntary mobilization and demobilization plans to challenge the teams, and to sometimes fit contractual requirements which might not be realistic,
- More generally, the Contractor’s or Owner’s internal schedule for specific resources or equipment shared between Projects might not fit the required dates for the particular Project. Depending on the situation, because of some stakeholders the Project may not want to show this constraint; or on the contrary it might be in its interest to show clear overlaps so as to foster a resolution of this availability conflict between Projects,
- Because of contractual strategies aiming at gaining advantages under the contract, contractors or

clients may show specific sequence of activities or dates in the schedules that they know are not exactly accurate with respect to their execution strategy and capabilities (the effect will depend on the contractual details and whether it is a lump sum or reimbursable contract, as well as on the window mechanisms for the mobilization of major equipment), or for Project completion,

- Other stakeholder requirement or constraints might dictate the production of different schedules which can be more or less optimistic.

The fact that several schedules might be used by different parts of the Project and for different purposes is not an issue by itself as long as the Integrated Project Schedule effectively reflects the expected unfolding of events. In any case it is not recommended to entertain parallel and conflicting Integrated Project Schedules in particular for long spans of time.

Best Practice for Multiple Schedules

The best practice for using multiple schedules is the following:

- Lower-level schedules can differ from the Integrated Project Schedule as long as differences are acknowledged at management level and the main interface points remain consistent (for challenging schedules a buffer should be introduced at the end that is owned by the Project Manager and which allows to tie it up with the Integrated Project Schedule),
- There can be variations from the reference Integrated Project Schedule produced for the sake of detailed scenario analysis, but they should be clearly considered to be non-applicable versions even if they can be used as the basis of discussions with various stakeholders. They should be clearly marked as scenario analysis schedules not applicable for Project execution,
- There should be only one reference Integrated Project Schedule, mostly in line with how the Project is expected to unfold; only small tweaks can be

acceptable for tactical purposes as long as they are known and acknowledged. The Project financial forecast needs to be consistent with the Integrated Project Schedule at all times, or any discrepancy clearly identified and tracked (for example as an allowance),

- Different schedules can be produced for different stakeholders depending on needs (including scenario plans) but should only be produced at a higher level (200-400 activities). It would be extremely cumbersome and resource-intensive to update in parallel a second 'ghost' Integrated Project Schedule and that should be avoided as much as possible. Still, there might be situations where that could be unavoidable but it should be avoided by maintaining a proper connection and trust relationship between Contractor and Owner/ Client representatives.

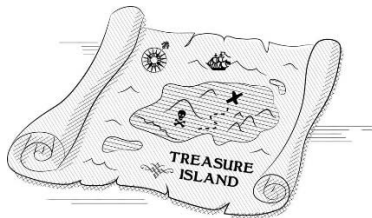
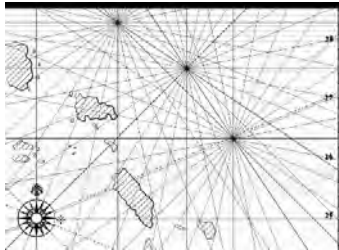
Conclusion

From the onset of the Project, it is essential to have a clear and unambiguous schedule hierarchy that will be used throughout the Project. Project Value Delivery's recommended hierarchy will suit all Large, Complex Projects.

- The Convergence Plan has shown a proven effectiveness in many Project-driven organizations as a high level Project management and communication tool, in particular for complex situations. It is easy to implement and extremely effective,
- The Integrated Project Schedule is the centrepiece of the schedule hierarchy. It needs to be limited in size, well linked with a focus on the interfaces between functions, and well updated and re-forecast,
- Maintaining a Simplified Project Schedule in parallel to the Integrated Project Schedule is an asset for the Project that should not be underestimated,
- Detailed functional schedules are underlying detailed schedules that are used to program and monitor the daily work of Project contributors.

It is also important to remain in control of the possible variances between the different schedules due to their different uses and stakeholders involved, and make sure the Project Management Team knows at all times what is the expected course of events to be used as a reference: the Project's single Integrated Project Schedule.

What is absolutely essential here is to use the right level of detail for the particular purpose of the schedule. Don't fall in the common trap of believing that more detail is better and try to produce huge schedules that you won't be able to update or change! Force yourself to fit each schedule in a given level of detail to have the right tools for the job you need to do. Make sure, in particular, that the Integrated Project Schedule is balanced effectively between functions and does not typically exceed 2,000 to 2,500 activities.





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