



White Paper 2015-14

How to Build a Proper Project Schedule Hierarchy

While having a single integrated schedule that includes all Project information is a good practice for very small, simple Projects, this is not a sustainable practice for Large, Complex Projects. In this instance, a Schedule Hierarchy must be built that will allow to track information at the right level. In particular, the Integrated Project Schedule that will be the prime tool of the Project Manager needs to avoid unnecessary congestion. This simple setup is not always understood or executed properly. In this White Paper we develop the practical concept of Schedule Hierarchy with the intent to make it a standard for Large Complex Projects.

At Project Value Delivery we firmly believe that tools should be suited to the use that is made of them, and to the needs of the user.

The Fundamental Schedule Levels

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. It is typically a schedule of less than 300 activities. It can be used as a 'sign-off' schedule for contractual purposes and is in effect rarely used by the Project manager,
- 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,

- 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.

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.

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 will discuss in other White Papers the appropriate characteristics and level of detail of such schedule. However it is also important to keep a high level view of the entire

Don't try to strategize your Project on very detailed schedules! It would be similar to planning a transcontinental trip on a very detailed local map!

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-levelling if required.

This hierarchy of schedules is summarized in the figure below.


Conclusion: have the right map for the right usage

A proper schedule hierarchy with schedules of adequate levels of detail for each usage is a key concept that needs to be applied more systematically in Large Complex Projects

Like it would be unwise to use large scale maps for detailed navigation, using excessively detailed maps for planning a transatlantic navigation would be quite ridiculous. Yet we observe that many Project Managers on Large Complex Projects still try

to strategize using very detailed schedules. A proper schedule hierarchy with schedules of adequate levels of detail for each usage is the adequate response to this issue. It is a key concept that needs to be applied more systematically in Large Complex Projects.

Find all these principles of Advanced Scheduling exposed in a comprehensive manner in our Handbook, Advanced Project Scheduling for Project Managers (2nd edition available in [Paperback](#) and [Kindle](#) versions!)



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Recommended Schedule Hierarchy for Large, Complex Projects



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