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How to Improve Project Forecasting: Taking Into Account Consequential Variances between Project Stages

Project Forecasting (in terms of cost and/or schedule) is often not sufficiently comprehensive and this leads to unpleasant surprises. More than the actual forecasting issues related to a single type of activity, consequential variances between different project stages and activity types are often ignored or underestimated. In this White Paper we investigate how to improve significantly project forecasting by dedicating sufficient attention to consequential variances.

In this paper, we will cover variances both in terms of Cost and of Schedule that occur in Large, Complex projects. Consequential variances are particularly important in this context as events in one area of the project can easily have rippling consequences on very different areas of the project.

What are consequential variances?

Project Controls is generally focused on identifying variances and reforecasting based on the observed physical progress or other parameters that drive the project forecast. While the forecast of the activity that is actually affected is not always of the expected quality, at least the direct consequences of the event are easily identified and considered for forecasting.

What is often not sufficiently considered is how important it is to always seek to understand the possible impact of a variance that is observed in an area of the project on other areas. Typical examples of consequential variances include:

- Late engineering leading to schedule delays and additional costs in the construction phase or claims from fabricators or suppliers (rework, claims for late delivery of Approved-for-Construction documents),
- Late procurement delivery leading to expensive re-sequencing of fabrication or operations,
- Late procurement delivery creating standby on operational assets and/or the need to incur higher costs for accelerated delivery (e.g. airfreight),
- Late placement of contracts leading to key contractors' inability to deliver at a later stage,
- Late fabrication leading to contractors' and construction delays and possible penalties,
- Etc.

Identifying and evaluating these consequential variances obviously require sound business understanding and elaborate comprehension of the ripple effects of any particular change to the project program.

The lack of consideration for consequential variances is a major issue in particular when the Project Controls team lacks experience

Beyond a sound Management of Change process

It is essential to determine for all significant deviations from the initial project baseline, what could be the consequences beyond the obvious. This requires a systematic assessment that is quite similar to the comprehensive assessment that must normally be done as part of the Management of Change process. However, variances are not really changes as per the Changes that are generally dealt with in the Management of Change process (often triggered by external events or substantial changes to the project execution strategy, and generally geared towards the identification of scope changes). The issue of consequential variances must thus be taken from a more holistic perspective.

How to review cost and schedule variances for consequential impacts

All cost and schedule variances must be examined for possible consequential impacts.

In the cost area, all variances to the project forecast are generally identified and reviewed with management as part of the monthly project report. From this basis, cost variances should be further challenged and analysed for possible consequential effects.

In the schedule area, systematic identification and analysis of the variances of the month is not always a practice (e.g. through a report from the scheduling team). The consequences of schedule variances on the entire project schedule are normally directly identified through the schedule update, provided the schedule is well built and flows without excessive constraints. However the cost consequences of these consequential schedule changes are not always properly captured without a sufficiently comprehensive process that would feedback from schedule to cost. A more systematic reporting and analysis from the schedule update process would certainly often be useful.

Finally all variances should be examined for their risk impact on the project, and whether they do not significantly increase the risk profile of the execution phase – which would require a review of the contingency levels.

The central role of Project Controls in the identification and evaluation of consequential variances

To achieve the objective of identifying and evaluating consequential variances, support from, and good communication to all functions of Project Controls (Cost, Schedule and Project Risk), Document Control,

Contract management and the other key disciplines such as Engineering, Procurement and Construction is essential. In general, the role of the Project Controls Manager, who has an overview on the entire project unfolding, as well as a keen understanding of the consistency between cost, scope and schedule, is central to a proper evaluation of consequential variances.
This is particularly critical because most consequential variances will have both cost and schedule components, which are linked. Still, impacts such as required resource substitution, airfreight and other acceleration costs will not be directly visible, and need to be understood by a finer understanding of the consequences of the events that lead to these variances.

Critical elements that have a huge consequential impact need to be identified and managed properly

In projects, there are always some critical elements that could have very significant consequential impacts, like for example key process tests/ pilot studies/ procedure certifications that are required to be successful to be able to proceed with the project. It is important to identify these critical success elements from the beginning of the project and check that they remain on track. This can be done effectively by identifying them as key deliverables in the convergence plan (refer to White Paper 2012-04 *'Convergence Management: the Key to Large, Complex Projects Success'*) and making sure that the dates where they are supposed to be delivered do not slip. This requires both outstanding visibility to the entire team and strong discipline at project management level.

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Conclusion

The lack of consideration for consequential variances is often a major issue in particular when the project controls team lacks experience. We have observed in major projects that it can often lead to unpleasant situations where a few months down the line, budgets and schedules need to be reforecast based on events that happened months before: this "surprise" was in fact the foreseeable consequence of previous events that had been identified in its time as a significant variance to the initial execution plan – but which logical consequences further down the line had not been properly understood and assessed.

For every significant variance in cost or schedule, ask yourself whether there would not be some indirect consequences that would need to be taken into account as well in the project forecast, in particular in the field of consequences on other areas of project execution!

Find all these principles of Project Cost Control exposed in a comprehensive manner in our Handbook (2nd edition),
Practical Project Cost Control for Project Managers
(available in Paperback and Kindle versions!)
[all links to Amazon.com]