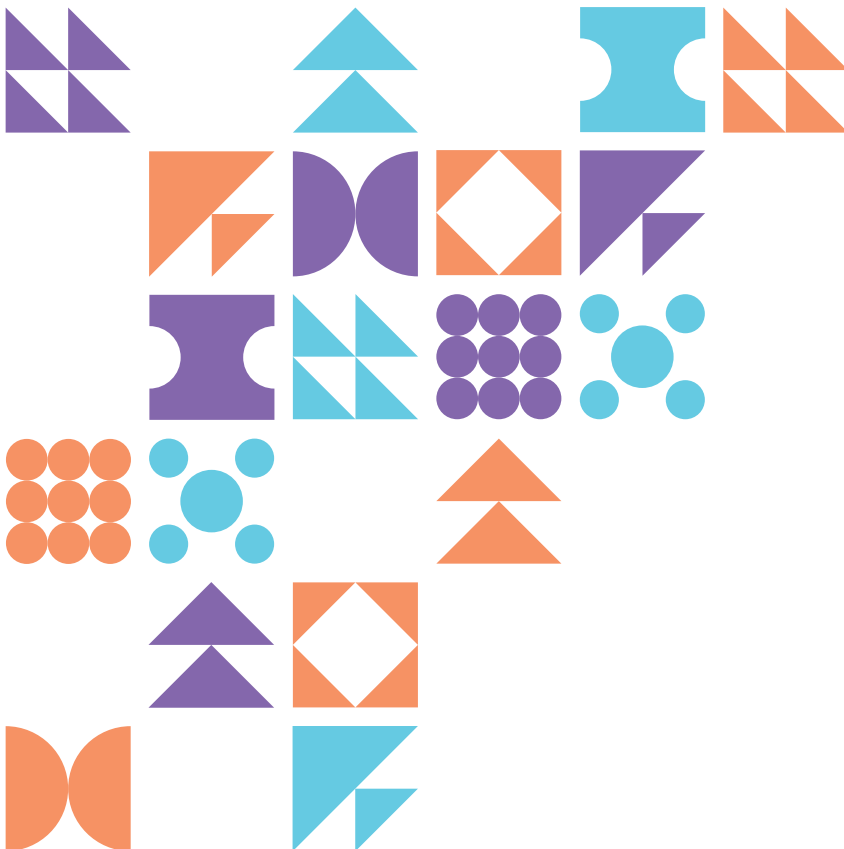


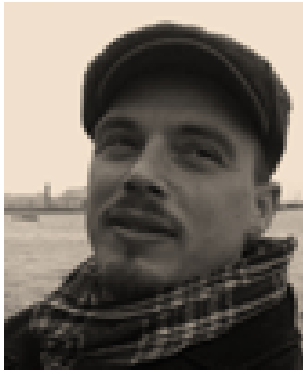


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Techniques to improve project time and budget management

Author: Alessio Bottiglieri
Dott. Ing., CEng, LLM, MBA, PMP®





Alessio Bottiglieri is a Chartered Engineer working as Senior Project Engineer for Saudi Aramco. He has 18 years of experience covering engineering and project management consulting roles in international firms for Oil & Gas and military projects. He obtained a Master Degree with honors in Computer Engineering at University of Catania (Italy), a Master of Laws in Law at University of Central Lancashire in Preston (UK) and an MBA at Anglia Ruskin University in Cambridge (UK).

Introduction

Project time and cost overruns are critical in managing large-scale complex projects. There are many causes of these problems, including organisational factors, which imply the need for more organisational and structural policies and priorities, including unclear communication and primary focus on technical aspects of the project. Personnel-related factors are associated with poor employee competencies during the project life cycle. Contractual issues arise when stakeholders pursue self-interests when initiating contracts, leading to adequate and effective coordination and better communication between the involved parties. Other factors are project design and implementation, legal and political, financial, and technical factors. The critical success factors for projects include having a clear project mission, top leadership support, client consultation, technical capabilities, client acceptance, good monitoring and feedback, proper communication, and troubleshooting. This article discusses the use of work breakdown structure

(WBS), the critical path method (CPM) planning techniques, comprehensive risk assessment, monitoring and reporting, and change control process to improve project time and budget management.

Work Breakdown Structure (WBS)

The WBS is a critical project planning technique that facilitates effective project planning, execution, controlling, establishing the status, and reporting. Everything included in WBS must be identified, estimated, scheduled, and budgeted. To create a work breakdown, a complex project is broken down into more minor subsequent activities until the simplest and financial activity is recorded. Each descending activity/level comprises an increasingly detailed division or definition of a project component. The code or structure of the WBS integrates and relates the entire project work to be used throughout the project life cycle to identify, assign, and track work scopes. Creating the WBS is the responsibility of project managers, who must consult other project members.

WBS is a critical project management tool because it breaks down the project into manageable components, which makes significant and complex projects less overwhelming and more manageable. The WBS provides a clear roadmap to different teams and people working on the project. Large and complex projects involve many teams working synchronously, and they must coordinate and integrate for the project to be completed. The WBS enables teams and individuals to focus on their assigned tasks and deliverables while understanding how they contribute to the entire project. The WBS is used to accurately measure project completion, identify milestones for the project and allocate budget resources. WBS use the 100% rule, which implies that it includes all aspects of the project, including individuals and teams responsible for them. This rule assures project managers that the project has been appropriately budgeted and that extra funds would not be needed.

The WBS helps the project planners identify the work that needs to be done and determine how it should be broken down for proper project delivery. A WBS provides an extensive overview of the project, which is provided to various stakeholders to review any detail they want. The WBS further explained the scope statement by highlighting the detailed tasks involved in the project scope.



A WBS provides the different teams of a complex project with clear instructions regarding their expected input. The work allocated to a workgroup is linked to those allocated to other groups, increasing commitment to meeting their goals. Suppose the WBS has work deliverables that lack corresponding summary work or tasks. In that case, the project managers will know that they have yet to identify all activities to be undertaken in the project. The WBS enables project planners to develop highly accurate estimates of project costs and schedules. The WBS gives project managers more points for accurately measuring project progress.

The manager should start allocating resources and time for the projects from the bottom-up; that is, they should start with the activities in the lowest hierarchy and start compiling them up the hierarchy. By allocating the resources to each task, they will prevent overloading specific departments or members while ensuring that the resources are used optimally. When resources are allocated efficiently, teams avoid time and resource wastage and ensure efficient project execution. When compiling the time and cost for the project, the project managers should estimate the cost and time associated with tasks and packages in the WBS. By providing a detailed estimation, there will be high accuracy in scheduling and budgeting. It could help to identify the areas where time can be saved, and costs minimised. There should be consistent and regular monitoring and control of the progress of the project against the WBS. This way, the project managers will identify the variances identified in the plan, ensuring timely corrective actions that could keep the project on track concerning time and budget.

Critical Path Method (CPM) Analysis

CPM is a deterministic method which uses a fixed time estimation to examine individual activities in a project. It is a highly used method because it is easy to use and understand.

The possibility of time variations having a significant impact is not considered during the completion of complex projects. CPM provides three merits, including an illustration of the project plan, a prediction of the minimum time cost for completing a project, and a list of activities that prejudice a schedule and activities which are not.

CPM is highly beneficial for complex projects with many activities and interdependent tasks. In this situation, it provides a better understanding of the critical path for the projects and enables project managers and other experts to manage the detailed schedule of the project. CPM is more suited to project activities that are adequately defined and have known dependencies and durations. This way, it could provide accurate estimates for project managers and provide a clear understanding of relationships between tasks for the best results. CPM is also suitable for projects that need timely delivery, enabling project managers to meet strict timelines. They achieve this by identifying activities that directly impact project duration and paying more attention to them. CPM is also best suited to projects with resource limitations, limited budgets, concurrent activities, and high risks.

The main aim of the CPM is to enable managers to stay on budget and allocate resources efficiently easily. Monitor progress, manage project management demands, and monitor and report the progress of the project. The CPM provides a clear path which enables timely completion of activities and the project, which reduces time wastage and increases the budget for resources. Project managers use the CPM to provide employees with tasks and allocate them enough float time, which ensures effective scheduling. The CPM breaks down large and complex projects into many activities that are easier to manage to achieve timely and cost-effective delivery.

When project managers use the CPM, they clearly understand when an activity must be completed and when extra resources are required.



This ensures efficient allocation of resources and lowers project costs. Project management software, which is used for the CPM, helps managers to identify the critical path of a project and use it to conduct real-time assessments of whether the project is progressing as planned and make necessary changes.

When project managers use CPM, they can quickly establish if a task along the critical path consumes more time and resources than the original allocation and make necessary changes to prevent delays and higher project costs.

It's recommended that project managers use the CPM; they identify the minimum time it could take to complete the project and focus on the critical path, enabling them to prioritise activities that significantly influence the project timeline. When such activities are determined, they will be the priority for resource allocation and the best teams and employees assigned to ensure timely project completion, lowering costs. The CPM minimises delay by showing the shortest time required to complete the project so project managers can focus on these activities. The managers would consistently review these activities, preventing drawbacks and ensuring the project is on track. The CPM identifies non-critical tasks which project managers can change start and finish time while focusing on critical activities. Managers can use schedule compression activities to align these activities with the critical path and prevent project delays. When managers are making decisions regarding the project, they should consult all employees and provide them with updates regarding the decisions taken.

Comprehensive Risk Assessment /Analysis

A risk is the quantifiable part of uncertainty, for which experts estimate the likelihood of occurrence and the size of the damage. Risk is considered to be a deviation from the desired level. Risk analysis is critical for selecting projects and coordinating activities, especially in construction projects. Risk analysis comprises analysing adverse events during the planning and programming of a project. Risk analysis informs the decision-making process and provides more arguments, which can be used to design a project to lower the likelihood of failure.

Through comprehensive risk assessment, the project managers will identify potential risks at the start of the risk cycle and create solutions before escalations, which will lower or prevent them from affecting the project. When project managers understand risks, they can determine and implement plans that could help them allocate, schedule, and improve their overall strategy. If the contractor determines that the risks of the project are too high, they can suggest changes to the contract or decline the project to avoid incurring huge losses and inconvenience.

Monitoring and Evaluation (M&E)

Starting and planning a project requires M&E to outline the needs of clients and incorporate them into the project as the project manager plans the resources for the project. The purpose of M&E is to compare the actual progress with expected project objectives, which helps to provide value for money and achieve quality, cost, schedule, performance, and satisfaction. All material, human, and financial project resources are closely monitored to properly utilise resources and accountability of all people involved in the project. By comparing progress information, project managers and other employees learn lessons about the project to improve outcomes and could use the lessons learned for future projects. The project managers should use M&E at all stages of the project to identify problems and potential for improvement at the start of the project and ensure this will lower costs and ensure the project is completed in time.

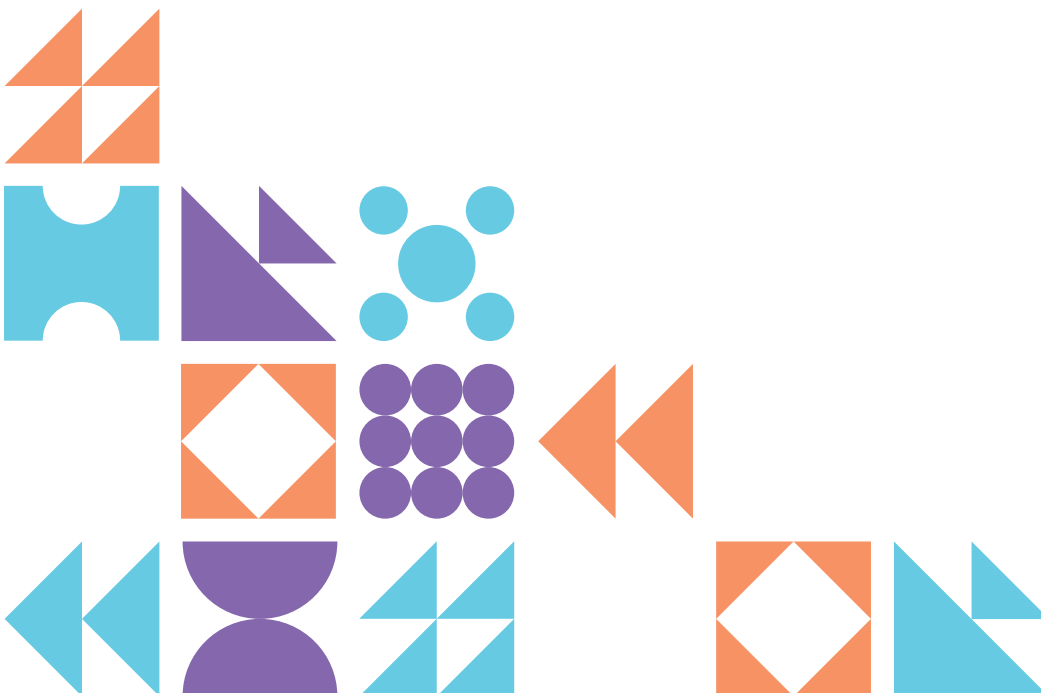
Change Control

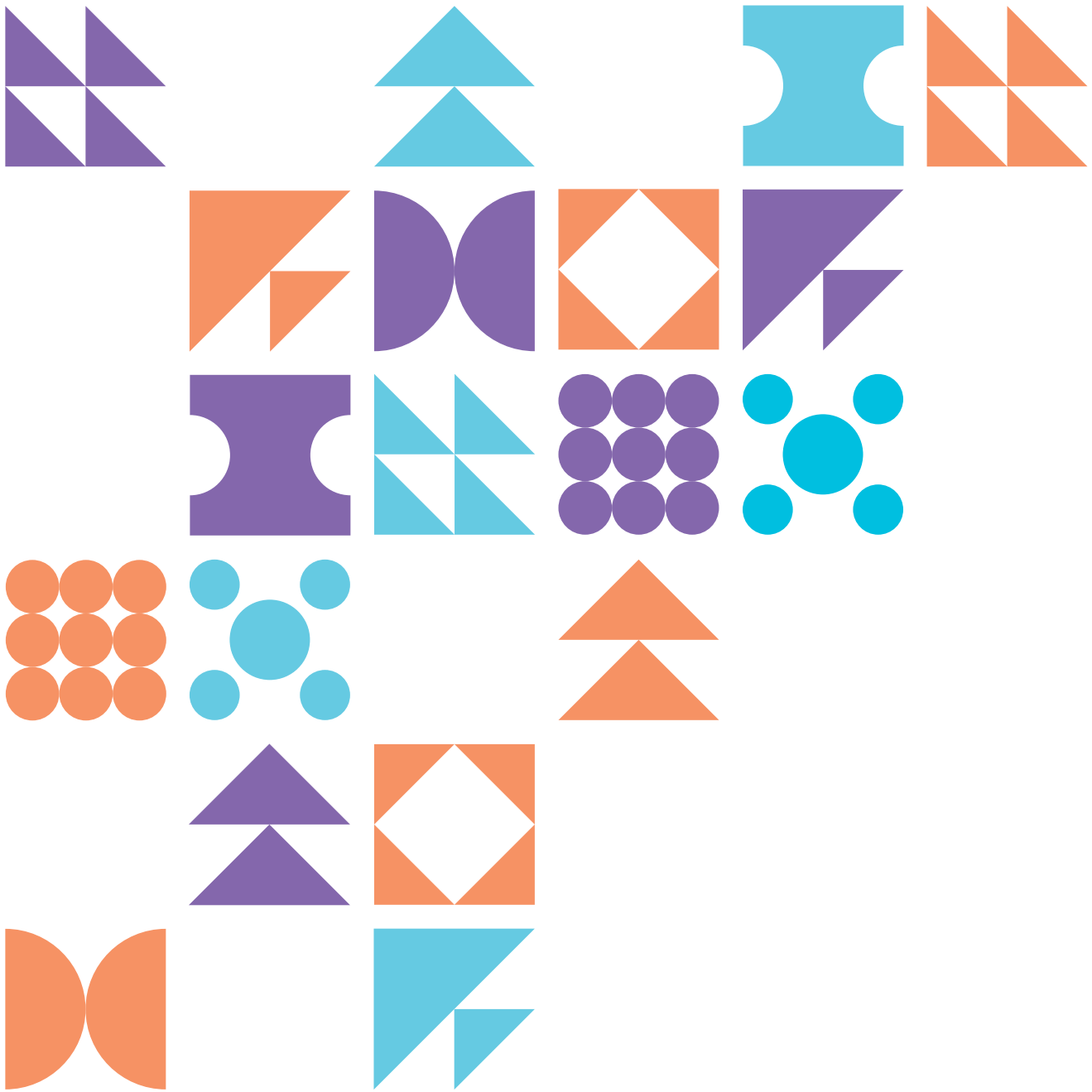
Project change might be necessary or inevitable, but it must be anticipated and managed correctly regardless of how it occurs. The purpose of change control is to ensure that when changes happen, there should be minimum disruption to the project activities, and it should be highly efficient. Change control ensures that the change is authorised and recorded, relevant documentation is amended as necessary, engaged people are alerted and consulted, the impact of changes are well defined and understood, and the change control is appropriately implemented. Change control could prepare project managers to change their projects to improve outcomes.



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