White Paper 2017-03

The Three Essential Transverse Processes
to Keep Large, Complex Projects Under Control

To keep control of a Large, Complex Project a large number of interfaces between functions have to be monitored through the Project Control processes. Three additional processes that are fully transverse to the Project also need to operate perfectly: these are Management of Change, External Interface Management, and Procurement Post-Award Management. This White Paper exposes why these processes are so critical, and what are the associated success factors.

Management of Change (also called Change Control)

Management of Change is an essential process that is transverse to the entire Project and is key to keep the Project in control.

Scope of Management of Change
The Management of Change should be applied to all changes performed to the Project's baseline, whatever its origin and time in the Project. One exception concerns the engineering design stage. The design process is by nature iterative and it would not make sense to apply an onerous Management of Change process at that stage. The Management of Change should only be applicable once engineering documents have reached a certain maturity stage.

> **Management of Change, External Interface Management and Procurement Post-Award Management are three essential transverse processes for Project success**

Essential characteristics
The essential characteristics of a sound Management of Change process include:
- Changes are documented against a clear baseline that is established and clearly defined at the start of the Project. This baseline includes all relevant documentation (specifications, technical requirements, schedule, budget, etc.). For each change, precise references must always be included to the part of the baseline that is changed,
- Wide coverage of Management of Change:
  o all changes - it is absolutely not restricted to changes that require the Owner's formal agreement,
  o internal as well as external changes and changes raised by suppliers and contractors,
  o physical changes as well as Project execution changes,
- There is a single Project-wide Management of Change process across all disciplines,
- Anybody in the extended team (including contractors) can raise a change. The process should make it easy to do so, even if it includes a first filter by supervision to make sure that changes that are processed are real changes,
- Consequences of any change are assessed across all functions (Engineering – Procurement – Construction – Commissioning – Cost – Schedule – Risk – HSE – Quality – Contract) prior to any decision. A particular focus needs to be on consequential impacts. As an additional line of defence, the changes are preferably reviewed in a meeting in the presence of all functions (a segment of the weekly PMT meeting is recommended),
- The initial consequence assessment is quick, and in particular fits within any contractual time bar,
- No Change should be implemented prior to a formal decision by the Project Manager. Decision on Change implementation is then communicated to the team and all affected documents and systems are updated to reflect the Change.
- Changes can be implemented before contractual consequences with the Owner are fully clarified if that is required, based on the Project Manager appreciation,
- When changes are implemented, consequences in terms of interfaces with stakeholders are examined comprehensively and documented.

Two types of changes are particularly the bane of Project Management:
- Uncontrolled changes from the Client through informal contact, comments to documents etc.,
- Uncontrolled changes by the engineering team sometimes due to 'over-engineering', or after documents have been approved and sent to suppliers or contractors.

To prevent these changes from by-passing without control the proper Management of Change review process, some Project Managers even on large Projects require their own signature on any revision of an Approved for Construction document or its transmittal. This allows them to examine systematically the justification for the revision and capture unapproved changes.

External Interface Management

Similarly to Management of Change, External Interface Management is an essential process that is transverse to the entire Project and is key to keep the Project in control.

The essential characteristics of a sound Interface Management process include:
- Ideally an Interface Management process is managed by the Owner or its representative, which provides a

single central platform (register and the relevant process and forms) for exchanging information between the main contractors,

- It is always essential for contractors to setup an interface management process between themselves and their own suppliers and subcontractors, that interfaces seamlessly with the Owner's own interface management system when available,
- Any interface issue can be raised by any supplier or contractor, either as a clarification to existing documents, or as a deviation from existing documents,
- Interface issues are preferably resolved quickly and collaboratively. The objective of the interface process is to agree on the interfaces between all interfacing parts of the Project so as to enable all interfacing parts to meet the associated technical requirements as specified in the Contract or in standards and norms. In certain cases, one or both interfacing parties may need to modify its intended design/solution in order to achieve this. Such modification should be subjected to a rigorous Management of Change process. Where the change is a result of requirements that were not covered by the Contract, a Change Order could be requested prior to implementing the Change so as to ensure that it is compensated for by the Client.

> **Sufficient attention must be devoted to setting up and operating those processes. This will often warrant to allocate full-time experienced persons to be allocated, in particular package managers to coordinate procurement post-award activities**

As part of the Interface management process, it is essential from a contractual perspective to distinguish between technical clarifications and technical deviations to an existing baseline. Only the latter can lead to contractual discussions between parties.

Procurement Post-Award Management

Procurement activities cannot happen in isolation. Pre-award,

- Supplier qualification exercises must involve all relevant functions (HSE, Quality, Engineering, Construction)
- Proper technical requirements must be prepared by Engineering, with input from Construction and Commissioning, HSE and quality, and possibly the future Operator,
- Proper control requirements need to be applied in terms of Project Control and Contract management.

After award, it is essential that the Project has a proper tracking and follow-up in place until delivery. In addition to the follow-up of manufacturing or service preparation itself, which is generally undertaken by a special 'Expediting' function, it is important to designate 'Package Managers' that will operate as contract and Scope Owners, coordinating aspects belonging to all Project functions, in particular Engineering and Construction.

Conclusion

The three transverse processes exposed in this White Paper are absolutely essential for any Project to be successful. Sufficient attention must be devoted to setting up and operat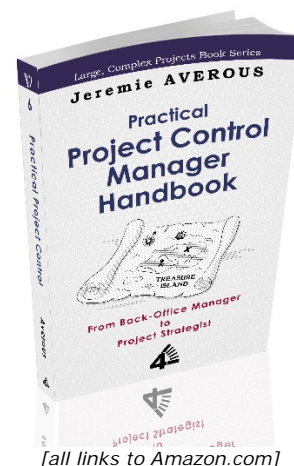ing those processes. This will often warrant to allocate a full-time experienced person to be allocated for Management of Change and/or External Interface Management. Experience often can't be replaced when it comes to gauging quickly the impact of a Change or an Interface Request over the entire Project, including consequential impacts.

Depending on the Project organization, Project Control might not be responsible to establish and maintain these processes. In all cases it must make sure they are functional throughout the entire Project execution, and make good use of the data they provide.

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