

## White Paper 2020-02

### What Processes and Systems Must be Setup by the Operator During Owner Project Execution

Following our previous [White Paper on how best to involve the future operator during a project to improve its chances of success](#), this White Paper delves more precisely on those deliverables which need to be setup during the project by the operating organisation, to ensure a smooth start-up of the facility.

#### Essential supporting processes and systems required for start-up, ramp-up and operations

Certain processes that are needed for project execution will also be used for facility operation; therefore, it is certainly more efficient to set them up from the start in a way that will be useful for the operation phase. Therefore, the setup of those processes and systems are better led by the operating organisation to ensure they will respond to its long-term needs. The project organisation certainly needs to be involved to ensure a minimum level of satisfaction of its needs, however, those are generally somewhat limited on the Owner side and will not dramatically influence the requirements for future operations.

The processes and systems typically required during project execution and that need to be setup or modified by the operating organisation include:

- Accounting (ERP) – adapted to the size of the operation
- Procurement process and supporting system (ERP)
  - Management of approved vendors
  - Procurement of equipment and project contracts
  - Procurement of spare parts
  - Accounting receipt of purchase orders, parts and material
- Logistics
  - Receipt and quality control on site
  - Material control on site
- Warehousing and preservation (ERP)
  - Inventory management for material and parts
  - Warehousing and issuance including tracking of issuance conditions, cost code
  - Preservation system
- Preventive maintenance system
  - Registration of all parts for all equipment procured
  - Integration with automated maintenance system
  - Maintenance procedures and link with spare parts
- Spare parts management
  - Catalogues of parts and associated prices (as negotiated during project procurement)

**Operator supporting processes and systems needed must be identified early in the project, to include their upgrade or implementation time into the global project schedule**

- Facility technical documentation and configuration management system
  - Gathering of supplier documentation, as-build design documentation
  - 3-D model and (optional) digital twin orientated to maintenance and operation

All these activities require the active involvement of the operator from the start of project definition. Full time presence of operator representatives in the project team needs to be organised from the start of project execution after the Final Investment Decision.

These activities are in addition to those specifically performed by the Operator to prepare for future operations such as hiring and training staff, developing maintenance manuals and operating procedures and setting up the information systems and

procedures required to start up and operate.

#### Timing of setup of those processes and systems

In particular for greenfield projects, those processes and systems may have to be set up from scratch and the time required to implement those systems should not be underestimated. It should be included in the project schedule to make sure that the systems and process delivery schedule fits with the project needs. Some of the work will have to start already from the Final Investment Decision onwards, and sometimes even earlier than that, the project control system is ready for execution.

Proper definition of the processes and systems, and of the information required for input from equipment suppliers and from design contractors is needed early in the project. Control is then exercised to make sure this information flows in a timely manner during execution.

#### Underlying data architecture requirement

The setup of those systems needs to rely on a pre-defined data architecture and breakdown that needs to be defined from the start of the project, at least in terms of structure. The important aspects include:

- The Product Breakdown Structure
- The tagging philosophy

#### Towards digitalization

To reap the full benefits of digitalization it is essential to ensure that the main properties of the final systems are consistent with the systems used by the project team and the main contractors – that at least an electronic download

from the project systems can feed the operating systems. Bridging that digital gap is essential and needs to be anticipated in terms of overall data and system architecture.

### **Interfaces to systems specifically required for project execution**

The list mentioned in the previous section does not cover other systems and processes specifically deployed during project execution; however, some of those systems and processes need to be deployed in a consistent manner and under a consistent architecture with the future operational framework.

This is particularly the case for the following systems:

- Design software, that needs to adopt the tagging system and allow transfer of data into the maintenance system and/or the digital twin,
- Material control system on site during construction, for full traceability from the warehouse up to actual integration in the facility (with a specific focus on bulk material or equipment which will be tagged only when physically placed within a certain location of the facility),
- System for commissioning and management of punch list items which needs to be compatible with the maintenance system for tag identification and allow a full final reconciliation of the facility.

### **Applicability to brownfield projects**

Even for brownfield projects we observe that even if some systems are already in place they generally need to be

upgraded and that the time and effort to do it is often underestimated. One reason is that they are often obsolete anyway; one other reason is that an upgrade is often necessary to cater for the additional complexity of the plant after the project, extensions of warehouses and modification of logistics flows.

In addition, substantial effort can be expected to be devoted to the recovery of legacy data and change management to new systems. And this effort will have to be performed whilst not jeopardising the operation of the existing facility, thereby causing a significant constraint in terms of implementation. Therefore, the level of effort for the upgrading of systems and processes in

existing facilities that get extended or modified can be expected to be at least as high as for a greenfield facility. Those activities thus need to be duly inserted into the project scope to make sure that their progress is monitored even if the operating organisation is responsible for their development.

### **Conclusion**

The setup of systems and processes suitable for the future operation of the facility is an essential part of project success. Yet this activity is often underestimated in terms of effort and time and not included in the project scope and schedule. It is essential that those activities be properly assessed, defined and considered by projects even if the responsibility of their implementation lies with the operating teams.

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