Data wrangling for effective project migrations to operations in oil and gas

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Organizations today manage copious amounts of files and data that are generated during the lifecycle of Major Capital Projects (MCP). Documentation and data generated during MCPs include information regarding conceptual design, front end engineering, detail design, construction, As-building and decommissioning. Additionally, MCPs closely coordinate with partnering stakeholders, monitoring and documenting scope non-conformances, corrective actions, deviations, and MOCs.

As an MCP nears completion, another challenge arises that is the MCP data and file migration to operations. During this time, you will find yourself asking many questions of the 'what, who, when, how and why' variety, relating to the many activities and decisions that encompass migration to operations. Defining handover is crucial both in helping manage it and clearly establishing a robust method that is communicated to all key stakeholders during the migration process. Some key questions organizations may ask are:

- **Who:** Who are the target audiences?

- **What:** What data and files need to be migrated, and what are the target systems?

- **When:** When should migration commence and complete?

- **How:** How will files and data be migrated?

- **Why:** Why is migration of MCP required?

Migration Data Wrangling Solution

Data wrangling services are ideally positioned to assist with the 'What, Who, How, and When' activities relating to MCP handovers. This includes the identification, deduplication, transformation and migration of files and data to target systems while adhering to system attribution and operational requirements.

Collaboration with IT partners that offer global best practices, and leverage domain expertise

paired with innovative automated AI solutions to protect and retain the integrity of critical data and files, are key drivers to success during migration from projects to operations.

Identification of files and data

To enable migration of files and data, the MCP must identify the target audience. Managing security protocols, access restricted file exchanges and working environments is imperative during migrations. Restrictions will need to be managed to ensure external organizations or internal personnel do not have direct access to company IP information.

Analyses of organizational MCP and operations information numbering and coding procedures/specifications is fundamental to allow identification of files and data within the MCP environment for migration, and also how that data and information will align to operational requirements. This includes:

- Identification processes need to be robust to ensure that critical and supporting information is migrated to support operational activities.

- Adherence to operational numbering/coding and target system attribution requirements is mandatory.

- Gap analysis of the MCP vs. operations system attribution should be performed to grasp the quantity of metadata transformation required.

- Metadata transformation includes aligning MCP discipline/document types to operation requirements, while maintaining the integrity of the source metadata.

- File deduplication activities are required where MCP files and data are stored in an uncontrolled environment, to certify identification of one true source, which guarantees that the latest revisions are migrated.

- Identification of redundant, obsolete and trivial information is advantageous to support MCP archiving activities.

Migration activities

Migration of MCP data and files can be challenging, especially if there are hundreds of thousands of files. Files and data need to be accurate, searchable and classified in a manner that allows maximum findability within the target operational system. MCPs need to determine, document and communicate:

- How will the files and data be exported from the MCP systems?

- How will the files be migrated into the target system and what tools are available for this?

- How will the MCP align to the operational attribution requirements?

- How will the MCP identify files and data needed for safe and reliable operations for migration?

- How will information and data be handled that has not been identified for migration?

  - MCPs should consider archival process, system and organization retention policies.

- How will the migration be tracked and audited?

- How will quality assurance activities be incorporated and communicated?

- How will target system restrictions and requirements be implemented?

Migration content needs to be accurately identified, extracted, classified, attributed and exported into an acceptable format to allow for target system population, or to align with the agreed organizational recipient system/migration requirements.

Stakeholder communication

Operations should be engaged throughout MCP construction, As-building, decommissioning and final handover activities to ensure that operational requirements and interests are maintained. A key time prior to MCP start-up is the process safety start-up review (PSSR). The PSSR team will receive critical files and data that ensures all new or modified facilities/systems are built and installed safely in accordance with MCP design requirements. The successful completion of the pre-safety start-up review should be the trigger to begin migrating MCP information to operations.

Migration quality assurance

MCPs need to ensure that migrations are fully tracked and auditable, and should consider creating the following if not already in place:

- Operations migration document and data acceptance forms, which can be grouped in packages such as discipline, area, system, etc.

- Once signed, operations claim full ownership, with revised documents bypassing MCP systems and directly populating operational system(s)

- Migration milestone schedule to ensure stakeholders have full visibility, thus resolving potential road blocks such as

  - Migration vs. system outages

  - Operational migration acceptance vs. MCP system decommissioning plan

  - Personnel access and training plans

- Migration plan and procedure describing processes and tools utilized

- MCP system archival and retention plan

- MCP system decommissioning process, with the inclusion of decommissioning sign off forms

About the author

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Janine Murray is an IM Consultant with over 15 years of experience in the O&G industry. She has extensive FE/Operations and Major Capital Project (MCP) Information Management experience. She has deep experience with IM brownfield modifications, greenfield enhancements, MCP joint ventures, closeout, and MCP handover to Operations. Additionally, she is experienced with document cleansing and data extraction techniques for digitizing O&G legacy assets.
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