Leading Indicators and Dashboarding for Advanced Work Packaging

Lloyd Rankin
AWP KPIs
POC Defined

- Path of Construction (POC)
- Path of Construction is defined as the articulation of the optimum building sequence of the physical components of a facility. It is considered complete when the owner agreed procedure is followed with input from all of the identified stakeholders.
POC Deliverables

- Optimal Project Schedule
- Geographical boundaries of EWPs/CWPs/PWPs
- WBS structure of project to align with EWPs/CWPs/PWPs
- EWP/PWP Releases to support the CWP Execution Schedule
- Contracting Strategy for the project
- Modularization / Fabrication Strategy for the Project
- Format / Content / Schedule of inputs for Project Database
- Metadata requirements to input into the Project Model (3D)
POC KPIs

• Project Type
• Inputs
• Outputs
• Stakeholders
• Meetings
• Deliverables
EWP Defined

• Defined as IFC when the EWP has all vendor documentation, is hold and error free, accurately reflects the revision status and has been reviewed and signed off by the required stakeholders.
EWP Deliverables

- EWP completeness, including all required information, attributes and updating frequencies
- EWP sequencing, release of IFC EWP in accordance with the schedule
- EWP progressing and forecasting, reporting EWP based on agreed upon rules of credit
- EWP completeness checks, creation and updating of readiness checklists for each EWP
- EWP expediting, applying the EWP Expediting procedure as required
- EWP auditing, reviewing EWPs in accordance with the EWP audit procedure
EWP KPIs

• EWP completeness
• EWP sequencing
• EWP progressing and forecasting
• EWP completeness
• EWP Expediting
• EWP auditing
## Generic EWP Progress

<table>
<thead>
<tr>
<th>Activity</th>
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<th>CUM</th>
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<tbody>
<tr>
<td>Initial Scope Identified</td>
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<tr>
<td>Initial Design (Modelling)</td>
<td>35</td>
<td>40</td>
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<tr>
<td>Preliminary Vendor Data Received (Where Applicable)</td>
<td>5</td>
<td>45</td>
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<tr>
<td>Preliminary MTO/BOM (Bulks) to Supply Chain</td>
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<tr>
<td>Final Vendor Data Received / Checks (Where Applicable)</td>
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<tr>
<td>Model Finalized (90%)</td>
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<td>70</td>
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<tr>
<td>Deliverables (incl. final MTOs, etc)</td>
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<td>85</td>
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<tr>
<td>EWP Reviews (Including: Eng Checking / Squad Check / IFR, etc)</td>
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<td>90</td>
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<tr>
<td>EWP c/w Drawing/Spec/MTOs Issued IFC</td>
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<td>95</td>
</tr>
<tr>
<td>EWP Accepted by Construction</td>
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</table>
Example: Discipline Progressing

• Piping deliverables
  o Development of 3D Model
  o Drawings (Isometrics, plans, etc.)
  o P & IDs
  o Requisitions
  o Specifications
  o Pipe Stress Analysis
  o Calculations
  o Scope write-up
  o …
# Piping EWP Progressing

<table>
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<th>PIPING / MECHANICAL</th>
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<th>CUM</th>
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<td>P&amp;IDs / LDTs IFC</td>
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<tr>
<td>Preliminary Stress</td>
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PWP Defined

• A database that tracks the materials and equipment necessary to complete an Engineering Work Package (EWP) and Construction Work Package (CWP). The PWP will track the EP materials and identify owner and contractor supplied materials.
PWP Deliverables

- PWP completeness, including all material, equipment, and related documentation
- PWP sequencing, release of complete PWP in accordance with the schedule
- PWP progressing and forecasting, reporting PWP based on agreed upon rules of credit
- PWP completeness checks, creation and updating of readiness checklists for each PWP
- PWP expediting, applying the PWP Expediting procedure as required
- PWP auditing, reviewing PWPs in accordance with the PWP audit procedure
PWP Deliverables

- PWP completeness PWP sequencing
- PWP progressing and forecasting
- PWP completeness
- PWP Expediting
- PWP auditing
Request for Information (RFI) Defined

- RFIs are defined as construction contractor requests made to the engineer to get clarification or get a change approved.
RFI Deliverables

• Design clarifications (conflicts, incomplete plans, specifications)
• Requests for a design change (often due to errors in construction, sequencing problems)
• Requests for substitutions (value engineering, material availability, ease of use)
• Constructability issues
• Differing site conditions
RFI KPIs

• RFIs compliance checking includes:
  o Responding to the RFI within the agreed upon timelines
  o Providing sufficient information to resolve 90% of the RFIs on the first response
CWP Defined

An executable construction deliverable that defines in detail a specific scope of work and should include a budget and schedule that can be compared with actual performance. The scope of work is such that it does not overlap another CWP. The CWP can be used as a scoping document for Requests for Proposal and Contracts.
CWP Deliverables

- Scope of Work
- EWP
- Materials
- Quality
- Safety
- Labor
- And 15 other items
CWP KPIs

- Rules of Credit for EWPs Progressing and Forecasting
- Rules of Credit for PWPs Progressing and Forecasting
- Rules of Credit for CWP Progressing and forecasting
- CWP Release in accordance with Release Plan
IWP Defined

A detailed execution plan that ensures all elements necessary to complete the scope of the IWP are organized and delivered before work is started. This detailed planning enables craft persons to perform quality work in a safe, effective, and efficient manner.
IWP Deliverables

1. Scope of Work
2. Safety
3. Quality
4. Engineering Information
5. Materials and Equipment
6. Man-hour Basis and Manpower
7. Progress Measurement Basis
8. Mechanical / Systems Completion Requirements
9. Regulatory and Approvals Permits
10. Construction Subcontractors
11. Vendor Support
12. Rigging Studies and Plans
13. Scaffolding
14. Waste Management
15. Contact List
16. Other Pertinent Information
IWP KPIs

- IWP Development (Done/Not)
- IWP Release in accordance with Schedule