

AWP-IM-WFP PROCEDURES

1.0 ADVANCED WORK PACKAGING PROCEDURE

This procedure “1.0 Advanced Work Packaging” is the first of three procedures that define the application of Advanced Work Packaging (AWP), Information Management (IM) and Workface Planning (WFP).

These three core procedures are supported by a suite of templates and supplemental procedures that are stored in the Workface Planning Toolbox.

At the discretion of the COMPANY any or all of the foundational procedures and supplemental procedures may be applied to a project in support of the core procedures.

Revision	Date	Description	Originator	
0	Oct,1, 2017	AWP Procedure	Insight-awp	
Approvals: Name		Position	Signature	Date
Geoff Ryan		Author		Nov,24 2014

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WFP TOOLBOX

Sample Documents		Supplemental Procedures		Job Descriptions	
SD01	WFP Cold Eyes Review	SP01	Scaffold Management	JD01	AWP Champion
SD02	WFP Bid Assessment	SP02	Equipment Management	JD02	Information Manager
SD03	Optimal Path of Construction	SP03	Training	JD03	WFP Coordinator
SD04	Installation Work Package	SP04	Work Packaging Procedure	JD04	Workface Planner
SD05	Foreman's Daily Plan			JD05	Workface Planning Lead
SD06	Weekly Project Controls Report				
SD07	WFP Audit Template				

1.0 Advanced Work Packaging Procedure

1. PURPOSE

The purpose of this document is to define the COMPANY's expectations for the Project Management's team's application of AWP. The procedure outlines the activities required to align Engineering and Procurement with the needs of Construction. The standards established in this document will support the application of the Information Management procedure by the Information Manager and the Workface Planning procedure by the Construction Contractors. This procedure may also be used periodically to audit the application for compliance.

Objectives

The ultimate goal of AWP-IM-WFP is to optimize project performance through the application of a structured planning process. This is expected to create a model for construction execution that will minimize risk and deliver predictable results. Project management activities detailed in this procedure will establish Stakeholder deliverables that will facilitate AWP.

Scope

This document will address the:

- **Overview of AWP-IM and WFP**
- **AWP Champion**
- **Information Manager**
- **Application of Procedures**
- **Work Breakdown Structure**
- **Path of Construction**
- **Interactive Planning Sessions**
- **Level 3 schedule**
- **Work Packages for**
 - **Engineering,**
 - **Procurement**
 - **Modules**
 - **Construction**

Other procedures in this series will address:

- The application of IM
- The details of how to populate and utilize WFP Software
- The construction contractor's application of WFP
- Installation Work Packages (IWPs)
- Scaffold Management
- Construction Equipment Management
- Training

Method

The AWP Champion is responsible to apply this procedure across all project stakeholders with support from the Project Manager and the Project Sponsor. This AWP procedure will be included in all E and P contracts as a required component of contract compliance.

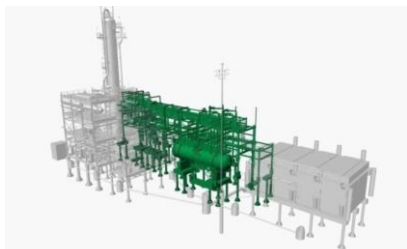
2 DEFINITIONS

- **Workface:** Is that geographic point where labor converts materials into a facility.
- **Workface Planning:** The process of organizing and delivering all the elements necessary, prior to the commencement of work, to enable labor to perform quality work in a safe, effective, and efficient manner.
- **Workface Planner:** A dedicated construction planner who has hands on construction skills and experience as a supervisor. Responsible for developing IWPs and removing constraints, reports directly to the construction superintendent.
- **Workface Planning Coordinator:** Owners representative who reports directly to the AWP Champion. Responsible to manage Contractor's WFP department, coordinate the turnover of CWPs from the Construction Management Team to the Contractors, and oversee the function of IWP development and constraint management.
- **Information Manager:** Owner's representative who reports directly to the AWP Champion. Responsible to develop systems and processes that govern the generation and transfer of project information. Responsible to facilitate the development of the project cloud with a document management system, material management database and Workface Planning software.
- **AWP Champion:** Owner's representative and member of the Project Management Team, responsible for the application and oversight of AWP, IM and WFP by all of the Project Stakeholders.
- **Labor:** Skilled or unskilled trades people, craft workers, artisans or workforce, divided by discipline, who are responsible for the actual physical work that converts materials into facilities.
- **Constraints:** The Information, Tools, Materials, and Access that are required to execute work.
- **Work Packaging:** The progressive elaboration of work from Engineering Work Packages to Procurement Work Packages and Module Work Packages based upon the requirements of Construction Work Packages. Further dissected into Installation Work Package and then into Daily Plans. The sequence of work dissection follows the path identified in the Path of Construction with the components modeled upon the structure of the WBS.
- **Owner:** The COMPANY that initiates a project by developing a business requirement.
- **Project Management Team:** A division of the COMPANY who are responsible to synchronize and manage Engineering, Procurement and Construction for the entire life cycle of the project.
- **Engineering:** Includes COMPANY Engineering and a series of specialized engineering companies who report directly to the Engineering Manager who is a member of the PMT. Engineering are responsible to elaborate the owner's concepts into a detailed design. This organization is directly responsible for the functionality of the process and the generation of project information.
- **Procurement:** The procurement division of the PMT or a division of the Engineering Team. This team is responsible to engage contractors and suppliers, fabricators, module assembly yards and construction contractors through the development of contracts. Also responsible to manage the procurement of bulk materials, components and oversee the fabrication and delivery of equipment, pipe and steel components.

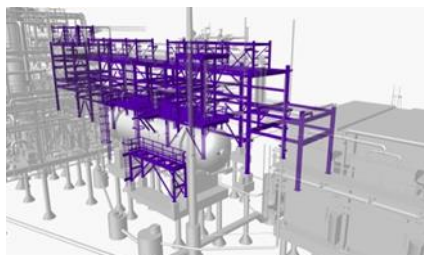
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- **Material Management:** The organization who are responsible for receiving all project material from the procurement team. Responsible to manage onsite warehousing and the distribution of all site materials.
- **Construction Contractor:** The organization engaged to construct the project utilizing direct hire labor and subcontractors.
- **Discipline:** A unique trade identified as: Civil, Structural Steel, Pipe, Mechanical, Electrical, Instrumentation or insulation etc.

Construction Work Area (CWA) – A geographical division of work defined by Construction. It

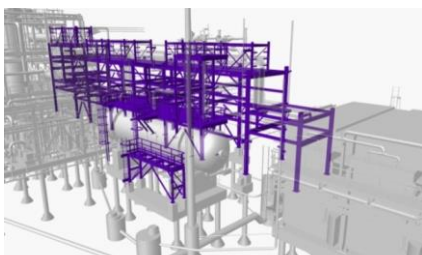


includes all disciplines, with the exception of cables and undergrounds that are also divided into work areas, but across the entire project. Each CWA has boundaries defined by the logical association of work and becomes one activity on the Level 2 Schedule.

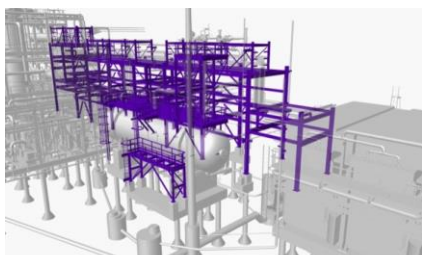


Construction Work Package (CWP) – A single discipline of a CWA that defines a logical division of construction work with less than 40,000 work-hours. A CWP is a component of the WBS, a single level 3 activity on the project schedule and is the downstream product of a single EWP and PWP when prepared for construction. The division of work is defined such that CWPs do not overlap and they can be used as contractual boundaries of work. Each CWP is dissected into a series of IWPs by the Workface Planners.

Engineering Work Package (EWP) - An engineering deliverable, single discipline that contains all of the engineering data required for a single Construction Work Package: Scope of Work, Drawings, Vendor Data, Bill of Materials and Specifications, in both PDF and electronic 3D model files. EWPs are developed sequentially to satisfy elements of the Path of Construction, which will facilitate sequential procurement and the execution of CWPs. A single EWP is represented in the schedule as a single level 3 activity.

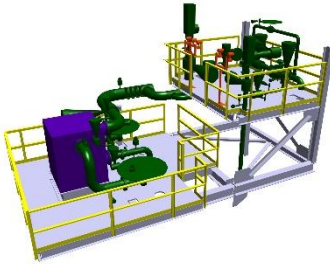


Procurement Work Package (PWP) – A procurement deliverable, that contains all of the materials required to satisfy a single CWP. Typically, a single discipline, in the case of steel and pipe the PWP becomes a discrete fabrication package that is expected to be manufactured and delivered as a distinct group of components.

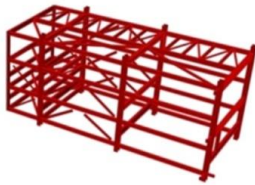


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Module Work Package (MWP): A subset of a group of single discipline EWP's that contains all of the Issued For Construction (IFC) engineering data for all disciplines required for the construction of a single module. A group of modules (<10) is a single CWP. The steel and pipe EWP's for a CWP of modules becomes discrete fabrication packages that identify all of the spools and steel piece marks for the CWP (group) of modules.



Installation Work Package (IWP): A discrete portion of constraint free, construction work that can be executed by a single foreman and crew, in a single 7 Day period. Dissected from a single CWP and made up of whole drawings. Each IWP becomes a single level 5 schedule activity.



Work Breakdown Structure (WBS) – A hierarchical representation of a complete project with its components being arrayed in ever-increasing detail. The WBS forms a direct alignment between Work, Time and Cost by serving as the basis of Work Packaging, Schedule Development and Cost Coding.

WTF-I-12-E4-C05-14

WTF- Water Treatment Facility (Plant)

I-ISBL: O-OSBL

12 - CWA

E - Major discipline (Earthworks)

4 - Sub Discipline (Excavation)

C05 - CWP (C- Construction, E-Engineering, M- Modules, F- Fabrication, P-Procurement)

14 - IWP or Drawing and spool

Project Nomenclature:

The creation of the WBS and the development of the WBS library forms the template for the project nomenclature. This naming convention (WTF-I-12-E4-C05-14) will then be used to identify physical components, drawings, spools, steel members, schedule activities, cost codes and work packages.

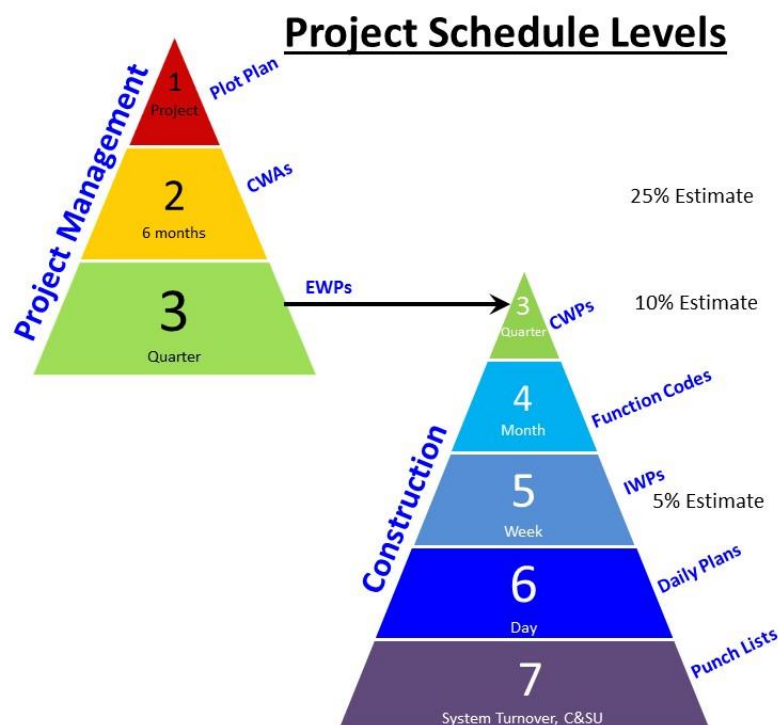
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Field Supervision: For the purpose of this procedure these terms are used to describe the three basic levels of field supervision that exist within the Construction Contractor or Subcontractor organizations. Ratios are expected to vary based upon the complexity and critical nature of the tasks. Terms and ratios may be changed to suit the local standards.

- Foreman:** Responsible for the direct supervision of one labor crew in a single discipline, with typically 1 foreman to 10 crew members.
- General Foreman:** Responsible to directly supervise up to 4 foremen in a single discipline.
- Superintendent:** Responsible to supervise up to 3 General Foremen in a single discipline. May be a member of staff or hired through the labor providers.

Schedule Dissections: For the purpose of this procedure this hierarchy will be used to describe schedule activities:

- Level 1: Plant and year
- Level 2: CWA and 6 months
- Level 3: CWP and 3 months
- Level 4: Function code and month
- Level 5: IWP and week
- Level 6: Daily plan and day
- Level 7: Task and hour



3 HOW TO APPLY THIS PROCEDURE

Project Management Team:

This procedure will be used to support the development of the Project Management Team's Organisation chart and will then be used to define the roles and responsibilities of the AWP-IM-WFP Team positions.

This procedure will be added to all Engineering and Procurement contracts and identified as the standard for compliance with the application of Advanced Work Packaging.

Contract Language:

Within 30 days of award the Engineering and Procurement successful bidders will submit an Execution Plan for the integration of Advanced Work Packaging based upon the standards identified in this procedure.

The procedure will be utilized to measure compliance through periodical audits conducted by the project management team or 3rd party auditors. The contractors are responsible to address issues from the audits and strive for substantial compliance.

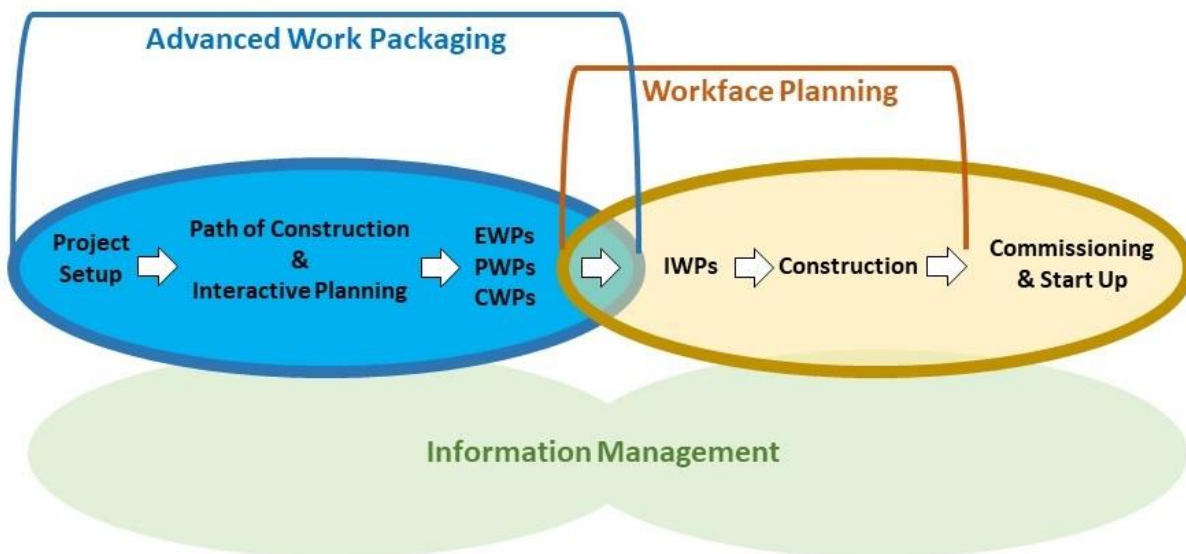
COMPANY reserves the right to periodically review this procedure and apply amendments through the management of change process.

4 OVERVIEW OF AWP, IM AND WFP

Advanced Work Packaging describes the processes upstream of the CWP that aligns Engineering and Procurement to facilitate the sequential creation of CWPs.

Workforce Planning details the processes downstream of the CWPs that leads to the creation of IWPs and execution of field work.

Information Management is the alignment of project data so that it facilitates the transition of Data → Information → Understanding, across Engineering – Procurement – Fabrication - Module Construction – Construction – Turnover - Commissioning.



Adapted from the CII surfboard model

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5 KEY STAKEHOLDER DELIVERABLES TO SUPPORT AWP

At 40% of the overall cost of a project, the construction phase traditionally assumes a large share of the project risk. The project's exposure to risk in the fields of Safety, Quality, Schedule and Cost can all be reduced through the organised execution of work-fronts that are the deliverable from Advanced Work Packaging.

In order to execute AWP-IM-WFP it is important to recognise that each of the project stakeholders contributes deliverables that are required by the Construction Contractors to support the application. This procedure identifies the outline of these deliverables and the actions that are required for their development. Therefore the members of the Project Management Team are responsible to implement and govern the execution of these processes through the application of this procedure.

Engineering: Develop and deliver EWPs, in the correct sequence, ensure that EWPs have all of the engineering requirements for Construction Work Packages, develop, maintain and regularly deliver an intelligent fully attributed 3D model.

Procurement: Insert the requirement for AWP, IM and WFP in all contracts, manage the sequential fabrication of components and modules to satisfy the requirements of Construction Work Packages, ensure that electronic data is a deliverable from fabrication.

Construction Management: Map the Optimal Path of Construction, identify the size, content and sequence of CWPs, facilitate the application of Workface Planning by the contractors and manage field execution.

Project Controls: Develop the level 3 EPC schedule based upon the OPC and sequence of CWPs, provide standards for Earned Value Management.

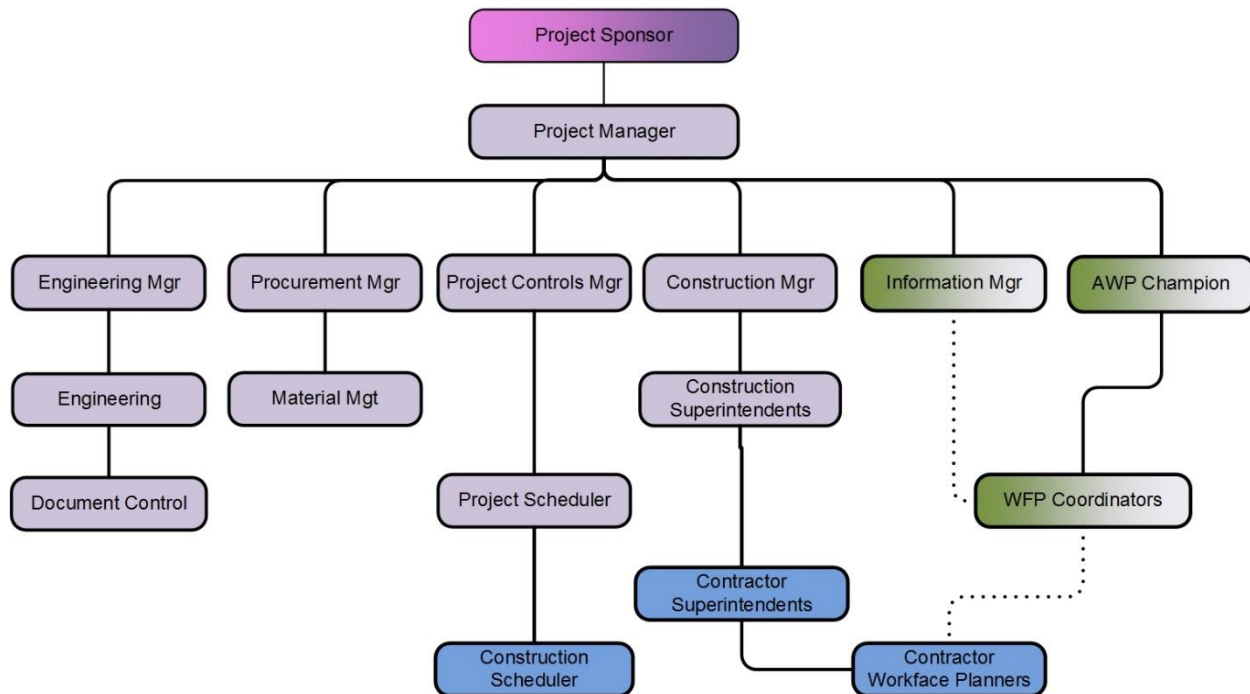
Onsite Material Management: Track and report materials required, ordered and received by Installation Work Package.

Document Control: Develop a single online document management database, store documents by their WBS, establish and maintain permissions that facilitate electronic access for all of the project Stakeholders.

Project Management: Establish the requirement for AWP, IM and WFP in contracts, appoint an AWP Champion and support the application of the AWP, IM and WFP procedures.

6 PROJECT MANAGEMENT TEAM

AWP – WFP integration with the Project Management Team



Project Management Team: A division of the COMPANY responsible to synchronize and manage Engineering, Procurement and Construction for the entire life cycle of the project.

The Project Management Team, led by the Project Manager is responsible to ensure that each of the Major Project Stakeholders satisfy the intent of their AWP-IM-WFP procedures.

The Workface Planning Champion will be assigned to the PMT and be responsible for the administration of the AWP, IM and WFP procedures across all project stakeholders.

7 AWP, IM AND WFP POSITIONS

AWP Champion:

The AWP Champion is the PMT representative responsible to initiate and pilot the processes that will support the application of AWP, IM and WFP procedures by the Project Stakeholders.

The AWP Champion will:

- Be responsible to apply the AWP procedure.
- Be assigned to projects prior to the development of contracts for Engineering, Procurement and Construction.
- Administer the application of the COMPANY AWP-WFP procedures by each of the Project Stakeholders
- Be responsible to guide the application of AWP, IM and WFP through the entire lifecycle of the project; Initiation through to commissioning with all of the contracted organizations.

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- Interact as a member of the PMT with: Engineering, Procurement, Project Controls, Document Control, Material Management, Construction and Operations.
- Facilitate the development of an Optimal Path of Construction and a CWP release plan.
- Support the development of an EWP release plan to support the Optimal Path of Construction.
- Have the authority and be directly responsible for the successful application of Workface Planning on the project.
- Maintain the WFP procedures.

Information Manager

As a member of the AWP-IM-WFP team, the Information manager is responsible to guide the creation and communication of project information on the platform of the WBS.

The Information Manager will ensure:

1. That the IM procedure is applied
2. The structure of the WBS facilitates the alignment of Work, Time and Cost
3. 3D model data is populated with attributes that are developed based upon the needs of Construction, the WFP Software and the need to mine data by other Project Stakeholders.
4. That the structure of the 3D model is based upon CWAs, EWPs and CWPs
5. The document nomenclature is based upon the WBS.
6. The storage of documents in the Document Control database is based upon the WBS
7. Steel Piece mark numbers are unique
8. Spools are identified as a subset of the isometrics
9. Fabricators develop and deliver electronic data as it is created.
10. Onsite Material management data utilizes the correct naming conventions so that there is a direct correlation between 3D model components, drawings and materials.
11. The WFP software is kept up to date with project information, revisions and 'as built' redlines.

WFP Coordinator

The WFP Coordinator is responsible to establish and maintain WFP in the Construction Contractor's organisation. This includes the creation and management of CWPs and the delivery of project information to the Construction Contractor's Workface Planners.

Therefore the WFP Coordinator is responsible to:

- Apply the WFP procedure.
- Work with the Information Manager to facilitate the development of the 3D model so that it supports information management for construction.
- Applying WFP software (ConstructSim or SmartPlant Construction) to the construction team with full functionality.
- Develop and conduct training sessions and ongoing coaching sessions for WFP Software users. (PMT and Contractors).
- Establish and maintain the electronic exchange of information between data generation points and the Workface Planning Software.
- Facilitate the development of CWPs and /or MWPs from EWPs
- Track and report the progress of CWP development.
- Facilitate the integration of project controls data from the Construction Contractors with the WFP Software.

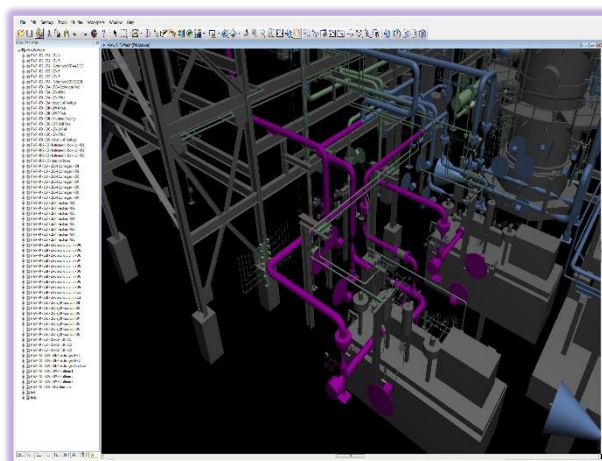
The job descriptions for these positions are stored in the WFP Tool box as **JD01, 02, 03**

8 WORKFACE PLANNING SOFTWARE

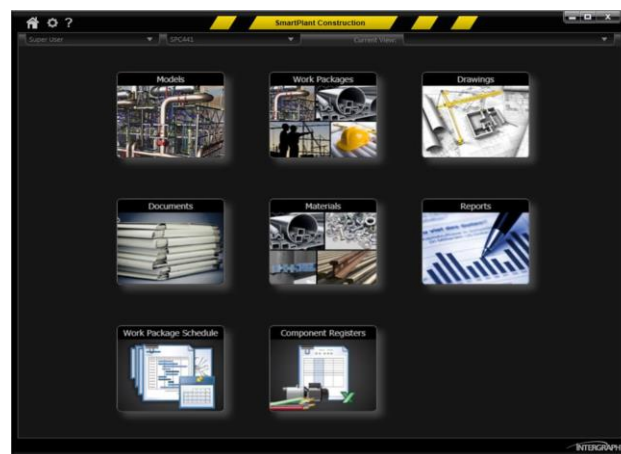
Prior to the start of detailed design the AWP Champion, working with the Engineering and Procurement Teams and the Information Manager will evaluate and select a Workface Planning Software that supports the needs of the project. The decision will be in consideration of the software used for the Engineering 3D model, Procurement/Material management and Document Control.

WFP Software is proprietary software that facilitates the process of developing Installation Work Packages (IWP) in a 3D environment.

There are presently two companies that have products that facilitate the automation of information in a 3D environment for the purpose of work packaging:



ConstructSim



INTERGRAPH
SmartPlant Construction

The software accommodates the calculation of planned value through the insertion of installation rates and rules of progress from the estimate. The intelligent model then allows the users to see the planned value for each component or the cumulative value of a group of objects (an IWP).

The software can then be used to show the state of readiness for IWPs by showing the actual received materials and drawings (in another colour). As the work is executed and progressed the Planner will progress the individual objects (changing the colour) and Earning Value against the total Planned Value.

The culmination of these fragments of information visualized in the 3D environment upon the Workface Planner's desktop facilitates the development of virtual IWPs, based upon the current reality. Objects in the model can also be grouped to represent schedule activities. This creates a visual schedule that can be rolled out one schedule activity at a time to visually simulate construction: (4D modeling).

The software facilitates Workface Planning by visualizing the answers to these complex questions:

- Which components have been engineered and released IFC?
- Which components have been fabricated, shipped and received?
- Which components have been installed (progressed)?
- Which components are scheduled to be installed?
- Which components have been allocated to an IWP?

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- Have the Workface Planning constraints for a specific IWP been removed?

9 3D MODEL

The functionality of the Workface Planning Software is critically dependent upon the structure, attributes and integrity of the 3D model. The correct object attributes must be identified and populated during the early development of the 3D model and then rolled up to the right level to form components that are meaningful to fabrication, material management and construction. The Information Manager is responsible to work with the Engineering team to develop and implement standards that will ensure the correct alignment of Attributes, Objects and Components in the 3D Model.

The AWP Champion will ensure that the fully functional 3D model is monthly deliverable from Engineering to Fabrication and Construction.

10 BID ASSESSMENTS

The AWP Champion will work with the COMPANY's Contract team and the PMT to develop an overall assessment of each Construction Contractor's bid.

The AWP Champion will apply the Bid Assessment Scorecard (**SD02**) to each bid as they are received. A designate from each bidder will be interviewed by the AWP Champion to complete the second portion of the assessment.

The final score for each bid, reported as a % of attainable, will be utilized as a guide to the potential of each bidder to successfully satisfy their portion of COMPANY's WFP procedures.

The Contract Team will consider each bidder's score as a component in their technical bid assessment.

The Bid Assessment Scorecard is available in the WFP Toolbox: **SD02**

11 AWP-IM-WFP KICK-OFF AND LESSONS LEARNED

The AWP Champion, with support from the PMT will conduct a Kick-off and Lessons Learned seminar with representatives from each of the Project Stakeholders, within 30 days of contract award. The whole day session will launch the application of AWP-IM-WFP for the Project Stakeholders and introduce the collaborative nature of information generation, management and sharing for the purpose of Workface Planning facilitation.

The AWP Champion will utilize the morning portion of the seminar to present a PM training program that will highlight the overall concepts, deliverables and interdependencies of AWP-IM-WFP on the project.

The afternoon session will be used to present lessons learned from other projects and the project procedures. The interactive session will invite the Stakeholders to contribute their own lessons learned to a log of experience.

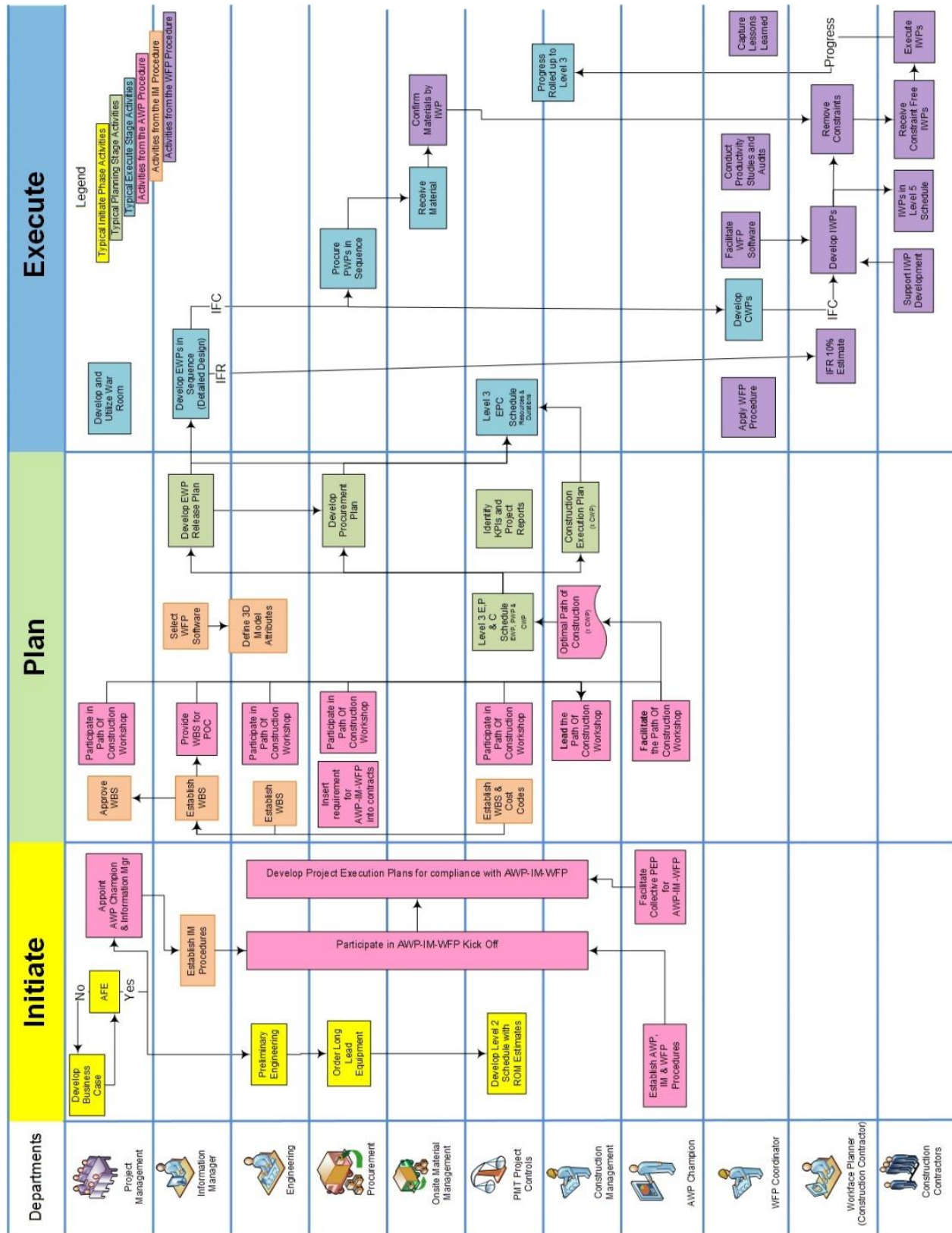
The AWP Champion will then introduce the concept of a stakeholder steering committee and then seek nominations from each of the stakeholder groups. The WFP Steering committee will meet monthly to table issues and seek resolutions for the entire life cycle of the project.

The AWP Champion is responsible to collate the log of lessons learned from the seminar and communicate it across the project.

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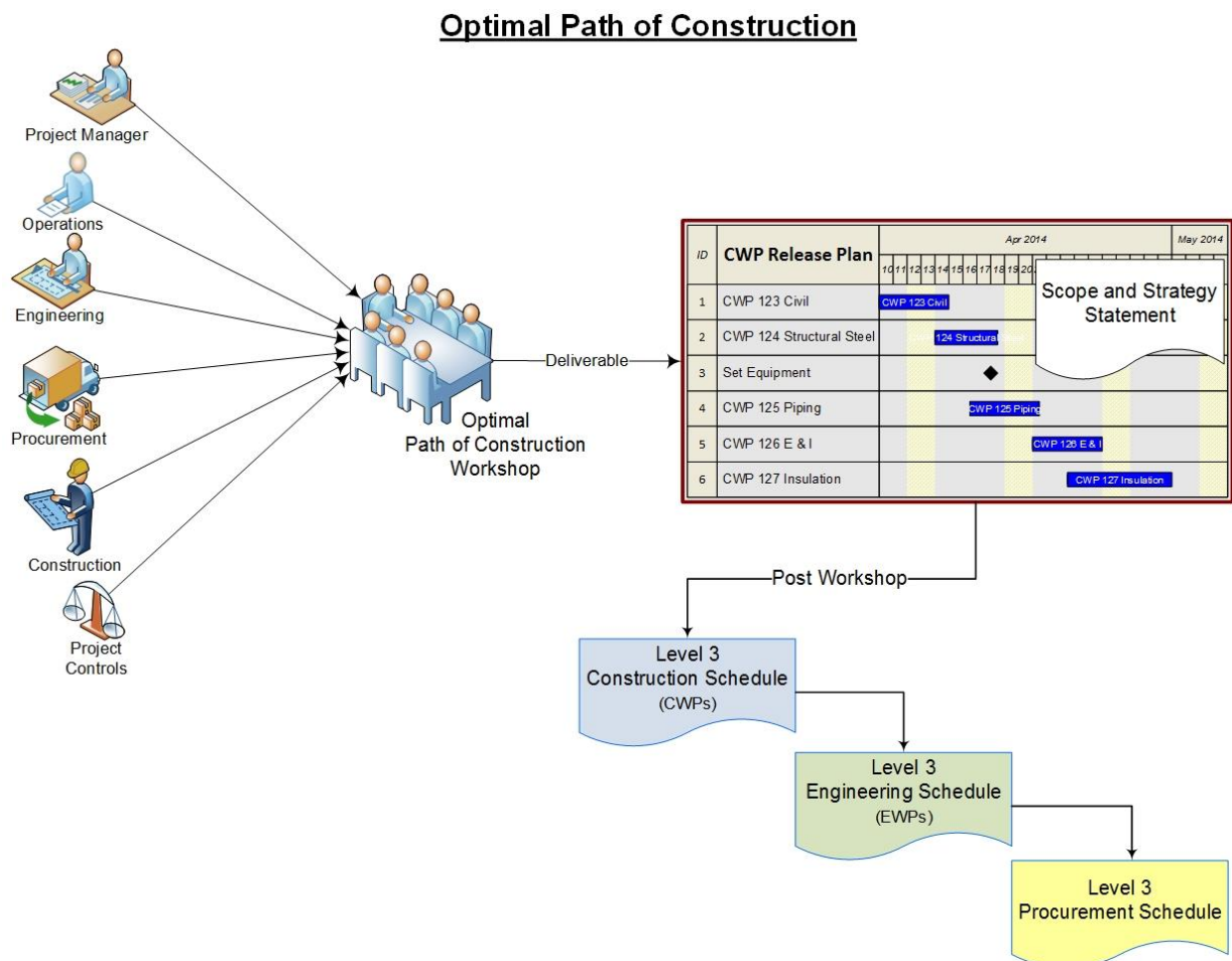
12 PROJECT DEVELOPMENT ROADMAP FOR AWP-IM-WFP



13 OPTIMAL PATH OF CONSTRUCTION

During the front end planning of each project and prior to the start of detailed design the senior project manager will convene a process that facilitates the development of the Path of Construction. The POC will prescribe the sequential development of engineering and procurement to support the optimal sequence of project construction.

The project management team led by the Senior Project Manager will ensure that the logic of optimized construction is the dominant influence on the final Path of Construction.

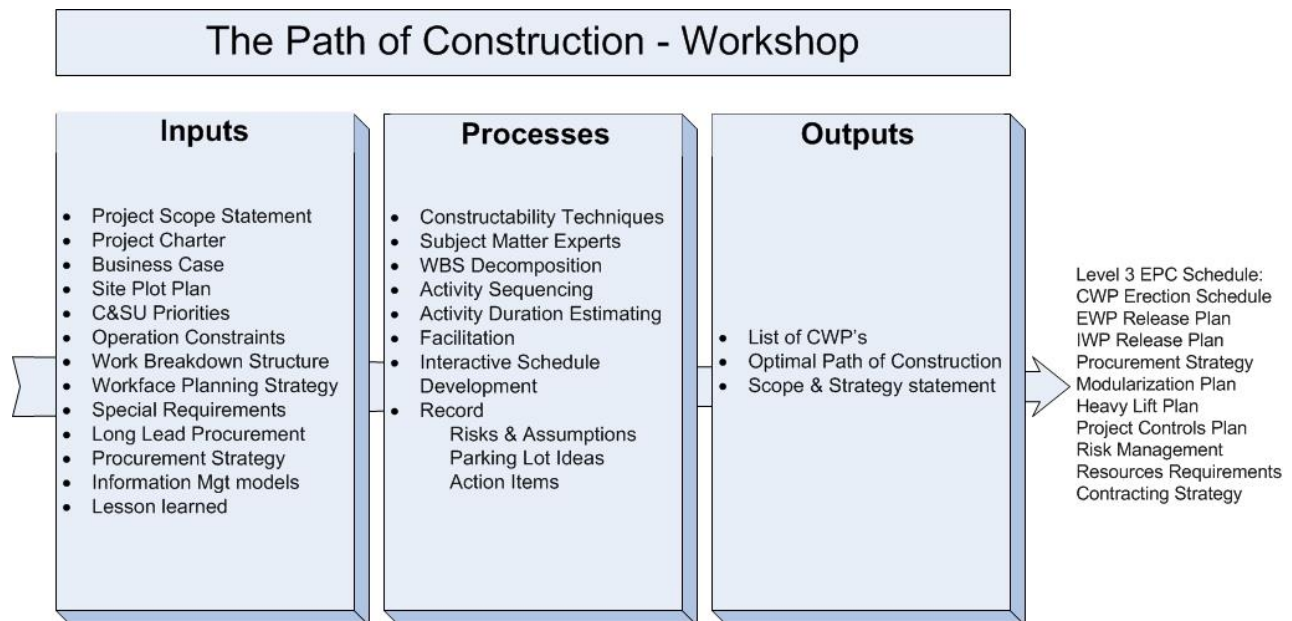


The document: “Path of Construction - Workshop” is available in the WFP Toolbox: **PM04** and establishes the method and structure of the workshop that will be used to develop the Optimal Path of Construction.

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The mandatory sequential development of engineering and procurement based upon the optimal path of construction is a critical requirement for effective Workface Planning. As such this process, which is a best practice on its own, has been included in this procedure as an essential element in the path towards optimized construction through the execution of Workface Planning.



14 Interactive Planning Workshop

The ideal output from the Path of Construction Workshop will be a complete list of single discipline CWP's and the sequence that they should start construction: The **CWP Release Plan**.

The CWP Release Plan establishes placeholders in a schedule format that shows the ideal sequence and approximate lag between the start of construction dates for CWP's

Install Heat Exchangers: CWP Release Plan												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Piles				CWP								
Concrete					CWP							
Steel						CWP						
Pipe							CWP					
E & I								CWP				
Heat Trace									CWP			
Insulation										CWP		

The Engineering and Procurement teams perform a backward pass where they develop activity durations for EWP's and PWP's that will support the requirements of each individual CWP.

For the purpose of this workshop the duration estimates are only for the fabrication and shipping of materials or the development of individual EWP's that takes place after the second model review. The engineering of systems and the procurement of bulk steel and pipe are executed as they normally are across the entire project prior to these start dates.

Install Heat Exchangers: EWP Release Plan												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Piles	EWP	P	CWP									
Concrete		EWP	P	CWP								
Steel		EWP	P	CWP								
Pipe		EWP	P	CWP								
E & I			EWP	P	CWP							
Heat Trace					EWP	P	CWP					
Insulation								EWP	P	CWP		

This method is premised upon the standard that one EWP = one PWP = one CWP and that the end of an EWP duration is the last drawing IFC with the end of a PWP being the last component received at site. The alignment of this methodology also mandates the requirement for work packages to be delivered as complete packages, not by single drawing or individual component. This also means that the activities run in series to each other with a finish to start relationship.

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If module fabrication is a component of the project then a group of modules (<10) will be considered a single CWP (identified by the construction team) and be identified in this release plan as Module Assembly that appears after procurement and before Construction.

At this stage of schedule development, the duration estimates are expected to be a Rough Order of Magnitude (ROM) estimate (+/- 25%) based upon analogous calculations.

With the EWP IFC dates established the Engineering team will develop an estimate for the development duration of each EWP and conduct a backward pass to establish a start date for engineering.

15 AWP-IM-WFP EXECUTION STRATEGIES

- After reviewing the AWP-IM-WFP procedures, each of the Project Stakeholders will be required to develop an Execution Strategy (ES) within 30 days of the AWP-IM-WFP Kick Off or 60 days after contract award, whichever is the sooner.
- The document will present a high level sequence of actions that are required to satisfy each stakeholder's commitment to their AWP-IM-WFP procedures.
- The AWP Champion is responsible to develop an overall AWP-IM-WFP Project Execution Plan from the Project Stakeholder ESs.
- The complete document will be represented as a flow chart along with the dialog of the stakeholder plans.
- The draft of the overall strategy will be submitted to the Project Management Team for review, edits, suggestions and approvals.

Engineering Execution Strategy

The Engineering team will develop an overall ES for AWP-IM for the support of Workface Planning that will encompass the development of the WBS, the 3D model and Document Control. The ES will describe the sequence of high level activities with inputs and outputs that will include but not be limited to:

- Participation in the development of the Path of Construction
- The sequential development of EWPs to support the Path of Construction
- The development of the level 3 (CWP) engineering milestone schedule
- The intention to review and incorporate AWP-IM lessons learned
- A human resource plan for engineering resources required to support this procedure.

The execution strategy will be submitted to the AWP Champion within 60 days, following contract award and will form a component of the Project's overall PEP for AWP-IM-WFP.

Procurement Execution Strategy

The Procurement team will develop an ES that details their contribution to the execution of AWP-IM-WFP. The ES will describe the sequence of high level activities with inputs and outputs that will include but not be limited to:

- Participation in the development of the Path of Construction
- The intention to review and incorporate AWP-IM lessons learned
- The development of procurement contracts that prescribe:
 - Naming conventions based upon the WBS
 - Electronic information deliverables
 - Sequential fabrication based upon the project milestone schedule.
- The establishment of a Material Management Database that has the functionality to support Workface Planning
- Material tracking processes that utilize RFID technology and data management.
- A chain of custody map that shows the handover of responsibility from procurement to material management and warehousing.
- A human resource plan for procurement resources required to support this procedure.

The completed ES will be submitted to the AWP Champion within 60 days, following contract award and will form a component of the Project's overall execution strategy for AWP-IM-WFP.

Construction Execution Strategy

The Construction Contractor's Workface Planning Lead will develop an overall ES for the application of Workface Planning at least 60 days in advance of the commencement of any direct work. The high level strategy will include execution plans for the development of a Workface Planning department and the adoption of this procedure.

The Execution Strategy will include but not be limited to:

- The process for identifying, hiring and training Workface Planners
- The standard for an Installation Work Package
- A plan to integrate WFP Software
- A list of standard constraints and the process for constraint removal.
- An office/equipment/vehicle/radio/phone plan for Workface Planners
- A procedure for short interval (daily) planning
- A process that will ensure that each IWP appears in the schedule prior to execution.
- A cost code structure and process that will allow timesheets to be matched to IWPs.
- A system for the collecting, logging and resolving delays.
- Flow charts that show how the Workface Planners will access document and material information.
- A plan for a "proof of concept" that will validate the information interfaces.
- A plan that links scaffold erection to the IWPs
- A plan that links construction equipment allocation to IWPs
- A Workface Planning training plan and matrix that shows each level of the organisation.
- The schedule for deployment.

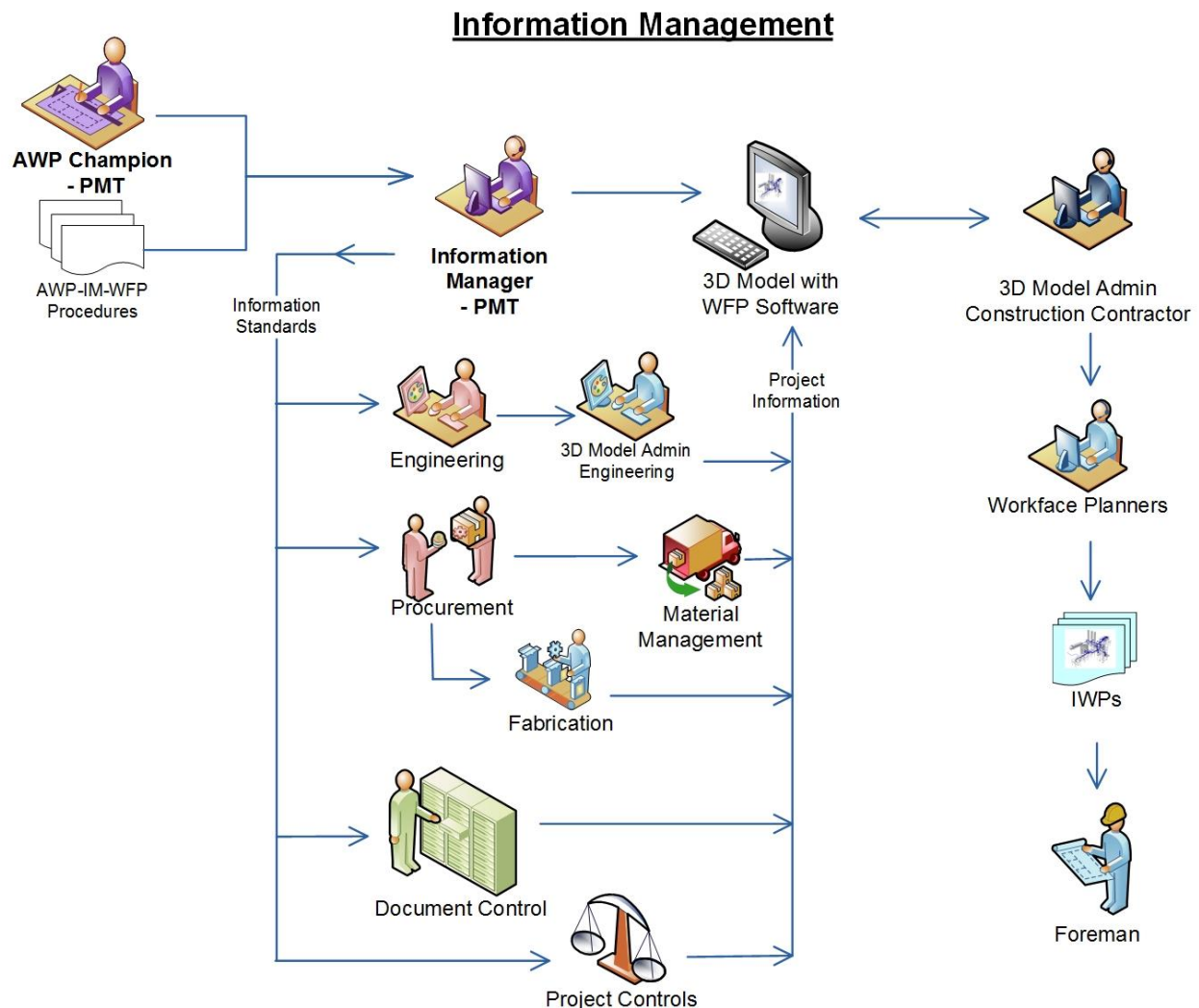
The approved ES will then be used to guide the development of Workface Planning by the Construction Contractor.

16 INFORMATION MANAGEMENT

The AWP Champion will engage an Information Manager to guide the development of information generation, storage and exchange.

The standards for information will be designed to support the interfaces between the 3D model the WFP software, the document control database and the material management system, with consideration for the project schedule and the management of earned value. Whenever possible the standard for data generation should also be compliant with the ISO standard 15926.

The Information Manager is responsible to support the development of project standards for information generation, the WBS and nomenclatures for all of the Project Stakeholders. The project wide standardization of information specifications is expected to facilitate the interfaces between the project stakeholders based upon the foundation of the 3D model.



1.0 Advanced Work Packaging Procedure

17 AUDITS

In order to optimize the Project Management Team's support for AWP-IM-WFP the Project Manager will initiate in-house audits of the process against this procedure during each stage of the project. The AWP Champion will develop the schedule and conduct the audits at the request of the Project Manager. These audit points will appear in the project schedule.

A Summary of the report will contain the following:

- Scorecard of adherence to this procedure as a % of total attainable
- A list of recommendations for alignment.
- Demographics of the project: Phase, Workforce and % Complete
- Comments and observations
- A list of acclamations and recommendations

The audits will utilize the audit template from the WFP Toolbox: **SD07**

The AWP Champion will present the audits to the Project Manager. The Project Management Team will develop a list of action items and assign accountable personnel. The AWP Champion is then responsible to progress the action items and produce a follow up report within one month of the audit.

18 PROCEDURE MAINTENANCE

This procedure is the first in a series of three that are interdependent to each other, therefore care should be taken that changes initiated here are not already covered in one of the other procedures or that the changes do not have a negative impact upon the effectiveness of the process as a whole. The local maintenance of this procedure is the responsibility of the AWP Champion over the course of the project and should reflect the reality of application.

At the completion of the project the AWP Champion is responsible to capture the actions taken by the project team to improve the procedure's effectiveness.

This report should include a detailed list of:

- The audit results that show trends in conformance or diversions from the procedure.
- Changes made to the procedure during the project c/w with an explanation of the reason for the changes.
- Lesson learned captured at the end of the project phases from all stakeholders.
- Project management end of project assessment that captures the effectiveness of the process and procedures.

The final report developed by the AWP Champion will be submitted to the project procedures owner for consideration as a suggestion for continuous improvement.