

AWP COMMITTEE

AWP 2018 Edition: Breaking New Ground & Taking It Forward

Presented by: COAA AWP Committee Panel



AGENDA

- 1. Scalability of AWP for Smaller Projects: Lloyd (Yogesh)
- 2. Return on Investment of AWP Implementation: Ryan P & Yonus
- 3. EWP Readiness Assessment Tool: Joe Hobbs
- 4. PWP The Procurement Work Process: Yogesh
- 5. Path of Construction: Glen
- 6. Mindfulness: Yogesh

Special Note: Revised edition of Schedule for Sale



1. SCALABILITY OF AWP

Presented by: Yogesh

Note – actual scalability presentation is being done at same time

Committees and Chairs

The committees are composed of over 40 professionals from the owner, and engineering, supply chain and construction communities from both sides of the border

Committee	Chair
Steering Committee	Lloyd Rankin (Group ASI)
Owners	Jeremy Furzer (Enbridge)
Engineering and Supply Chain	Randy Friesen (Fluor)
Front-End Construction (FEC)	Kirk Harris (Black & Veatch)
WorkFace Planning (WFP)	Ben Swan (Element Industrial)
Editor	Narjis Shahzad (Teknobuilt)



Our Mandate

- Improving smaller projects' (\$100 million and under) outcomes through the application of Advanced Work Packaging principles.
- The objective is... maximize value through the right planning at the right time to improve project performance as measured by:
 - Productivity
 - o Cost
 - o Safety
 - o Schedule
 - Quality
 - Predictability



AWP Principles: Never Changing

- Determine how you will build the project (POC)
- 2. Determine how to package the project
- 3. Determine how to manage the packages
- 4. Identify and supply the necessary information
- 5. Identify and supply the necessary materials requirements
- 6. Identify and supply the necessary equipment requirements
- 7. Identify and supply the necessary labor requirements





AWP Practices: Must Change

Project Classification Tool

Ready Now

C	COAA AWP - SCALABLE		Construction Familiarity & Complexity Screening Tool					
	Project Name			L	evel Rank Matı	ix		
	Project General Description Review Date:			LOW	Type 1	Type 2 Medium		
	Project Manager Construction Manager			нісн	Medium	High		
No	Question	Complexities (Risks)	Description		Type or Complexity	Screening	General Comment	
ami	liarity Type		Select Low/Hi description from Drop	Down Box 🗸		Record key	decisions and actions	
1	Is Scope of Work (SOW) similar to previously executed projects?	SOW Familiarity	Duplicate project with scope of work similar to previously executed projects and has <50% scope change					
2	Will the development be managed as a program, portfolio or project	Project execution efficiency	Managed as a Portfolio, Program					
3	Are the work packages reusable for this project?	EWP/CWP production efficiency	Standardized design or >50% engineering and construction work packages are recycled from previous projects.					
4	Regulatory and permitting requirement.	CSR; Regulatory, Reputation	Execution team has successfully completed project specific regulatory permitting requirements.		ТҮРЕ 1			
5	What type of construction contract is planned?	Project execution efficiency	Owner or EPC has partnered with select general contractors and assigns construction on a highest value bases		TYPE 1			
6	How is equipment and materials purchased?	Project execution efficiency	Dwner or EPC purchase equipment and material from an approved vendors list		ТҮРЕ 1			
Comj	plexity Level (Consti	ructability)						
1	ls proposed fadiity is brownfield or greenfield?	Operations Interface, Ground Disturbance	Greenfield - No previous facilities existed above or below ground, new development will have minimum impact on operaring facilities. New development is separated from the exiting facility by a minimum of 30 m (100 Ft)		LOW			
2	What is number of separate construction areas?	Coordination, Interface, Battery limits	1 or 2 adjacent areas; Shared resources ca	n be utilized	LOW			
	What is the count of construction	Coordination work face density_Interface	< 7 of any of discipline: earthwork, foundat	ions, structural,				

WorkFace Planning System

Ready Now

6/13/2018



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To be Reviewed By CII and Ready for October 2018



6/13/2018

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2. ROI OF AWP IMPLEMENTATION

Presented by: Ryan Posnikoff – Bentley Systems & Yonas Halala – University of Alberta



Working with University of Alberta NSERC Industrial Research Chair to:

- 1. Develop tools and a framework to assess AWP costs and benefits
- 2. Assess impact of maturity of AWP practices on project performance
- Assess impact of characteristics of workface planners, foremen, and crew on performance
- Develop a method to calculate ROI of AWP on projects



Co-Chair: Ryan Posnikoff – Bentley Systems Co-Chair: Tannis Liviniuk – Pull Plan Andrew Foy – Team Builder Solutions Doug Hill – Team Builder Solutions Barry Tymchuck – Pathfinder Project Services Bobby Patterson – Zachry Group Petra Polster – AECOM Stephen Atkinson – Accenture





DAA 2. ROI OF AWP IMPLEMENTATION





Data Collection Forms





ROI Calculation Framework





Context characterization and correlation analysis framework





Progress to Date:

- 1. Developed data collection instruments and methodology
- 2. Tested data collection and analysis on pilot project
- 3. Developed a report of findings
- Currently soliciting additional projects for data collection



Need for further AWP Research

- 1. Lack of sufficient quantitative data to verify benefits of AWP utilization.
- Cost of implementing AWP is not quantified and compared to benefits in order to determine ROI.
- Impact of crew, foreman, and workface planners on AWP implementation has not been addressed



3. EWP READINESS ASSESSMENT TOOL

Presented by: Joe Hobbs

To provide latest update and how the tool has changed from ROC for EWP to an EWP Readiness Assessment tool. New narrative available to explain the tool as well as now having developed guidelines for most engineering disciplines.



Why do we need a readiness assessment tool?

- Engineering Rules-of-Credit
- EWP readiness versus RoC
- EWP readiness assessment tool











EWP

→ Avg'd Σ Deliverable (Gated RoC)

Drawing 1 \rightarrow Gat

 \rightarrow Gated RoC

Deliverable 2 \rightarrow Gated RoC

Drawing initiated Checking Internal Discipline review Issued For Review Comments incorporated Authentication Issued For Construction







EWP \longrightarrow Avg'd Σ Deliverable (Gated RoC)

EWP = $\Sigma_{\text{deliverable progress / 'N' deliverables}}$

The BIG Question

EWP progress = 95% it has been for 4 months! ANSWER

The 95% progress = completeness ≠ readiness









Engineering Work Package Readiness

GENERAL	%	CUM
Initial Scope Identified	5	5
Initial Design (60% Model)	35	40
Preliminary Vendor Data Received (Where Applicable)	5	45
Preliminary MTO/BOM (Bulks) to Supply Chain	5	50
Final Vendor Data Received / Checks (Where Applicable)	5	55
Model Finalized (90%)	15	70
Deliverables (incl. final MTOs, etc)	15	85
EWP Reviews (Incl Eng Checking / IDR(SQK) / IFR, etc)	5	90
EWP c/w Drawing/Spec/MTOs Issued IFC	5	95
EWP Accepted by Construction	5	100



EWP Readiness – Mechanical/Piping

PIPING / MECHANICAL	%	CUM
Initial Scope Identified	5	5
P&IDs / LDTs IFC Milestone		20
Preliminary Stress Milestone		35
Initial Design (Modelling)	35	40
Preliminary Vendor Data Received (Where Applicable)	5	45
Preliminary MTO/BOM (Bulks) to Supply Chain	5	50
Final Vendor Data Received / Checks (Where Applicable)	5	55
Final Stress Milestone		65
Model Finalized (90%)	15	70
Deliverables (incl. final MTOs, etc)	15	85
EWP Reviews (Incl Eng Checking / IDR(SQK) / IFR, etc)	5	90
EWP c/w Drawing/Spec/MTOs Issued IFC	5	95
EWP Accepted by Construction	5	100



Engineering Work Package Readiness

- Readiness is workflow based (It relies on the activities and contributors to the EWP (not just produced deliverables within it))
- The readiness assessment tool **can be easily modified** to suit differing workflows
- The tools can be applied in a generic form (all disciplines are the same) or be discipline specific
- Readiness can be **assessed by anyone**
- Meant to help facilitate dialogue not to police or punish





Presented by: Yogesh Srivastava Presentation to provide guidance as to changing from a PWPackage to PWProcess. Guidelines for database attributes to support. Guidelines to how to use this as Material Readiness Assessment for any specific CWP.





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The PWP

Procurement Work Process

Procurement Work Package





PWP in the AWP Work Process





4. PWP Life Cycle





Why PWP?

- PWP is the bridge that gets us from how we buy to how we build
- AWP in PWP: <u>Early involvement to influence procurement</u> <u>upstream</u> and have strategy for site materials
- Can start during the POC for Material planning by CWAs
- Scope clarity and alignment
- Relevance of how construction is going to do the work with SCM
 - Three tie points are: EWP, PWP and POs
 - PWPs may have direct correlation to POs or multiple POs







5. Path of Construction

Presented by: Glen Warren The POC has changed as AWP has been adopted. Provides new procedure, new checklist and new guidelines for database attributes to support POC.







The Details

	Path Of Construction - Stakeholder Inputs							
Stakeholder	Input	Туре	Prerequisite for POC	Project Phase				
				PREFEED	FEED	Det Engineering	Construction	
Owner	Enterprise Objectives	Doc						
	Schedule Milestones	Doc						
	Project Scope	Doc						
	Project Execution Strategy	Doc						
	AWP / WFP Strategy	Doc						
	Establish Path of Construction Procedure							
	High-level Scope Summary	Doc						
Pr	Project Charter	Doc						
oje	Project Objectives/Strategy Summary	Doc						
ct _	Project Delivery System	Doc						
Mai	Project Key Milestone/Deadlines	Schedule						
naç	Project Quality Manual	Doc						
jen	Change Management Strategy	Doc						
ıen	Important Risks/Risk Mgmt plan	Doc						
Ĥ	High-level Deliverables List	Doc						
eam (PMT)	Project Work Break-down Structure	Doc						
	Major long lead items	Doc						
	Modularization Strategy	Doc						
	Project HSSE Plan	Doc						
	Lessons Learned Register	Doc						



6. MINDFULNESS

Presented by: Yogesh Provide a high level summary of what the Mindfulness presentation during the next track will be providing.

COAA is trying to determine whether another committee should be struck to further develop guidelines to implement best practices using the "soft skills".

- On an average we have 50,000 thoughts each day
- 98 % of the thoughts are the same as yesterday
- 80 % of those are negative.
- And the things we repeatedly do become automatic and our second nature.

On an average, 47% of the time, we are distracted – HBR Study

Operating in Error!

Distractions: Twice as more in 10 years!

As humans we are no longer cognitively alert as we were 10 years ago

AVERAGE ATTENTION SPAN

10 years ago	20 seconds
Now:	10 Seconds

SHEER VOLUME OF DATA EXPLOSION

Human- and machine- generated data are already experiencing a growth rate that is 10 times faster than that of traditional business data, while machine data is increasing at 50 times the growth rate.

Source: Dr. Cindy Gordon, CEO SalesChoice Inc

We are constantly DISTRACTED....





This decrease in human cognitive focus has been fueled by mobile connectivity. While we are plugged in 24/7, <u>our productivity is being severely impacted by our</u> <u>cognitive dissonance</u>.

Current Applications



MBSR Mindfulness-Based Stress Reduction

Benefit psychologically and physically from extended time spent pinning their attention to the present







MBCT Mindfulness-Based Cognitive Therapy

Emerged as a popular therapeutic intervention to treat depression



Projects & Construction Situation





High momentum of man, materials & machinery



Introducing the Lean Mind: An Inside-Out Practice



The Lean Mind for Personal Practice



15 Minute Personal Practice

- Based on traditional mindfulness concepts from <u>Vipassana & Mitta Bhavna</u>
- It's an inside-out practice of the Self, starts with settling down at your core and
- <u>Three dimensional expansion</u>: of your self to include others, extension in time beyond present moment and expand spatially outside your vicinity.
- Clear and well defined intent built around minimizing waste





- Based on traditional mindfulness concepts
- Going inside-out, it is the expansion of self to include others, extension in time beyond present moment and the work area.
- Clear and well defined intent built around minimizing waste
- Combined with cultural facets of the organization, leadership and employee



Apprenticeship & Mentoring

Next Shift / Trade Efficient Handover

Orderly & Safe Job Site

The Corporate HSE Benefit







People bring Mindfulness HSE: Safety Mindfulness Productivity Existing HSE Orientation and Training Programs A LEAN Mind (Mottainai) culture for every worker orientation Complete & aligned package based execution: AWP/WFP fundamentals

Leverage by Enhanced Onboarding Program

Productivity Problem: Work vs. Waste Equation

