Advanced Work Packaging

Quantifying the Return on Investment
• AWP and WFP – How did we get here?
• COAA/CII Research Team 272 & CII Research Team 319 Publication
• COAA AWP Research Project
  – Question of study
  – Overview of Project
• Key Takeaways for the Session
• Questions and Answers
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Overview of Advanced Work Packaging

The Reason – Why do we need Advanced Work Packaging?

AWP Model – What it looks like and how it works.

AWP in 3 – Getting down to the basics. It doesn't have to be complicated.
Poor Field Productivity
Field productivity rates have declined over the last 30 years. We must improve to stay competitive.

Predictability
Project predictability is more like guesswork than science.

Poor Schedule Performance
Project schedule overruns have become the norm rather than the exception.

Poor Cost Performance
Cost overruns on projects have become all too common.

Advanced Work Packaging
Define CWAs
CWA boundary definition within the plot plan

Path of Construction
Sequencing of the Construction Work Areas that have been defined

Execute Construction
Execution of the overall construction strategy

IWP Release Plan
Sequence of IWP development to support planned crew activities

Measure Performance
Performance measurement for each hierarchical level of the work package breakdown (CWA, CWP, IWP)

EWP Release Plan
Planned sequence of EWP development to support construction

CWP Release Plan
Planned sequence of CWP development to support construction
How Did we Get Here?

(2003 - Present)

COAA – Research and Best Practice Development of WorkFace Planning Model

(2009)

COAA/CII RT 272 – Kickoff of Research Project

(2011)

COAA/CII RT 272 – Completion of Phase I of AWP Research Project

(2015)

COAA/CII RT 272 – Kickoff of the RT 272 Phase II Research Project

(2014)

CII RT 319 – Kickoff of the 319 Project

(2013)

COAA/CII RT 272 – Report out of the 272 Team (Phase II)

(2011)

COAA/CII RT 272 – Report out of the 272 Team (Phase II)

(2015)

CII RT 319 – Report out of Research Team 319 Publication Validating the AWP Model

(2015)

AWP as a Best Practice – CII Announces AWP as an Industry Best Practice
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Advanced Work Packaging
• Improves productivity
• Improves predictability
• Reduces cost
• Improves safety planning
• Improves housekeeping
• Improves alignment
• Improves craft retention
• Improves Foreman performance
• Improves stakeholder satisfaction
Evaluation of project data to determine benefits of AWP as well as maturity traits.

Survey of conference attendees to validate the benefits of AWP.

Also included focus groups. Enabled the team to analyze specific processes and complete maturity level ratings.
The Knowledge Leader for Project Success

Owners • Contractors • Academics

### Maturity Stage

<table>
<thead>
<tr>
<th>Performance Dimension</th>
<th>1 – AWP Early Stage</th>
<th>2 – AWP Effectiveness</th>
<th>3 – AWP Business Transformation</th>
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<tbody>
<tr>
<td><strong>Productivity</strong></td>
<td>Around 10% Improvement</td>
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<td><strong>Safety</strong></td>
<td>0 lost-time accident [TRIR below company average]</td>
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<td>Project experienced minor delays</td>
<td>Project slightly behind schedule during execution</td>
<td>Project slightly ahead of schedule during both planning and execution</td>
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<td><strong>Predictability</strong></td>
<td>Not very satisfying (major changes to estimates)</td>
<td>Moderately positive (minor changes to estimates)</td>
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<td><strong>Quality</strong></td>
<td>In line with previous quality performance</td>
<td>Reworks slightly below company’s average</td>
<td>New plans and RFIs substantially below company’s average (negligible impact on AWP execution)</td>
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### Performance Breakout

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Owners • Contractors • Academics
Presentation Overview

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The AWP ROI Project
Providing Greater Insight into the Current State
The most common question that we hear from Owners and EPCs alike is “what is the typical return on investment?”

To further the implementation of the best practice, we are working to answer that question.
The Need for Further Research

- RT 272 and RT 319 laid a great groundwork for the value of AWP and WFP
- The COAA research team aims to build upon COAA and CII’s advances
  - Additional quantifiable metrics
  - Deeper look at the stages of maturity within organizations and the impact on AWP/WFP success
Sub-Committee Formed
- Tannis Liviniuk (Bentley Systems)
- Ryan Posnikoff (Bentley Systems)
- Petra Polster (AECOM)
- Craig Boudreau (AECOM)
- Bevin Braganza (Imperial Oil)
- Doug Hill (Progressive Industrial Construction Certifications – PICC)
- Stephen Atkinson (KPMG)
- Barry Tymchuck (Fuller Austin)
- Andrew Foy (Williams Energy)
- Chris Thomas (Fluor)

Research Proposal is Developed and Academic Team has joined
- Aminah Robinson Fayek, Professor, P.Eng (Hole School of Construction Engineering, University of Alberta)
- Nima Gerami Seresht
- Yonas Halala

Industry Support
The Team requires organizations with projects and project data that can be analyzed for the research
The Question

Sub-Problem 1 –
What is the effect of AWP/WFP on schedule, cost performance, field productivity and predictability for stakeholders?

Sub-Problem 2 –
What effect does the use of AWP/WFP have on total rework rate on projects?

Sub-Problem 3 –
What effect does the use of AWP/WFP have on Total Recordable Incident Rates on projects?

Sub-Problem 4 –
What effect does the maturity of the AWP/WFP program have on indirect spend?

What is the variance in total return on investment for organizations that have implemented AWP/WFP in relation to the maturity of the Advanced Work Packaging Program?
The project requires industry participants:

• EPCs, EPCMs, Engineering firms and Contractors
  – Utilizing either AWP & WFP, or only WFP
• Able to provide significant data points for analysis
• Interested in advancing industry knowledge, understanding and best practices
Project Sizes

• Advanced Work Packaging is an industry best practice that may be leveraged for projects of any size or type (sustaining project, green or brown field, etc).
• The Research Team is interested in projects of varying sizes from $5 million and greater in value.
What is Required from Participants?

- Fully or substantially completed project
- Organization representative to answer a series of short surveys
- Provide metrics on:
  - Productivity
  - Cost
  - Schedule
  - Predictability
  - Rework
  - Safety
- Data required for all categories
Disciplines to be Studied

• Piping
• Electrical
• Structural Steel
• Scaffold
All data will be collected by your organization’s project personal and submitted to the academic team to ensure confidentiality.

All researchers involved are required to adhere to the University of Alberta’s policy for research involving secondary handling of data.

Appropriate safeguards are in place for the collection, use, and dissemination of data.

Organization identifiers will be removed from data prior to the COAA committee reviews the results.
Present Proposal to COAA BP Conference

Proposal and question finalized

Committee begins project data analysis

Research paper completed and presented

Participants submit data and answer short surveys

Participant organizations briefed on data collection required

After data analysis, research team prepares and compiles paper with findings

Research Committee Formed

UofA Academic Team joins Research Team

2015

Early 2016

May 2016

Early 2017

Winter 2016

Fall 2016

June 2016

2017

Spring 2018
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While the research has not yet been completed, we want to send you away from this session with some key takeaways in improving your return on investment from the subject matter experts of this research team.

In the following slides, we have identified a series of key points through evaluating successes and failures of Advanced Work Packaging and WorkFace Planning best practice implementation by our research team members.

While not all encompassing, these points will give you some tips to evaluate the performance of AWP on your project, which will help to ensure that you are getting the best value for your dollar.
Write it into the Contract

CONTRACT

TERMS OF AGREEMENT

SIGN HERE

X
Tailor your Program to your Needs
Collaboration is Key
You DON’T Need an Army
Conduct Regular Audits
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