Advanced Work Packaging

Quantifying the Return on Investment
• Advanced Work Packaging Overview
• AWP Timeline – 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, both within and external to Alberta, have become all too common.

Advanced Work Packaging
The Reality of Projects Today

- Cost Overruns: 64%
- Schedule Overruns: 73%
- Time on Tools: 33%

Data:
- Ernst and Young, 2015
- CII, 2013
The Reason

Percentage of Time Spent - Foremen

- Travel: 8%
- Planning: 3%
- Paperwork: 5%
- QA/QC: 9%
- Supervision of Crew: 15%
- Safety Activities: 20%
- Meetings (non-safety): 10%
- Other: 30%

COAA
Construction Owners
Association of Alberta
“WFP is the process of organizing and delivering all elements necessary before work is started, to enable craft persons to perform quality work in a safe, effective and efficient manner.”
(Construction Owners Association of Alberta, 2011)
WorkFace Planning was coined as a best practice by COAA in the early 2000’s, and since then has been successfully implemented and executed on a variety of project types and project sizes.

The goal of WorkFace Planning is to improve construction predictability, productivity and performance through early definition of construction needs, improved access to information, and by eliminating roadblocks that would prevent crews from executing work in the field.

Initial WorkFace Planning efforts focused mainly on field level planning, with an aim to increase available work fronts, and therefore decrease the potential for crew downtime.
Installation Work Packages
Advanced Work Packaging

“Advanced Work Packaging is the overall process flow of all the detailed work packages (CWPs, EWPs and IWPs). It is a planned, executable process that encompasses the work on an engineering, procurement and construction (EPC) project, beginning with initial planning and continuing through detailed design and construction execution” (CII, 2013).
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

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

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

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

CWP Release Plan
Planned sequence of CWP development to support construction

CWP Release Plan
Planned sequence of CWP development to support construction

EWP Release Plan
Planned sequence of EWP development to support construction

Measure Performance
Performance measurement for each hierarchical level of the work package breakdown (CWA, CWP, IWP)
IMPROVING ALIGNMENT OF PROJECT STAKEHOLDERS

Construction

Engineering

Procurement
LEVERAGING THE POWER OF COLLABORATION
ADVANCED WORK PACKAGING IS GLOBAL
Advanced Work Packaging in 3 Minutes Video

https://youtu.be/Z9gnny5aJtQ
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COAA/CII RT 272 – Completion of Phase I of AWP Research Project

CII RT 319 – Kickoff of the 319 Project

COAA/CII RT 272 – Kickoff of Research Project

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

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

AWP as a Best Practice – CII Announces AWP as an Industry Best Practice

COAA AWP ROI Team – COAA AWP Research Project Begins

COAA – Research and Best Practice Development of WorkFace Planning Model

How Did we Get Here?

(2003 - Present)

(2009)

(2011)

(2015)

(2014)

(2013)

(2011)

(2015)

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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.

Also included focus groups.

Survey of conference attendees to validate the benefits of AWP.

Enabled the team to analyze specific processes and complete maturity level ratings.
### Performance Breakout

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<th>Performance Dimension</th>
<th>Maturation Stage 1 – AWP Early Stage</th>
<th>Maturation Stage 2 – AWP Effectiveness</th>
<th>Maturation Stage 3 – AWP Business Transformation</th>
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<td>Reworks slightly below company’s average</td>
<td>Reworks and RFIs substantially below company’s average (negligible impact on IWP execution)</td>
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The Knowledge Leader for Project Success

Owners • Contractors • Academics
Performance Breakout

- Productivity
- Quality
- Predictability
- Schedule
- Cost
- Safety

Maturity Stage

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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 (Posnikoff Project Consulting Ltd)
- Petra Polster (AECOM)
- Craig Boudreau (AECOM)
- Roger Ellenberger (Consultant)
- Bevin Braganza (Imperial Oil)
- Doug Hill (Hilldale Services)
- Stephen Atkinson (KPMG)

Research Proposal is Developed

The research proposal has now been drafted and is being peer reviewed by industry subject matter experts and academic advisors.

Industry Support

The Team requires organizations with projects and project data that can be analyzed for the research.
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
• The Committee will have academic support
  – Participant organizations will communicate only with an academic, who signs a non-disclosure agreement.
  – Any information shared with research committee will be stripped of all identifying information
  – Participants will not have to worry about proprietary information being shared with competitors
Present Proposal to COAA BP Conference
Proposal and question finalized
Committee begins project data analysis
Research paper completed and presented to COAA
Participants submit data and answer short surveys
Participant organizations briefed on data collection required
Research Committee Formed
Request for partnerships in project from COAA members
After data analysis, research team prepares and compiles paper with findings
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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
You DON’T Need an Army

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