

AWP xChange: Contractor's Summit

Presented: June 22, 2022



Your Emcee for Today

Andrew Foy VP, AWP & Construction Excellence

- 16+ years experience in industrial construction
- 6 years dedicated AWP implementation experience for a range of Owner organizations
- CII AWP Scaffolding JWG Chair
- CII AWP Leadership Team Member





Your Support Team







Mandi Coker VP, Education & Engagement mandi@o3.solutions





Today's Summit



Purpose:

To educate Contractors, EPC Firms, and Owner/Operators on the best way to support AWP

Agenda:

- Framing Today's Conversation
- Peer Stories presented by Shell, Linde, Zachry
- How Technology Supports Contractors
- AWP Implementation Tips & Support
- Key Takeaways, Q&A





By communicating procedures clearly and effectively with employees ...accident rates will be minimized and subsequently an injury or illness befalling a worker, site visitor or members of the public who happen to be nearby.

The Importance of Communication



- 1. Begin with positive outlook.
- 2. Create an environment to be heard.
- 3. Set the stage for the conversation.
- 4. Be tactful and concise.
- 5. Avoid abrupt, offensive, or accusatory statements.
- 6. Be sure to listen.
- 7. Agree where you can.
- 8. Encourage standards and advocate for success.

Source: IncidentPrevention.com





Housekeeping Items

- Submit questions using Slido (#awpxchange)
- Chat directly with Event Hosts
- All presentations and a link to the recording will be available to registered attendees
- Stay connected!
 #AWPxChange





Interact with Us Using Slido

We will use Slido throughout the day for Q & A Sessions & Polls.

Visit **slido.com** and enter the code **#awpxchange** or scan the QR code to join us!







Slido Practice:

Where are you joining from today?





slido

Where are you joining us from today?

(i) Start presenting to display the poll results on this slide.



03 SOLUTIONS

Framing Today's Conversation



© 2022 The information contained herein is proprietary and confidential.

Speaker Introduction

Josh Girvin CEO

- CII AWP Community for Business Advancement
 - Leadership Team, Member
 - Performance & Benchmarking, Founding Co-Chair
 - Scaffolding Working Group, Founding Co-Chair
 - AWP for Engineering, Founding & Current Chair
- CII Technology Committee Member
- Former SVP Product & Market Strategy for Materials Management / RFID Software
- 12 Technology Patents
- BSE Mechanical Engineering, Princeton



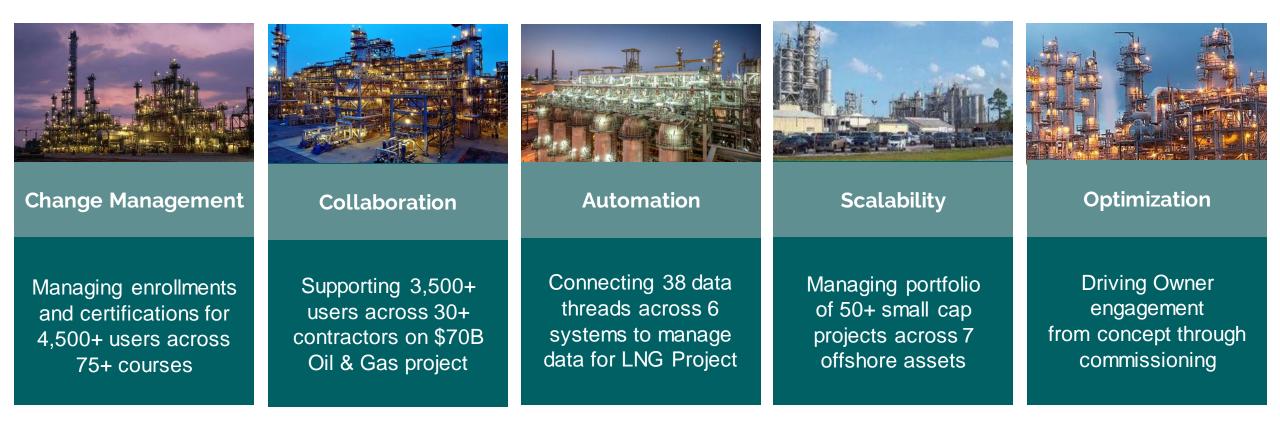
WHO IS O3?

O3 is a modern web-based platform that leverages Advanced Work Packaging and Agile best practices to disrupt the status quo for companies in construction who want to improve productivity, safety, quality, and predictability.





Market Leader in AWP Software







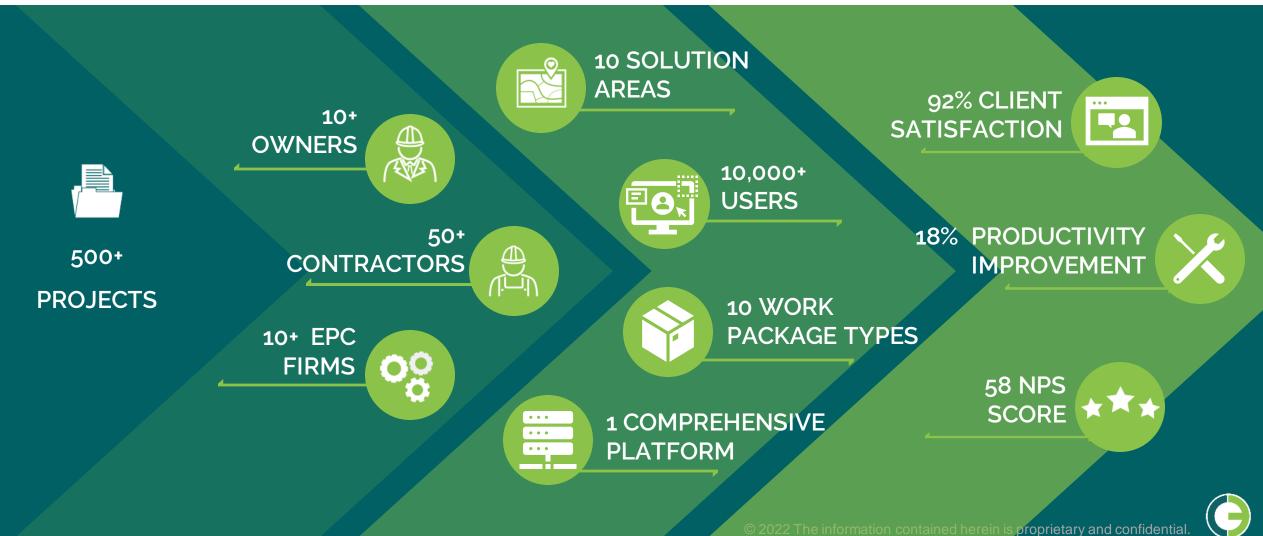








BY THE NUMBERS





Why O₃ is Better.







O3's SOLUTIONS: What Sets O3 Apart

Single, Modern Platform





Supports Work

Packaging



影

Robust Roles & Permissions

Multi-Project Support

Multi-Contractor Support

Continuous Innovation



© 2022 The information contained herein is proprietary and confidential



O3's SUITE OF SOLUTIONS







Visit O3 Solutions online to:

- Download case studies
- Check out our latest webinars
- Watch quick overview videos of our solution suite
- Connect with us on social media
- Sign up for our monthly newsletter

www.o3.solutions



PART ONE: Peer Stories: Successful AWP Program Collaboration Examples





Today's Summit

PART ONE - Purpose

To share stories directly from practitioners who have successfully implemented Advanced Work Packaging and Workface Planning programs

Peer Stories

- Shell: Powering Progress in Projects with Advanced Work Packaging, Interview with Jay Moser
- Linde: 'Last Mile' of AWP in the Field, Implementing AWP & Workface Planning with Construction Partners
- Zachry: Leveraging Data to Simplify AWP

Q&A Session with all Speakers



Today's Summit

PART ONE - Purpose

To share stories directly from practitioners who have successfully implemented Advanced Work Packaging and Workface Planning programs

Peer Stories

- Shell: Collaborating with Contractors to Deliver AWP Outcomes, Introduction by Jay Moser
- Linde: 'Last Mile' of AWP in the Field, Implementing AWP & Workface Planning with Construction Partners
- Zachry: Leveraging Data to Simplify AWP

Q&A Session with all Speakers

Speaker Introduction

Jay Moser Principle Technical Expert Construction at SHELL Projects & Technology

Shell







Powering Progress in Projects Advanced Work Packaging

A thriving and inspired community



The companies in which Shell plc directly and indirectly owns investments are separate legal entities. In this presentation "Shell", "Shell Group" are sometimes used for convenience where references are made to Shell plc and its subsidiaries in general. Likewise, the words "we", "us" and "our" are also used to refer to Shell plc and its subsidiaries in general or to those who work for them. These terms are also used where no useful purpose is served by identifying the particular entity or entities. "Subsidiaries" and "Shell companies" as used in this presentation refer to entities over which Shell plc either directly or indirectly has control. Entities and unincorporated arrangements over which Shell has joint control are generally referred to as "joint ventures" and "joint operations", respectively. Entities over which Shell has significant influence but neither control nor joint control are referred to as "associates". The term "Shell interest" is used for convenience to indicate the direct and/or indirect ownership interest held by Shell in an entity or unincorporated joint arrangement, after exclusion of all third-party interest.

This presentation contains forward-looking statements (within the meaning of the U.S. Private Securities Litigation Reform Act of 1995) concerning the financial condition, results of operations and businesses of Royal Dutch Shell. All statements other than statements of historical fact are, or may be deemed to be, forward-looking statements. Forward-looking statements are statements of future expectations that are based on management's current expectations and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in these statements. Forward-looking statements include, among other things, statements concerning the potential exposure of Shell to market risks and statements expressing management's expectations, beliefs, estimates, forecasts, projections and assumptions. These forward-looking statements are identified by their use of terms and phrases such as "aim", "ambition", "anticipate", "could", "estimate", "expect", "goals", "intend", "may", "objectives", "outlook", "plan", "probably", "project", "risks", "schedule", "seek", "should", "target", "will" and similar terms and phrases. There are a number of factors that could affect the future operations of Shell and could cause those results to differ materially from those expressed in the forward-looking statements included in this presentation, including (without limitation): (a) price fluctuations in crude oil and natural gas; (b) changes in demand for Shell's products; (c) currency fluctuations; (d) drilling and production results; (e) reserves estimates; (f) loss of market share and industry competition; (g) environmental and physical risks; (h) risks associated with the identification of suitable potential acquisition properties and targets, and successful negotiation and completion of such transactions; (i) the risk of doing business in developing countries and countries subject to international sanctions; (i) legislative, fiscal and regulatory developments including regulatory measures addressing climate change; (k) economic and financial market conditions in various countries and regions; (I) political risks, including the risks of expropriation and renegotiation of the terms of contracts with governmental entities, delays or advancements in the approval of projects and delays in the reimbursement for shared costs; (m) risks associated with the impact of pandemics, such as the COVID-19 (coronavirus) outbreak; and (n) changes in trading conditions. No assurance is provided that future dividend payments will match or exceed previous dividend payments. All forward-looking statements contained in this presentation are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. Readers should not place undue reliance on forward-looking statements. Additional risk factors that may affect future results are contained in Shell's Form 20-F for the year ended December 31, 2020 (available at www.shell.com/investors) and www.sec.gov). These risk factors also expressly gualify all forward-looking statements contained in this presentation and should be considered by the reader. Each forward-looking statement speaks only as of the date of this presentation, June 22, 2022. Neither Shell plc nor any of its subsidiaries undertake any obligation to publicly update or revise any forward-looking statement as a result of new information, future events or other information. In light of these risks, results could differ materially from those stated, implied or inferred from the forward-looking statements contained in this presentation.

We may have used certain terms, such as resources, in this presentation that the United States Securities and Exchange Commission (SEC) strictly prohibits us from including in our filings with the SEC. Investors are urged to consider closely the disclosure in our Form 20-F, File No 1-32575, available on the SEC website <u>www.sec.gov</u>.

Shell's operating plan, outlook and budgets are forecasted for a ten-year period and are updated every year. They reflect the current economic environment and what we can reasonably expect to see over the next ten years. Accordingly, Shell's operating plans, outlooks, budgets and pricing assumptions do not reflect our net-zero emissions target. In the future, as society moves towards net-zero emissions, we expect Shell's operating plans, outlooks, budgets and pricing assumptions to reflect this movement.

Also, in this presentation we may refer to Shell's "Net Carbon Footprint", which includes Shell's carbon emissions from the production of our energy products, our suppliers' carbon emissions in supplying energy for that production and our customers' carbon emissions associated with their use of the energy products we sell. Shell only controls its own emissions. The use of the term Shell's "Net Carbon Footprint" is for convenience only and not intended to suggest these emissions are those of Shell or its subsidiaries.



Is the use of AWP a requirement on capital projects for Shell?



Is Shell using AWP across all project phases, or is the process typically limited to construction?



How do you see the role of Engineering & Procurement contractors verses a Construction contractors, in terms AWP?



How do you manage the technology side of the process, when working with the contractors?

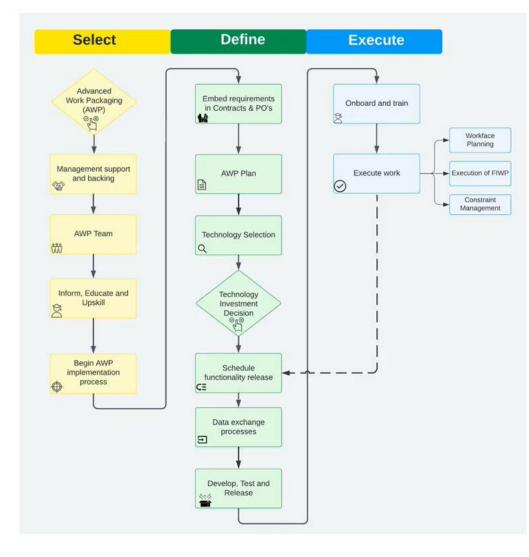


Is AWP adoption a significant step-change in the way that projects are executed?

Ways of working



AWP Journey



OPPORTUNITY



Why Advanced Work Packaging (AWP)?

- On SDA we demonstrated that improvements during construction can be made through adoption of AWP
- The Industry is heading in this direction, it is not optional if we want to stay competitive
- Increase productivity of contractors through better planning and constraint management
- Improve construction & commissioning safety performance
- Decrease in re-work
- Improved job satisfaction

Benefits of AWP

The following benefits of AWP were observed by CII, based on 20 case studies.

Productivity	An average 25% increase
Cost	Savings between 5-10 % of TIC (Total Installed Cost)
Safety	Zero lost time in 25 million construction hours
Schedule	13 projects met deadline, 6 were ahead of schedule
Quality	Enhanced quality with reduced rework observed
Predictability	High predictability in cost and schedule observed
	CII = Construction Industry Institute



Speaker Introduction

Eric Leimer Project Director

The AWPXChange





"Last Mile" of AWP in the Field –

Implementing AWP & Workface Planning with Construction Partners

Eric Leimer AWPXChange[™] – June 22, 2022

Making our world more productive



The Linde Engineering World



Gases

Division

Engineering

Division

→ The leading industrial gases and engineering company

- ➢ Formed in 2018 with the merger of Linde AG and Praxair, Inc - two world-class companies with nearly 140 years of shared history and successful achievements
- Proven critical project execution knowledge in diverse geographies

→ Best-in-Class safety performance



Unique setup

Close to the customer with an integrated business model

Linde Engineering ~7,300 Employees*

Petrochemical Plants Hydrogen & Synthesis Gas Plants Natural Gas Plants Air Separation Plants Adsorption & Membrane Plants Manufacturing of Components Services

100+

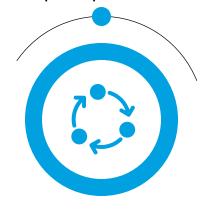
Active on more than 140** construction sites worldwide

*As of 2020 ** As of 2019 **Our company** We serve our customers in over 100 countries worldwide

Integrated EPC planning & execution with the end in mind – Key Learnings (AWPXChange[™] 05/2021)



• Stick to CII/COAA and industry AWP principles & terminology





Concept / Feed Phase

- AWP is integral part
- Frontloaded Path of Construction is key
- Integrated EPC concept schedule as basis for L3
- Stable foundation for EP execution

EP Execution

- Definition & tracking of EWPs & PWPs is key
- Constraint management
- Interdisciplinary supply chain management
- Controlled CWP hand-off to construction





Workface Planning & Site Execution

- Transparency for early mitigation
- Common WFP platform for better cooperation
- 3D constr. model & graphical work packaging (ad-hoc implementation challenging but works)
- Data requirements in POs & sub-contracts

Which benefits can AWP & WFP deliver to field execution?



Competitiveness

- Cost efficient projects
- Win-win for proj. stakeholders

Field Execution & Project Result

- Increased field efficiencies
- Schedule certainty

Execution Planning & Controls

- Improved safety
- Transparency & single truth
- In-sequence execution

EP Deliverables

- Availability of material, drawings, & data by constr. sequence
- Predictable work fronts

Partnering / Sub-Contracting – Familiarization with AWP & WFP

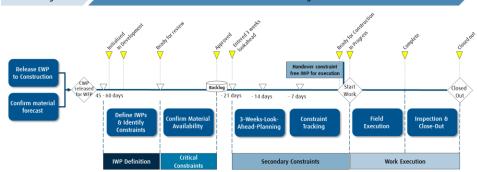


- Invitation to Tender (ITT) & Sub-Contract(s) include AWP & WFP
- Workshops with Construction Partners (at management & project level)
 - Linde's AWP approach for EP scope
 - WFP execution at site
 - Integrated Construction & WFP platform
- In APAC & EMEA, Construction Partners typically have limited experience in AWP & WFP
 - Almost all have some level of familiarization & experience with AWP
 - Generally seen positive & as opportunity to mitigate execution risks
 - Limited confidence to price-in efficiency gains from AWP/WFP (for unit-rate contracts)

Workface Planning Set-Up with Construction Partner

- WFP procedure
- CWA definition
- CWP / Execution Task types
- Norm manhours for WFP
- Data requirements for Construction Partner (mainly for pipe & steel prefab.)
- WFP Software Set-Up & Configuration
- Reporting format and dashboards (integrated with L3/L4 schedule & progress reporting)
- Org. set-up of Construction & WFP team
- Training materials and set-up



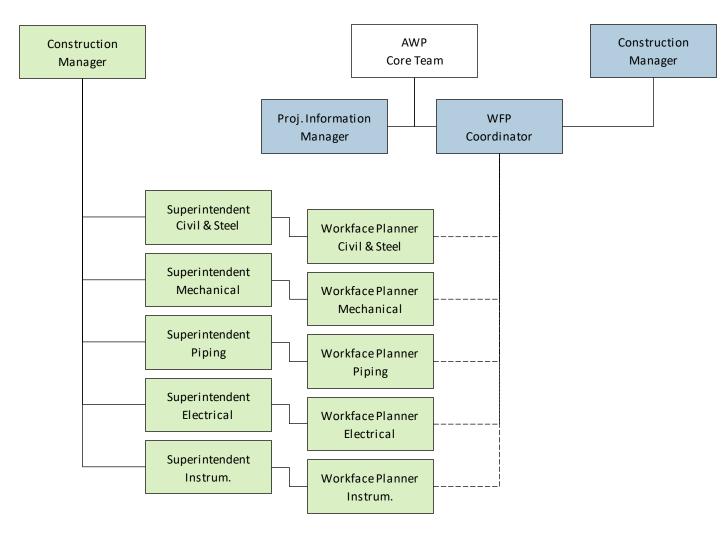






Workface Planning – Typical Site Organization





Workface Planning & Construction – Site Execution

- Release of CWPs for Workface Planning (by Linde)
 - EWPs released & PWPs sufficient material coverage confirmed
 - Data upload to Constr. Mgmt. Syst. (CMS) & WFP Software
 (e.g., CWP & EWP index, docs. per EWP, components & associated material, 3D model)
- Workface Planning Coordination at Site
 - Integrated planning sessions with construction to break down CWPs
 - Alignment of construction execution and WFP
 - IWPs fulfil quality & safety standards (integrate workflows of QHSE & WFP)
 - WFP generates sufficient work front in form of IWPs
 - Follow-up on timely closure of IWPs
- Material Management
 - Material receiving, registration, and release for construction
 - Issue of material to field by IWPs (integrated workflow with WFP)

Public

WFP

Set-Up

Partnering

Site

Execution





Implementing AWP & Workface Planning with Construction Partners – Lessons Learned





- WFP "light" with little leadership by Linde not successful
- Integrated WFP platform
- Release of CWPs with clear scope definition and required data
- Integration of AWP WBS into project controls
 - L3/L4 schedule & resource loading
 - Progress reporting
- WFP coordination at site
 - Lead WFP Coordinator by Linde
 - Integrated Construction and WFP team (Linde & Constr. Partner)
 - Include sub-sub-contractor management in WFP
- Material management



Thank you for your attention

Linde Engineering Eric Leimer eric.leimer@linde.com www.linde-engineering.com

Making our world more productive



Speaker Introduction

Duncan Turner Senior Project Engineer

ZACHRY



ZACHRY GROUP

Leveraging Data to Simplify the AWP Process

06/22/2022



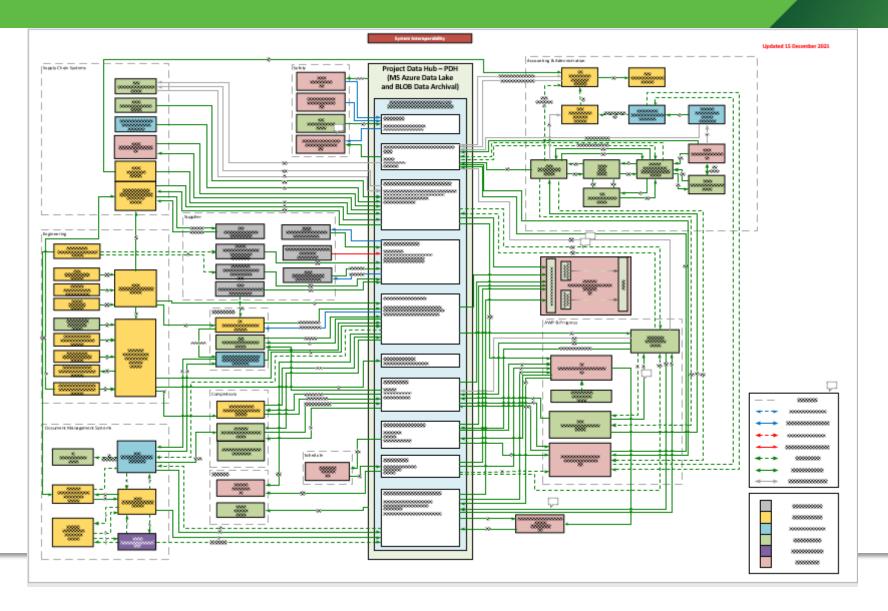
Background







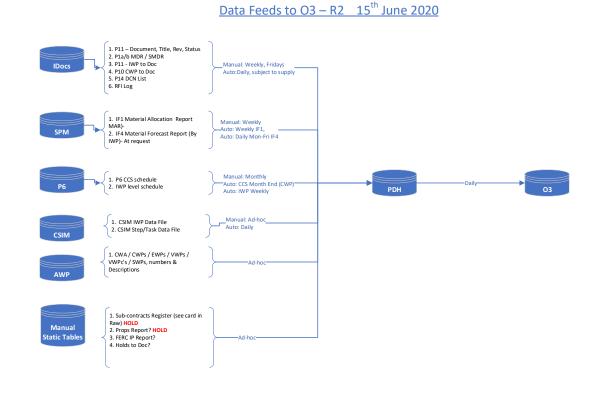
Applications, Databases and High Level Interfaces



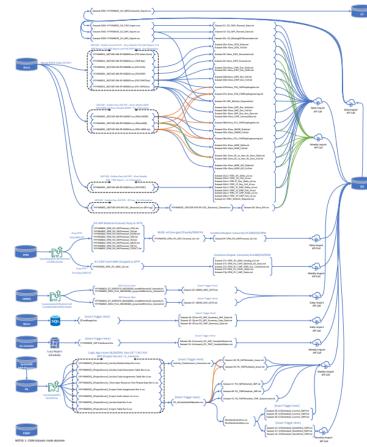




O3 Detailed Interfaces



O3 Data Flow Diagram; Source Data Level

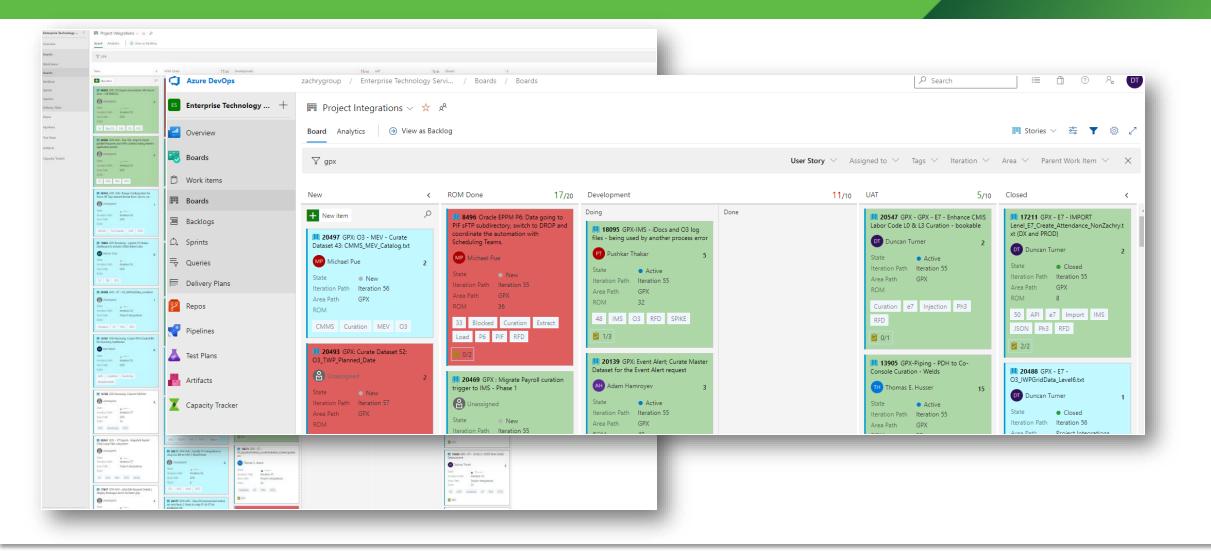






REVISON DATE: 2022-05-24

Execution Philosophy



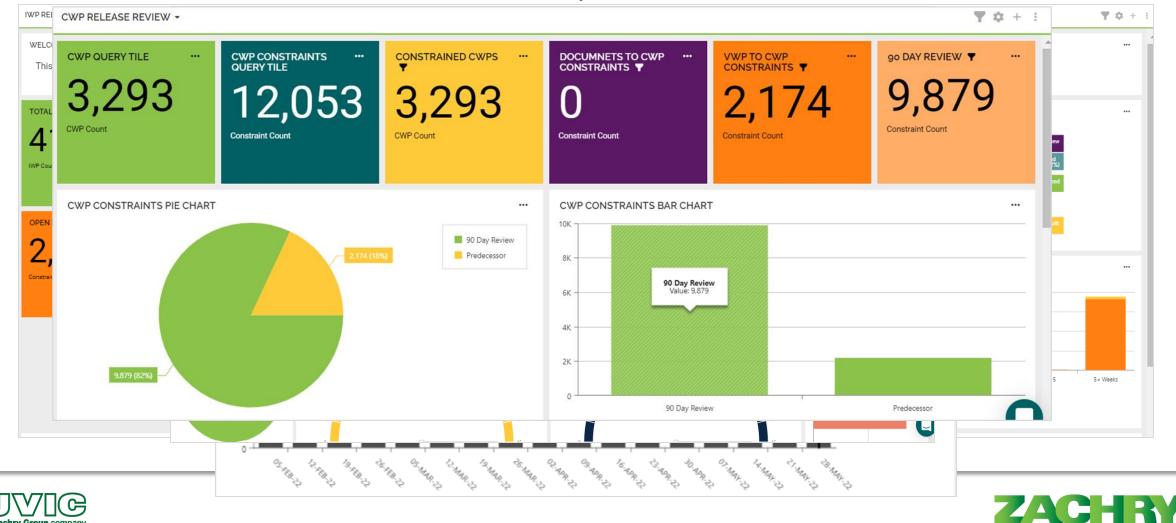




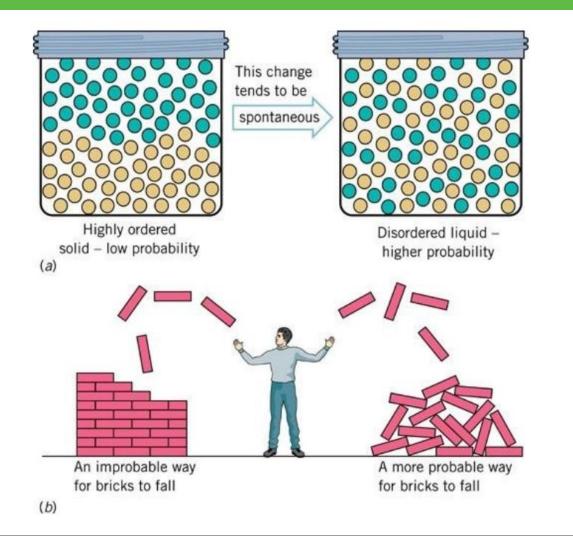
Dashboards

a Zachry Group company

CHARDERED BARADAR HADDAIR



Lessons Learned





"He's right, when you look at it that way, it's not so bad!"





Thank you zachrygroup.com jvic.com





Jay Moser





Eric Leimer





Duncan Turner



Q & A #awpxchangeQA





slido

Audience Q&A Session

(i) Start presenting to display the audience questions on this slide.





Short Break, back in 5 minutes



AWP xChange: Contractor's Summit PART TWO

Presented: June 22, 2022





Today's Summit



PART TWO - Purpose

To share support and implementation tips and best practices for AWP programs and projects

AWP Technology Discussion

- The latest software available to support AWP programs
- A discussion about contractual agreements

Project Implementation Tips & Support

- Requirements, Assessments, and other examples
- AWP Implementation Toolkit







PART TWO: AWP Technology Discussion



Speaker Introduction

Colin Budka O3 Product Manager

- CII AW P Performance & Benchmarking Committee
- Experience with projects in Manufacturing, Oil & Gas, Chemicals
- Former EMT
- Venture for America Fellow, 2018
- Electrical Engineer, Case Western Reserve University





What's New in AWP Software?



© 2022 The information contained herein is proprietary and confidential.



Agenda & Objective

Purpose: Review significant changes from the last 12 months of development in O3

Data Management

- Requirements
- Deliverables
- Forms

Change Management

- Releases
- Annotations
- Notifications

Model and Status Visualization

- Expanded Stakeholders
- Automation
- Reporting



Data Management



© 2022 The information contained herein is proprietary and confidential.

Data Management



- Field-level data requirements
- Entity-level requirement generation
- Import template generation



- Configurable field mappings
- Alerts and notifications
- Reporting and analytics



- Configurable detail forms
- Configurable tabs
- Field-based templates



Data Management



- Field-level data requirements
- Entity-level requirement generation
- Import template generation



- Configurable field mappings
- Alerts and notifications
- Reporting and analytics



Simplify Communication

- Configurable detail forms
- Configurable tabs
- Field-based templates



Change Management



© 2022 The information contained herein is proprietary and confidential.

Change Management



- Vendor Data and Drawing annotation
- Linked constraints
- Enhanced RFI management



 CWP release management

 Drawing release management



- Change-based notifications
- Configurable settings
- In-app inbox

Change Management



- Vendor Data and Drawing annotation
- Linked constraints
- Enhanced RFI management



- CWP release management
- Drawing release management



- Change-based notifications
- Configurable settings
- In-app inbox



Model and Status Visualization



© 2022 The information contained herein is proprietary and confidential

Model and Status Visualization



- Purpose-built TWP creation
- Mobile model access
- Expanded format options



Automate Planning

- Expanded scoping automation
- Resource
 Requirement
 Automation



- 4D visualization
- Expanded Status visualization
- Progress Curves



Model and Status Visualization



Expand Access

- Purpose-built TWP creation
- Mobile model access
- Expanded format options



 Expanded scoping automation

 Resource Requirement Automation



Visualize Progress

- 4D visualization
- Expanded Status visualization
- Progress Curves



Recap of New Features





© 2022 The information contained herein is proprietary and confidential.



© 03 SOLUTIONS

PART TWO: Contractor's Role in AWP Technology



ential.

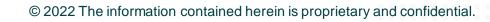
© 2022 The information contained herein is proprietary and confidential.



Purpose:

Discuss how AWP technology is used on capital projects and which organization is best placed to implement it

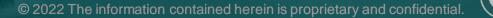




Who typically provides the software for Advanced Work Packaging and Workface Planning on Capital Projects?



Who is generally the <u>purchaser</u> of AWP software?



Are Owners <u>mandating</u> AWP and AWP software on their projects?

Are you seeing movement from Contractors?

Why have Contractors not historically purchased software?



© 2022 The information contained herein is proprietary and confidential

What is the <u>benefit</u> to the contractor in purchasing the software directly?

D. WELSON



© 2022 The information contained herein is proprietary and confidential.

When should AWP/WFP software be introduced on a project?

Who should have access to the AWP software?



How is AWP software used differently when purchased by an Owner versus an EPC versus a Contractor?



Who do you think should hold the technology in order to bring maximum value to the project?



© 2022 The information contained herein is proprietary and confidentia

What if the Contractor doesn't want to share certain information with the Owner or other stakeholders?



Who is most likely to <u>push back on the</u> introduction of AWP software on a project?



AWP Implementation Tips & Support





PART TWO: Contractual Agreements to Support Collaboration



© 2022 The information contained herein is proprietary and confidential



Purpose:

Learn how O3 can maximize your opportunity to win more contracts with AWP software.

- AWP in Contracts
- Timing
- Ownership
- Wording of AWP Requirements
- Contractor Assessment
- Questions

AWP In Contracts



Contractor Summit

The AWPXChange

- Does AWP language belong in bid documents and contracts?
- Have you ever seen AWP language in a bid or contract?



Contract Language Timing





The AWPXChange

© 2022 The information contained herein is proprietary and confidential.



Contract Language Ownership

Who decides what the AWP requirements are?

Who decides which contracts they apply to?

Contractor Summit

The AWPXChange







Contract Language Wording of AWP Requirements

- What should be written in the contract?
- Are we seeing consistency in contract language for AWP?

"On this project we will 'build AWPs"

Contractor Summit



Contractor Assessment – Pro Tips

- Read the requirements
- Perform a gap analysis
- Guideline vs Stipulation
- Push back (if needed)
- Be honest about experience
- Don't reply with vapor

Contractor Summit







AWP Implementation Toolkit



 $\ensuremath{\mathbb{C}}$ 2022 The information contained herein is proprietary and confidential.



Purpose: Busting the myth that AWP is difficult to implement and giving you resources to accelerate adoption

Background

- AWP is growing into a global best practice.
- More and more companies are implementing AWP.
- A lot of material is available to help organizations new to AWP.
- But there is no single, step-bystep guide available.





AWP Implementation Toolkit

- O3 is developing an implementation toolkit to address this shortfall.
- Released in a series of publications over the course of the next year.
- Free-issued to the community.
- Rather than a lot of theory, this will be an actual project, albeit a fictitious one.
- Practical examples and real documents.



The AW

hange

Frequently Asked Questions



Contractor Summit

- Doesn't CII do that?
- Is this AWP training?
- What will be included?
- Who should use this material?
- Aren't there consultants that do this?



Contractor Summit

Where can I find the toolkit?

Advanced Work Packaging Implementation Toolkit

Download the following materials discussed in the AWP xChange Sessions.

What is Advanced Work Packaging?

AWP began as a Workface Planning (WFP), and was initially developed in Canada as an effort to reverse declining field productivity by improving execution planning and efficiency. This concept was then extended into a partnership between the Construction Owners Association of Alberta (COAA) and the Construction Industry Institute (CII).

TABLE OF CONTENTS Definitions and A Business Case Deliverable One: Part Two - FEL2 Delive 5 FEL2 - Construction Work Ar EL2 - Path of Constructio FEL2 - Work Breakdown FEL2 - 3D Model Advanced Work 9 FEL2 - Modularization FEL2 - Turnaround. 11. FEL2 - Contracting Strateg **Choosing a Pilot Project** EEL2 - Engineering Work for AWP hich Organization You Represent? 2 What Stage is the Projec October 2021 10. 10. 10. Tes No Yes No Will the Project Use a Data-Rich 3D Model? Ten No Yes No Will the Project Use an Integrated Procurement & Materials Management Statem? . ---Contractors – Is AWP an Owner mandate / Do you have the authority to Tes No. Yes No. . . AWP Implementatio Category

AWP was recognized as a CII Best Practice in 2015. There is a LOT of information about AWP, so it can be difficult to know where to start. Below, we will focus on the key information sources and most easily accessible information.

The intent for this toolkit is to provide help and guidance for people and companies looking to start their AWP journey. Each deliverable will be structured as a logical, sequential part of the process, and the resulting toolkit will provide a step-by-step guide to AWP implementation and execution.

https://bit.ly/AWP-Toolkit-from-O3

© 2022 The information contained herein is proprietary and confidential.



WRAP UP: Key Takeaways





Key Takeaways for the Day

requires contractors to be

successful

AWP is a project execution methodology not a construction execution methodology	Contractors who demonstrate the ability to support AWP with process and technology will win work over those who do not
O3 is the leading AWP solution with support for the entire project lifecycle	AWP is not as hard as some people would like you to think
Leading Owners are requiring AWP by building clear expectations into contracts and bid packages	Check out all of the free resources from CII and O3 and you can get started today
AWP is a collaborative process that	

© 2022 The information contained herein is proprietary and confidential



Contractor Summit The AWP/Change

Conclusion





Contractor Summit The AWP/Change

Q & A #awpxchangeQA2





slido

Audience Q&A Session

(i) Start presenting to display the audience questions on this slide.



Turn ON the Power of O3

www.o3.solutions



Are you finding more contractors becoming familiar with AWP in general?