Changing How the World Builds

CII AWP Community of Business Advancement Update Webinar

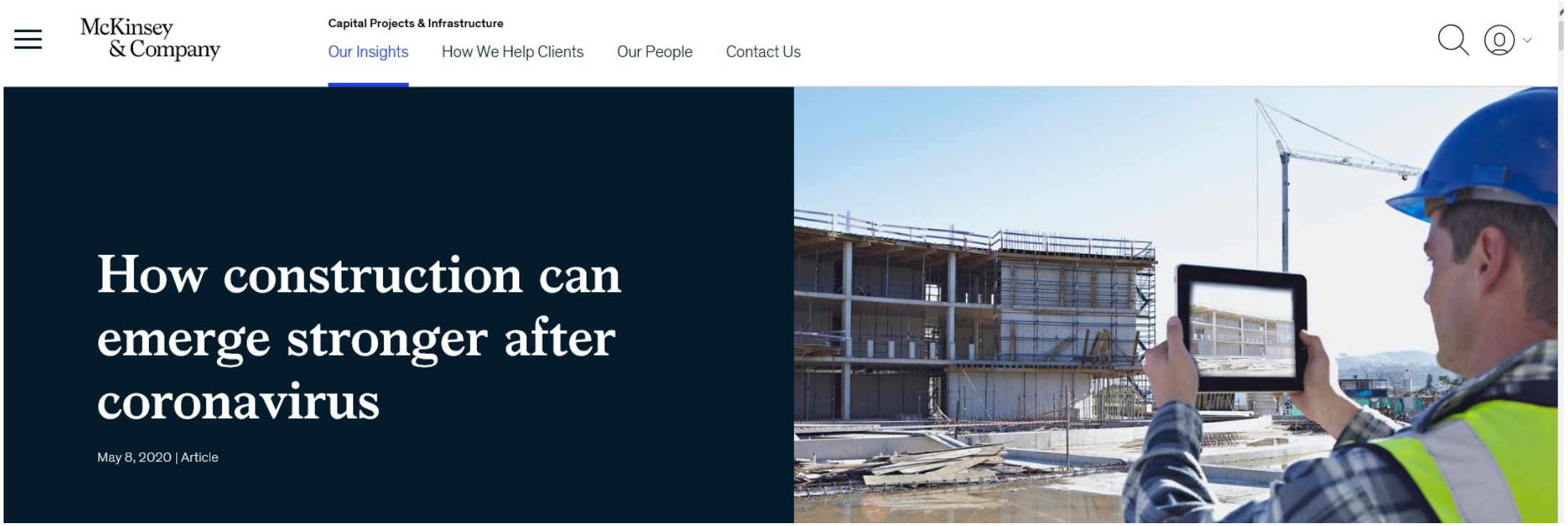
Mike Pappas, CII Associate Director of Deployment
Jamie Gerbrecht, ExxonMobil
Eric Crivella, Digital Construction Works

August 18, 2020

Agenda

- Introductions – 5 min
- Safety Minute – 5 min Eric
- CII Research Program – 10 min Mike
- CII AWP CBA Overview & Updates – 25 min Eric
- Q&A / Meeting Wrap-Up – 15 min

Safety Moment – Con Tech for COVID



https://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/how-construction-can-emerge-stronger-after-coronavirus#

Safety Moment – Con Tech for COVID

BRIEF

McKinsey: COVID-19 will spur construction's tech use

AUTHOR
Zachary Phillips

PUBLISHED
May 20, 2020

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Dive Brief:

- The coronavirus pandemic has forced construction companies to adopt new and readily available technologies, and that adoption will continue in the short term and post-pandemic, according to McKinsey & Co.
- In the long term, McKinsey writes, there will be increases in tech investments and the use of digitization, building modeling systems, off-site construction and sustainable building materials.
- The pandemic has helped contractors to realize how efficient and fast online platforms can be, especially with the ongoing shortage of skilled labor and fewer workers being able to be on a jobsite at any given time.

https://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/how-construction-can-emerge-stronger-after-coronavirus#

Safety Moment – Con Tech for COVID

Short- and long-term trends

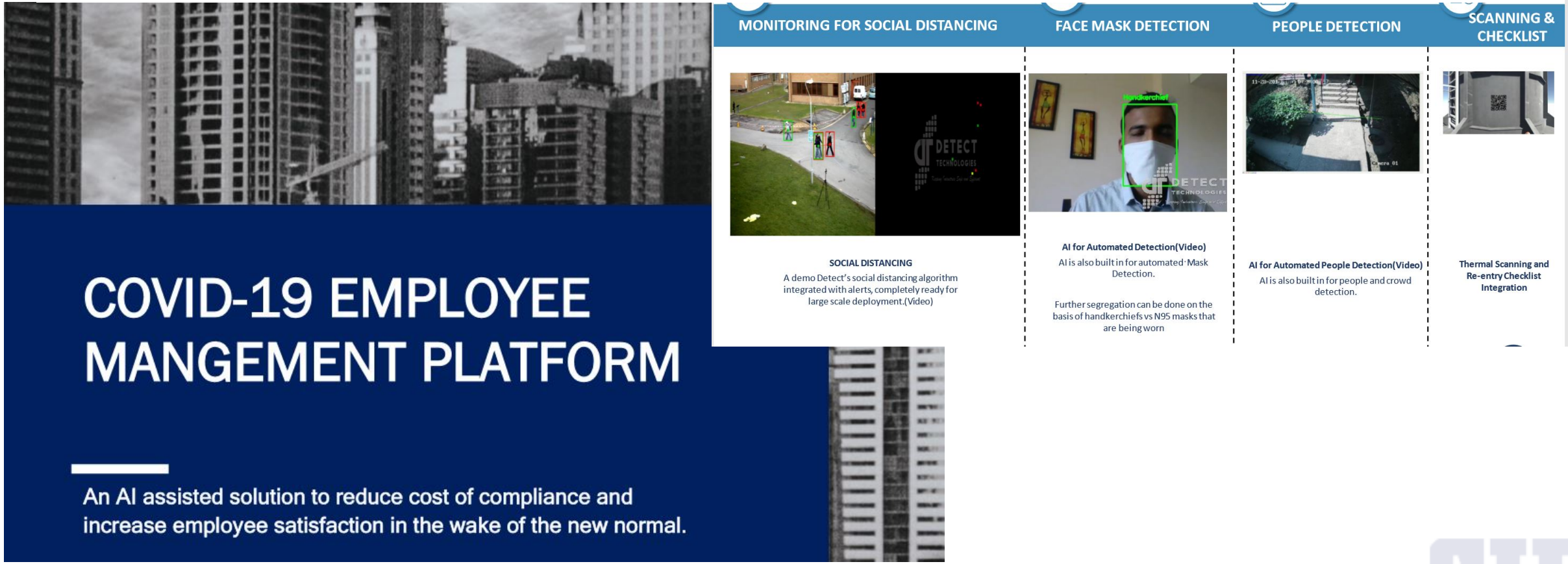
Preliminary indications are that many of the characteristics of the COVID-19 pandemic are inducing or increasing some disruptions. In addition to immediate trends, we expect longer-term ones to accelerate as new ways of living and working become standard:

- *Short term: Increased digitization.* Organizations across the industry are shifting to remote ways of working. For instance, designers and engineers are relying even more heavily on digital collaboration tools such as building-information modeling (BIM). Leading engineers and contractors are using 4D and 5D simulation to replan projects and reoptimize schedules. Integrated digital-twin solutions are being developed to be used end to end, from project concept to commissioning. And contractors are looking to online channels for monitoring their employees' well-being through apps, ordering construction materials, managing scarce resources more accurately, and maintaining cash flow.

https://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/how-construction-can-emerge-stronger-after-coronavirus#

Safety Moment – Con Tech for COVID

AI Safety Solution

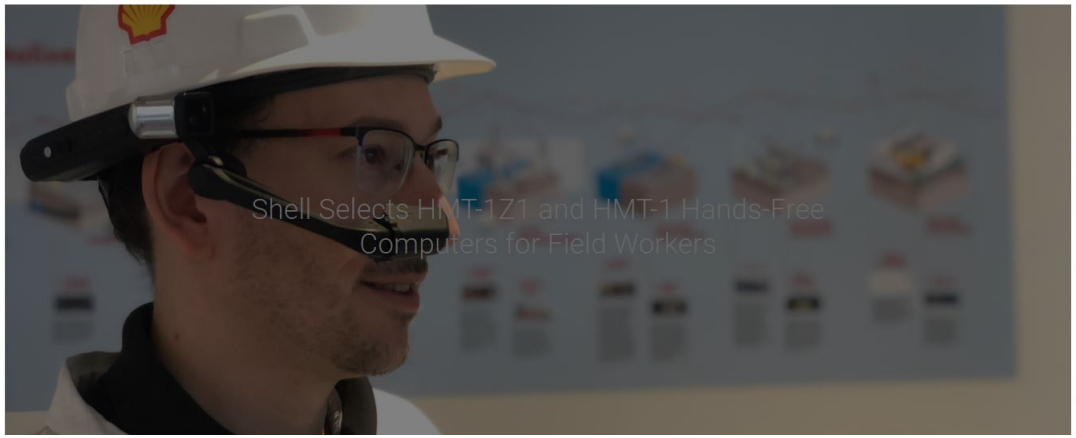


Safety Moment – Con Tech for COVID

Remote Expert

Industrial Safe Wearables

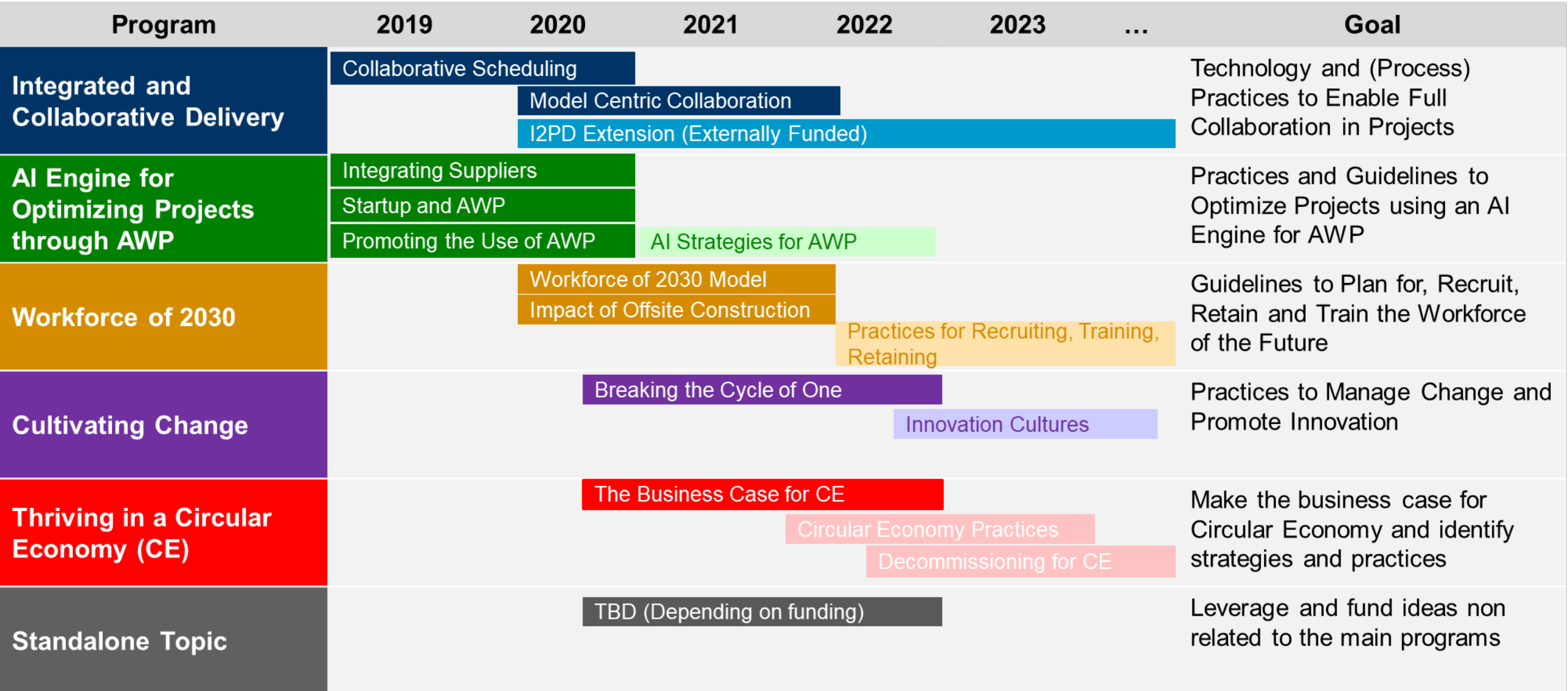
RealWear Announces that Shell Selects HMT-1Z1 and HMT-1 Hands-Free Computers for Field Workers



Remote Expert, Inspection and Task Workflows

What are CII's Research Plans?

CII Research Program



CII AWP Research Program

Day One: Integrated Advanced Work Packaging

September 1 • 1:00 PM to 5:30 PM (Central)

Kick-off	Comments from CII Executive Director, AWP CBA co-chair and 3 RT co-chairs
RT-363	Integrating the Supply Chain with AWP Practices
RT-364	AWP-integrated Practices for Completions, Commissioning and Startup
RT-365	Promoting the Use of Advanced Work Packaging
Close-out	Comments from the kick-off team: how to use the research and future AWP directions

Day Two: Advanced Work Packaging Data

September 2 • 9:00 AM to 12:30 PM (Central)

Kick-off	Comments from the Research Director, AWP CBA co-chair and the day's RT co-chairs
Joint Team	Advanced Work Packaging Data Requirements
RT-TC-03	AWP Digital Threads to Enable Supply Chain Visibility on Capital Projects
Close-out	Comments from the kick-off team: how to use the research, with a data and technology focus

Changing How the World Builds

CII AWP Community of Business Advancement Overview and Updates

CII AWP CBA 2020 – Promote & Scale AWP

Deliver A Measurable Reduction in Construction Cost & Schedule via Programmatic Adoption of AWP

- Training & Education
- Engineering Alignment
- Data Management, Integration & Automation
- ROI Measurement

CII AWP CBA Priorities for 2020 – Scale & Promote AWP

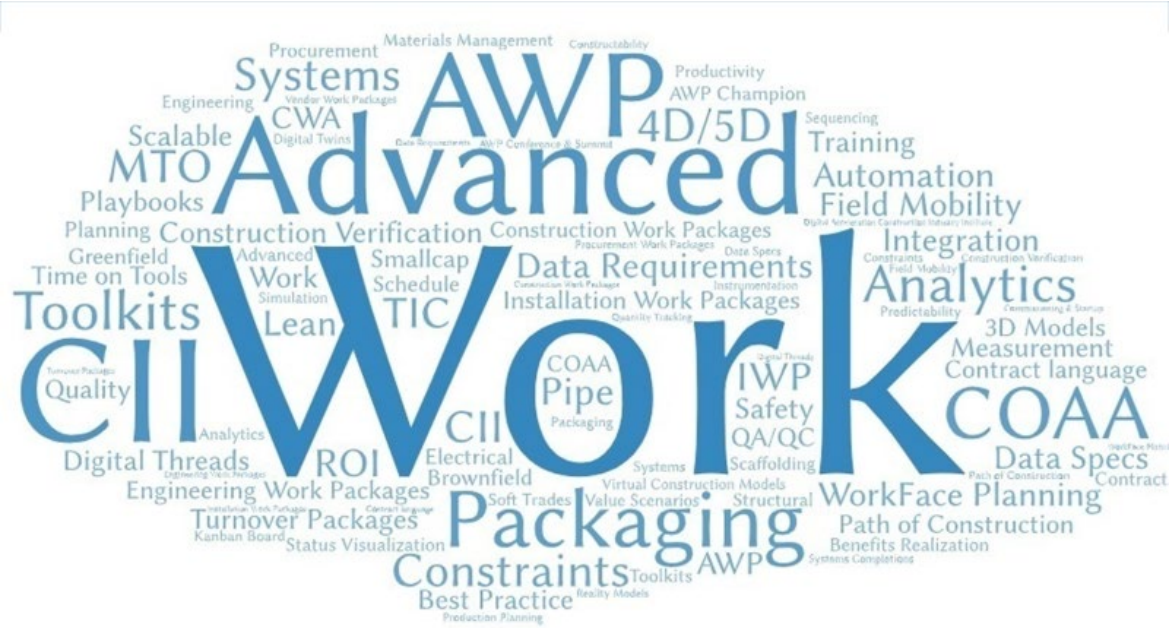
- High level priorities for AWP CBA in 2020
  - Grow the AWP CBA membership and active members
  - Focus on deliverables to further CII AWP thought leadership
  - Education is a leading Indicator of success. Let's rally around a set common definitions, educational framework & certification process
  - It's all about the data – promote AWP data reqs / evolve digital threads
  - Promote greater AWP buy in from engineering & procurement
  - Measurement: let's prove how much we moved the needle via common set of ROI metrics and communicate the results
  - Let's create the "Go To Resource" and AWP Concierge

2020 CII AWP CBA – Meetings

- **AWP CBA Monthly Meeting**
  - First Wednesday of every month 8:00 - 9:30 Central
  - Go To Meeting via CII
  - robert.wible@cii.utexas.edu
- **AWP CBA Leadership Meeting**
  - Every other Friday from 11:00 – 12:00 Central
- **Subcommittee meetings**
- **Workshops & Events**

CII AWP CBA 2020 – Meeting Topics

- January – AWP CBA Priorities
- February – AWP CBA Deliverables
- March – Scaffold Work Packs & AR
- April – AWP Data Requirements
- May – Smart Contracts & AWP
- June – Safety & AWP CBA Joint Meeting – AI for Safety
- July – Engineering for AWP
- August – Advanced Project Delivery: Initiating a Discussion



2020 Success Metrics

CBA Success Metric	2019 (Baseline)	2020 (Target)	Notes / Status
Active Member Participation	25%	40%	YTD % of roster members on calls
Active Subcommittee Participation	25%	50%	Ramp up involvement in subcommittees
Member Growth	180	270	Based on roster growth
Face to Face Meetings	3	4	AC, AWP Conf Hou & London + workshops
Active Subcommittees	3	4	E&O, P&B, KM, AWP Bus Accelerator
Backlog of Discussion Topics	2	4	Should be lined up for the quarter
Research Topics / Ideas Submitted	4	8	FSC dialogue is expected
ROI Calculator	-	1	Release ROI calculation approach
Collaboration / Joint Meetings	2	2	Joint CBA meetings – Supply Chain & Modular
Outreach Events	3	4	CII or other conferences / workshops
Teams & O3 Collaboration Tools	25%	75%	All CBA members accessing and contributing
AWP Data Requirements	-	1	Release AWP Data Requirements
Establish Toolkit / Concierge	-	1	Establish go to resource (KM + E&O)

AWP CBA 2020 Subcommittees & Deliverables

- Education & Outreach Subcommittee
  - AWP Training Framework – Release a well-defined AWP Training Framework
- Performance & Benchmarking Subcommittee
  - AWP ROI Standardization / Value Scenario Framework
- Knowledge Management Subcommittee
  - AWP Knowledge Management – Develop CII AWP BOK & Concierge
  - RT 272 Refresh
- AWP Business Accelerator Subcommittee
  - AWP Capabilities Assessment – Release AWP Assessment Tool & Workshops
- *AWP CBA Joint Working Group Data Requirements*

AWP COMMUNITY FOR BUSINESS ADVANCEMENT

AWP EDUCATION FRAMEWORK

Version 1.0 | Published August 2020

Created by the AWP Education & Outreach Subcommittee

CII ADVANCED WORK PACKAGING Community for Business Advancement

VISION:

To establish the CII AWP CBA as the “go to resource” for anyone in the industry adopting Advanced Work Packaging

OBJECTIVES:

- Set the standard for AWP Education & Training
- Collaborate with other CII groups and external organizations to advance AWP
- Establish means of collecting and sharing information regularly

2020 Objective & Progress to Date

- **Goal:** Publish AWP Framework Deliverable by the Annual Conference
- **Deliverable:** PowerPoint slides with notes for each section
- **How will we get there?**
  - ~~Divide sections of the content into manageable work “packages”~~
  - ~~Determine what should go into each section~~
  - ~~Understand what resources are available as reference material (CII, COAA, Group ASI, etc.)~~
  - ~~Create a draft and submit for review to E&O team members~~
  - ~~Incorporate revisions and submit second draft of content~~
  - ~~Open review of second drafts~~
  - ~~Final draft goes to design~~
  - Get approval for final publication from CBA Leadership
  - Compile and share at Annual Conference in September

AWP Education Framework Table of Contents

IN FINAL REVIEW

- What is AWP?
- Benefits & Value of AWP
- Origin & History of AWP
- AWP by Project Phase
- Roles & Expectations
- Work Package Types
- Path of Construction & Interactive Planning
- Constraint Management
- Scalable AWP
- Overcoming Common AWP Objections

Performance & Benchmarking Update

- Connected with the Business Accelerator to leverage the value scenario framework
- Collaborated with the Business Accelerator to make following additions to the framework:
  - Provided robust definition for each AWP value scenario
  - Differentiated the value generated from AWP practices from good project deliveries (Non-AWP)
  - Defined investments and benefits associated with each value scenarios
  - Introduced AWP implementation categories to group value scenarios

AWP Capabilities Assessment Matrix

ID	Value Scenario
VS01	Execute Constraint Free IWPs in the Field
VS02	Increase Project Visibility and Proactive Management
VS03	Proactively Drive CWP Readiness
VS04	Reduce Engineering MnHrs During Detailed Design
VS05	Minimize Impact of Engineering and Field Revisions
VS06	Decrease Engineering and Indirect Hrs at Site
VS07	Reduce Materials Chaos at Site / Yard
VS08	Enable Rapid Information Access in the Field and Yard
VS09	Monitor Progress with Minimal Effort
VS10	Reduce Inefficient Use of Punch to Track Incomplete Work
VS11	Increase Accuracy in Estimating of Cost-to-Complete
VS12	Enhance Testing, Completions & Commissioning
VS13	Streamline Time to Assemble Data & Docs for Turnover
VS14	Reduce number RFIs and and timing of RFIs in the Field
VS15	Ability to Satify Client Requirements through AWP Capabili

Defining Values

Aligning Values

AWP Best Practice Touchpoints		Value Scenarios: Constraint Free IWPs (01)	Better Project Visibility (02)	Drive CWP Readiness (03)	Reduce Engr Hrs - Office (04)	Reduce Revision Impacts (05)	Reduce Engr Hrs - Site (06)	Reduce Materials Chaos (07)	Field Info Access (08)	Progress w Min Effort (09)	Min Incomplete Work (10)	Accurate Cost-to-Complete (11)	Enhance Testing & MC (12)	Streamline Turnover (13)	Reduce RFIs Count (14)
TP1	Developing and Documenting the Path of Construction		x	X2	X								X		
TP2	Master Project Schedule Structured for AWP		X	X3	X					X		X	X		
TP3	Engineering Systems Set-Up to Support AWP	X	x	x	X	X1	x	x	x	x	X	X3	X	X	x
TP4	Identification & Encoding of Engineering Deliverables by CWP	x	X1	x	X2	X	x		X2					X3	
TP5	Engineering Deliverables Tracking & Constraint Management		x	x	X1	X	X								X
TP6	Consolidation & Validation of BOM by CWPs		x	x	X	x	X	X2	x				x	x	
TP7	Integrated Materials Management Support for AWP	x	X2	X				X1	x						
TP8	Driving Supplier Deliveries by AWP - Pipe Fabrication	X3	X	X				X		x					
TP9	Driving Supplier Deliveries by AWP - Steel Fabrication	X4	X	X				X		x					
TP10	Driving Supplier Deliveries by AWP - Equipment Vendors		X	X	X3			X		x			x	X2	
TP11	CWP Feasibility & Work Front "Opportunity" Reviews	x	X	X1	X	X	X2	X							
TP12	Driving Module Fabrication using AWP Methodology	x	X3	X			x	X		x					
TP13	Sub-Contractor / JV partner Enablement in AWP	X						x		x	X1	X1	x		X
TP14	IWP Virtual Development & Assembly	X2			X2			x	X1	X3	X	x	X		X1
TP15	IWP Constraints & Release Management	X1				X1		x		x	X	x	X2	x	X2
TP16	Interface for Workface Planning to Construction Services	X													
TP17	Short-Range Production Control at Work Steps Level	X						X3	X	X2	X2	X			X3
TP18	AWP Integration to Streamline Inspection & Testing										X	x	X1	x	
TP19	Progress Roll-Up and Status Visualization Support	x	X4							X1	X3	x			
TP20	AWP Integration to Streamline Completions & Commissioning										X	X2	X	X1	

ADVANCED WORK PACKAGING
Community for Business Advancement

CII Joint Working Group for AWP Data Requirements

AWP Data Requirement Specification and Implementation Guideline

ADVANCED WORK PACKAGING
Community for Business Advancement

Prepared by:
Construction Industry Institute (CII)
Technology & Innovation Committee
AWP CBA Joint Working Group
Research Team TC-05, AWP Data Requirement Specification & Implementation Guideline

Version 1.0

July 2020

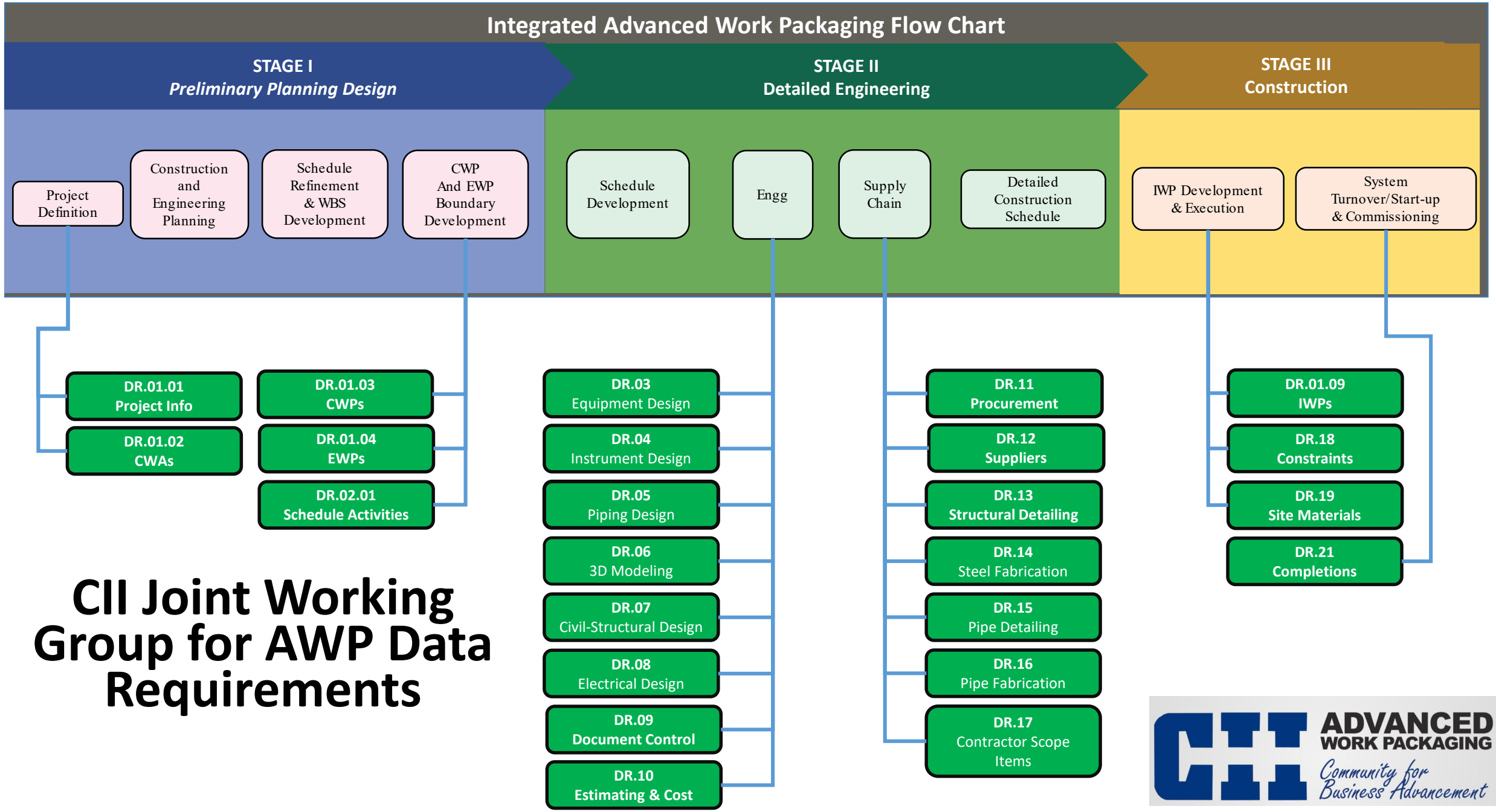
Executive Summary

Advanced work packaging (AWP) has become a necessary best practice for stakeholders on capital projects. AWP facilitates a more productive and progressive construction project through identification, categorization, and information sharing of the work process flows. By standardizing the information-sharing process and components, capital project stakeholders are more transparent and proactively plan and adapt to the inherent challenges of construction projects. This information sharing fosters alignment across stakeholders who reduce risk on a capital project. Prior to the completion of this *AWP Data Requirements Specification and Implementation Guideline*, a need existed within the Construction Industry Institute's (CII's) Body of Knowledge—as well as the construction industry at large—for a vetted comprehensive set of data requirements for AWP.

The Construction Industry Institute's AWP Joint Working Group developed a comprehensive set of AWP data requirements for capital project stakeholders. In an attempt to maximize the extent to which these AWP data requirements are leveraged and implemented by the construction industry, the project team—consisting of the CII's AWP Joint Working Group and academic faculty members at the Georgia Institute of Technology—refined, reviewed, and published this implementation guideline. The project team members who have contributed to the guideline development are listed in the Appendix.

It is anticipated that this guideline will support efforts to implement the created AWP data requirements and encourage companies to standardize information flow for work processes on capital projects. The project team expects that this guideline will serve as a critical reference as companies create contracts that include data to support AWP.

AWP Data Requirements Guide is in CII review for publication!



CII Joint Working Group for AWP Data Requirements

ADVANCED WORK PACKAGING
Community for Business Advancement

CII Joint Working Group for AWP Data Requirements

AWP Requirement Index

DR00-01 Requirement List

Data Requirement Number	Requirement Name	Data Table	Table Name	Directory Name
DR01	AWP Master Index	01	Project Information	DR01-01 Project Information
DR01	AWP Master Index	02	CWA	DR01-02 CWA
DR01	AWP Master Index	03	CWP	DR01-03 CWP
DR01	AWP Master Index	04	EWP	DR01-04 EWP
DR01	AWP Master Index	05	IWP	DR01-05 IWP
DR02	Project Schedule	01	Schedule Activities	DR02-01 Schedule Activities
DR03	Equipment Design	01	Equipment List	DR03-01 Equipment List
DR04	Instrument Design	01	Instrument Index	DR04-01 Instrument Index
DR05	Piping Design	01	Isometrics	DR05-01 Isometrics
DR05	Piping Design	02	Tie-in Schedule	DR05-02 Tie-in Schedule
DR06	3D Modeling	01	Pipe Components	DR06-01 Pipe Components
DR06	3D Modeling	02	Equipment Components	DR06-02 Equipment Components
DR06	3D Modeling	03	Generic Components	DR06-03 Generic Components
DR07	Civil-Structural Design	01	Structures List	DR07-01 Structures List
DR08	Electrical Design	01	Cable Schedule	DR08-01 Cable Schedule
DR08	Electrical Design	02	Electrical Equipment	DR08-02 Electrical Equipment
DR08	Electrical Design	03	Conduit & Raceways	DR08-03 Conduit & Raceways
DR08	Electrical Design	04	Lighting and Devices	DR08-04 Lighting and Devices
DR08	Electrical Design	05	Electrical Heat Tracing	DR08-05 Electrical Heat Tracing
DR09	Document Control	01	Document Register	DR09-01 Document Register
DR09	Document Control	01	Document to Entity	DR09-01 Document to Entity
DR10	Estimating and Cost	01	EWP Estimate	DR10-01 EWP Estimate
DR10	Estimating and Cost	02	CWP Estimate	DR10-02 CWP Estimate
DR11	Procurement	01	Purchase Order Tracking	DR11-01 Purchase Order Tracking
DR11	Procurement	02	Purchase Order Line Items	DR11-02 Purchase Order Line Items
DR11	Procurement	03	Supplier Shipment Lots	DR11-03 Supplier Shipment Lots
DR11	Procurement	04	Required Deliveries	DR11-04 Required Deliveries
DR12	Suppliers	01	Supplier ETA	DR12-01 Supplier ETA

Index | DR01-01 | DR01-02 | DR01-03 | DR01-04 | DR01-05 | DR02-01 | DR03-01 | DR04-01 | DR05-01 | DR05-02

AWP Contractor Scope Items

DR17-01 Contractor Scope

Key	Tier	Field Name	Definition	Directory Name
PK	Required	Project ID	Unique project identifier	DR00-01 Requirements List
PK	Required	Contractor ID	Labor Contractor on the project that has performed the Material Take-Off for the CWP	DR01-01 Project Information
PK	Required	Scope Item	A Scope Item may be from the construction contractor's take-off or progress database, line items from an estimate, IFC drawings, schedule activities, installation work packages, or any other basis of defining scope.	DR02-01 Schedule Activities
	Required	CWP	Unique Construction Work Package Identifier	DR03-01 Equipment List
	Required	Discipline	Engineering Discipline responsible for MTO	DR04-01 Instrument Index
	Required	Drawing ID	Drawing for the Material Take-Off	DR05-01 Isometrics
	Required	Est Hrs	Estimated Hours for Installation Activities associated with the Reported Quantities	DR06-01 Pipe Components
	Required	IWP ID	Installation Work Package (IWP) on the project	DR07-01 Structures List
	Required	Material Description	Short description of the material in consideration for the MTO analysis	DR08-01 Cable Schedule
	Required	Material Type	A specific type of material within the scope of the CWP	DR09-01 Document Register
	Required	Tag	Item Tag - including Equipment Tag, Electrical Tag, Instrumentation Tag, Isometric Tag, Spool Tag, Weld Tag, Valve Tag, Specialty Tag, and other tags	DR09-01 Document to Entity
	Required	Test Package Designation	Test Package Identifier	DR10-01 EWP Estimate
	Required	Total QTY	Total Quantity of the Material Type within the CWP for the primary & secondary classifications	DR11-01 Purchase Order Tracking
	Required	Turnover System	Unique turnover system identifier (e.g. 13-01)	DR12-01 Supplier ETA
	Required	UOM	Unit of Measure for the Quantity Field (Count, Length, Dia. in)	DR13-01 Steel Detailing Deliverables
	Optional	Phase	Field Phase of Execution	DR14-01 Steel Fabrication Delivery Requirements
				DR15-01 Pipe Isometric Detailing by CWP
				DR16-01 Pipe Spool Delivery Requirements
				DR17-01 MTO
				DR18-01 Constraint List
				DR19-01 Materials Locations
				DR20-01 Typical Steps
				DR21-01 Systems Index

AWP Data Requirements Guide is in CII review for publication!

CII AWP Next Gen Research Workshop - August 11

Workshop Details:

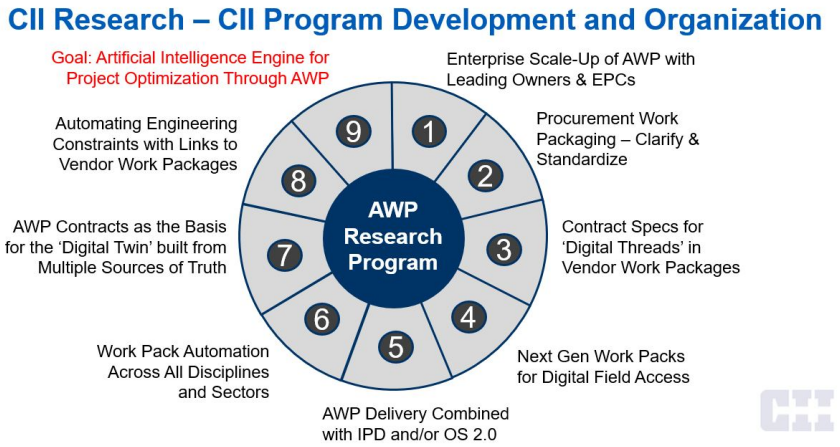
Date and time: August 11

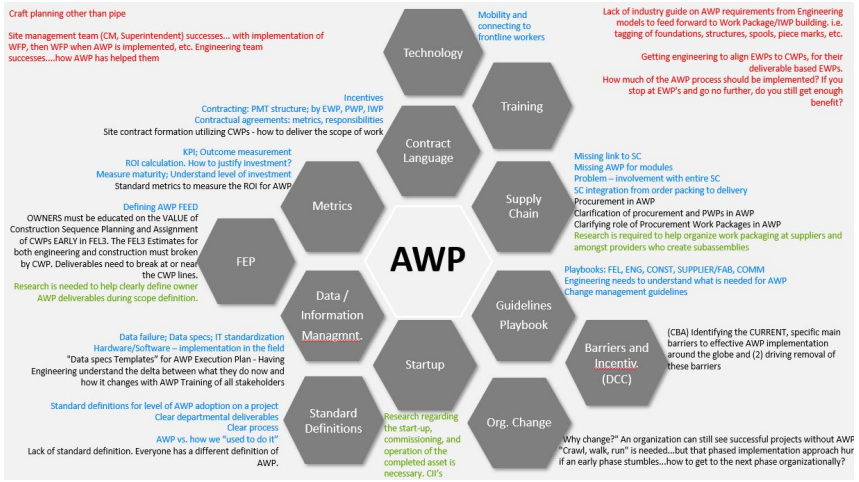
Two online sessions

Session 1: 10 am - Noon (Central)

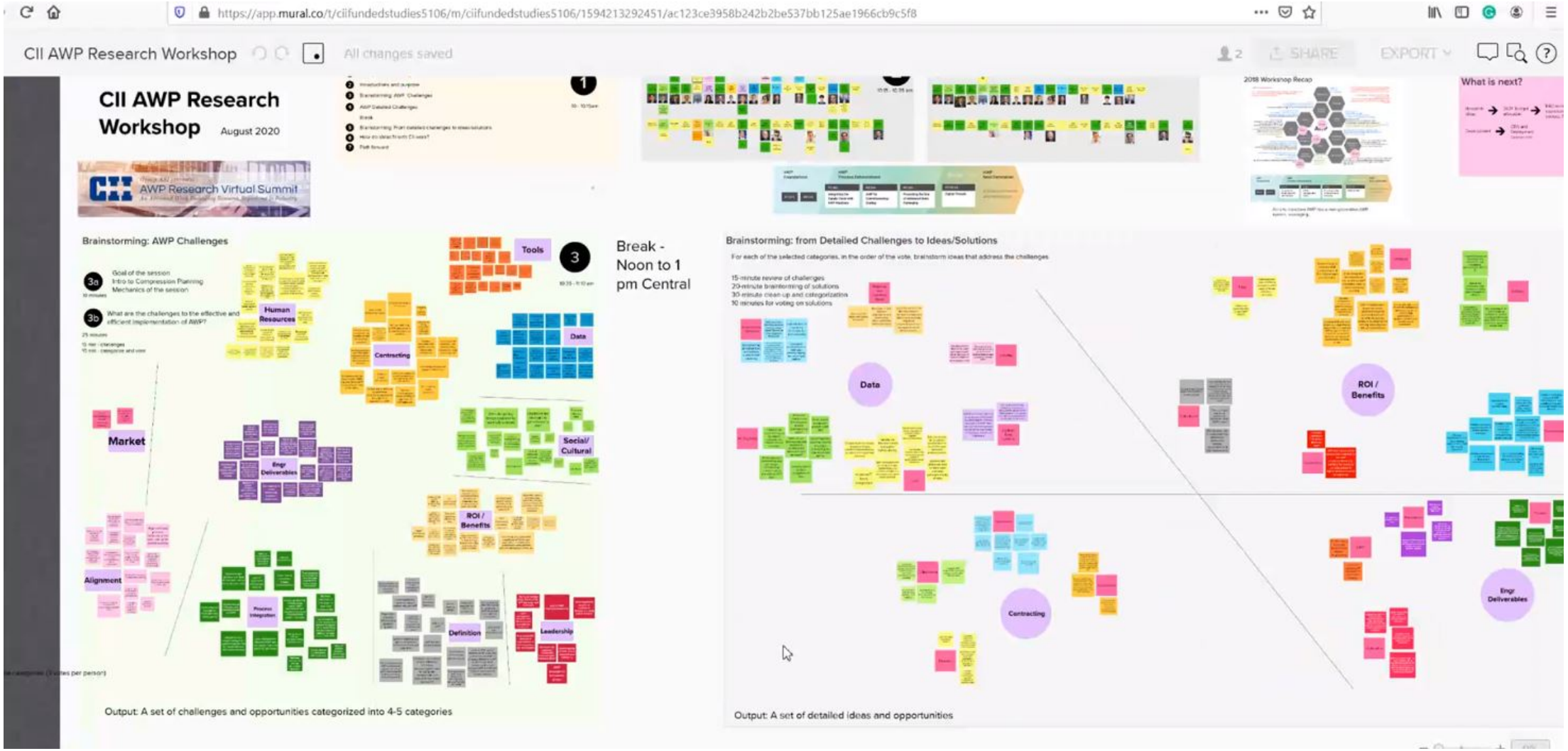
Session 2: 1 - 2 pm (Central)

- Go To Meeting
- Mural Digital Workspace
- Facilitated by Daniel Oliveira & Josh Girvin



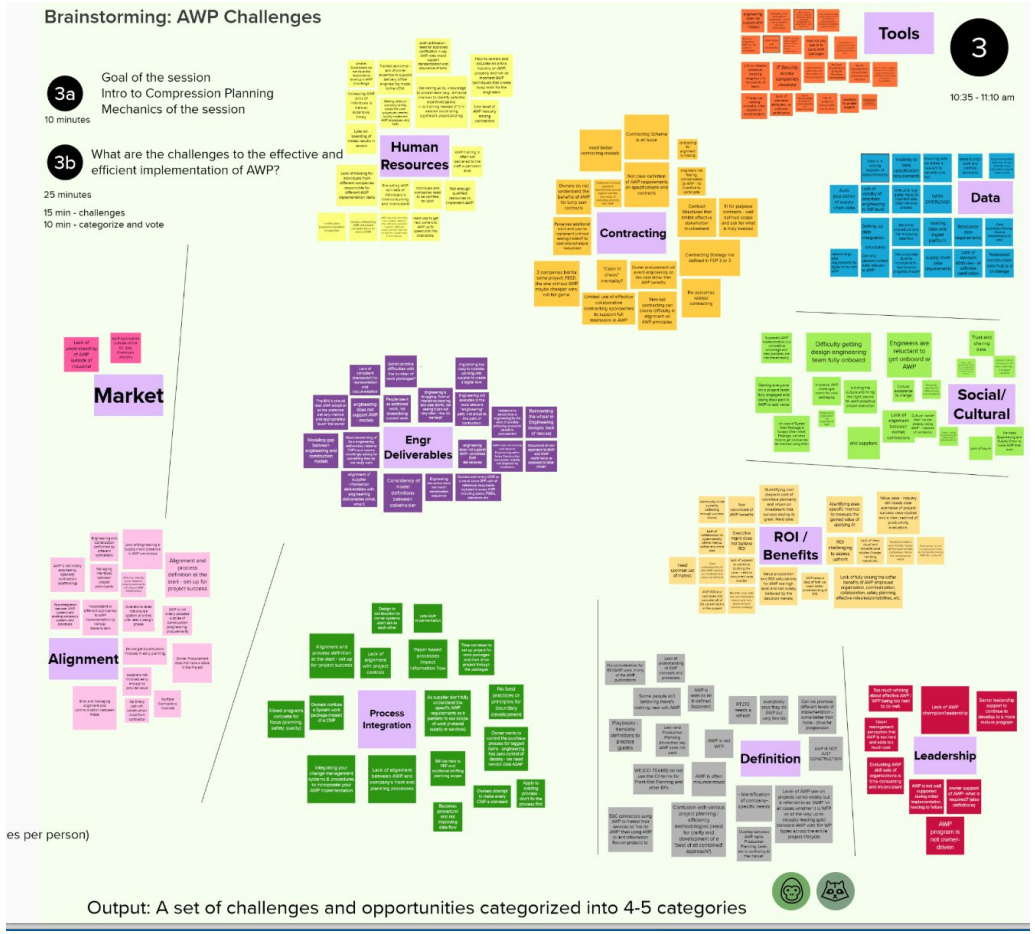


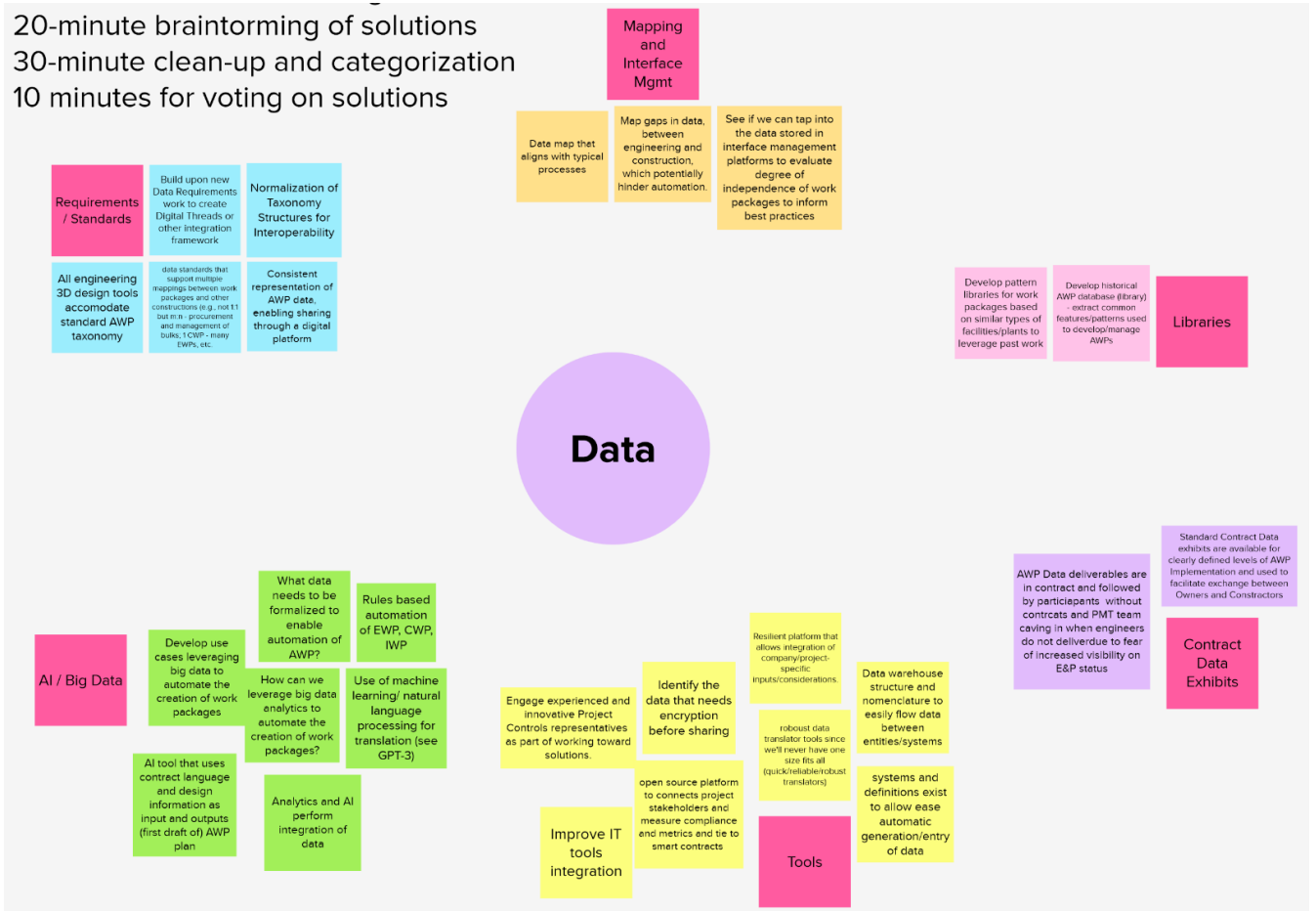
AWP Next Gen Research Workshop – August 11



Compression Planning Using Mural Digital Workspace

AWP Next Gen Research Workshop – August 11





“Better than in-person workshop”

Group ASI presents:

AWP Research Virtual Summit

An Advanced Work Packaging Research Report-out to Industry

The Latest Innovations in Project Performance from Five Industry-Led Research Teams

Earn 7 Professional Development Hours in 2 Half-Day Sessions

September 1-2, 2020

ADVANCED WORK PACKAGING

Community for Business Advancement

ASI GROUP

AWP Conference

Virtual Event | October 27-28, 2020

awpconference.com

Sponsorship Guide and Agreement

Wrap-up and Close

- Consider becoming an active member of CII AWP CBA
- CII Participation
  - Get out of CII what you put into it
  - Good for your company, project and career
  - Together, we can move mountains!!

ADVANCED WORK PACKAGING
Community for Business Advancement

THANK YOU!

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