

OCTOBER 25, 2023

Digitally Transforming Energy Infrastructure Projects

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Chris Cran – AVEVA

Malcolm Panthaki - Aras

AVEVA

BUILDING ENERGY'S FUTURE



ONSHORE



OFFSHORE



**SUBSEA &
FLOATING FACILITIES**



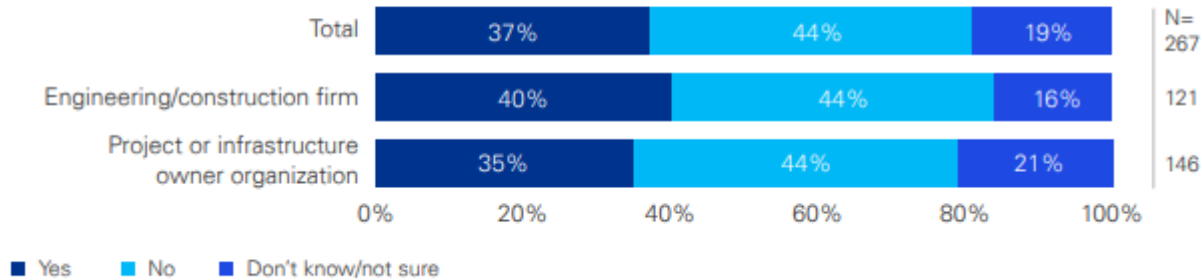
STORAGE



ENERGY'S FUTURE

Industry Metrics

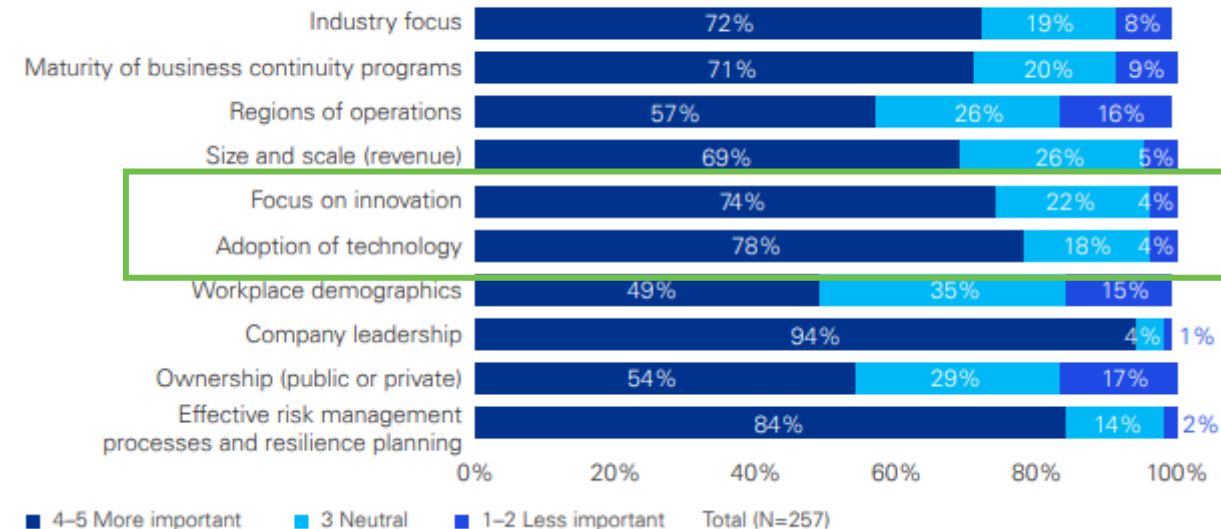
Exhibit 5: Over the past 12 months, have any of your capital projects significantly missed budget and/or schedule performance targets (20 percent or more) due to lack of effective risk management?



In last 12 months, 37% of Projects significantly missed budget and/or schedule performance

Innovation & Adoption of technology viewed as significant factors influencing organization's success dealing with disruptive events

Exhibit 8: Please rate the following attributes that influence your organization's success or failure in dealing with disruptive events.



Challenges & Solution?



		Need...	Tools Must...	How?
Processes		Maximize quality and minimize effort	Enable process transformation	Reimagine for current capabilities
Integrations		Ensure integrity and break down silos	Minimize deployment time & effort to execute	Leverage APIs, not spreadsheets
Data or Information		Contextualization & Timeliness	Standardize... but extend	De-siloed + Visualization = Information

Document Driven Execution

4.0 DESIGN

4.1 General Requirements

4.1.1

VENDOR shall take full responsibility for the skid and equipment design fully complying to the applicable standards, rules and regulations for the project.

4.1.2

The overall dimensions of the skid shall not be less than the overall dimensions of the skid-mounted equipment.

4.1.3

Where appropriate, modules shall be identified by suitable markings designated by the CONTRACTOR.

4.1.4

All ladders and access platforms shall be seal welded and shall be in accordance with OSHA recommendations or the ABS Guidance Notes for the Application of Ergonomics to Marine Systems, Section 9, whichever is more stringent.

4.1.5

All skids shall be designed for seal welding to a structural steel deck without the formation of pockets which can trap water. Skid-mounted equipment liquids which may be spilled or drained into the skid area shall be provided with decking and coaming on the perimeter of the skid to contain spillage. Coaming areas shall be provided with a minimum of two drains, terminating with a forged steel, 3000# screwed coupling with a hex plug.

4.1.6

All skid-mounted equipment, vessels, buildings and related assemblies shall be designed and mounted to withstand the wind loading, seismic conditions, and vessel motions given in Specification B5729-S-SP000-TS-2002-00.

4.1.7

Skids shall be sandblasted and painted as per Specification B5729-M-SP000-TS-5504-00.

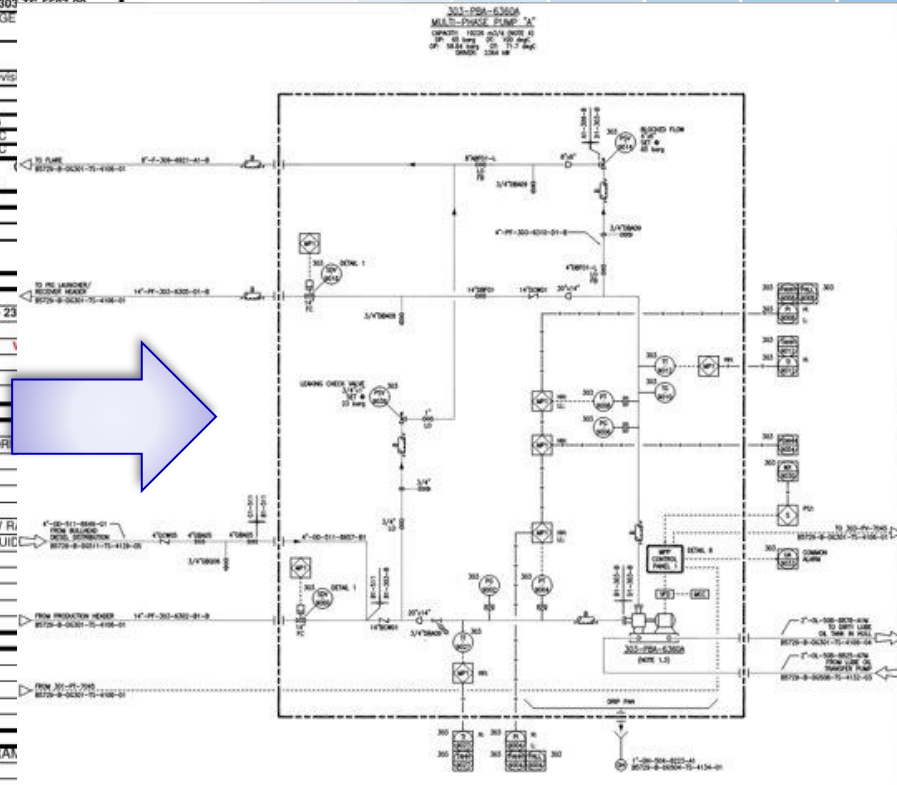
4.1.8

Skids with driven equipment shall be designed to maintain equipment alignment while being lifted.

4.1.9

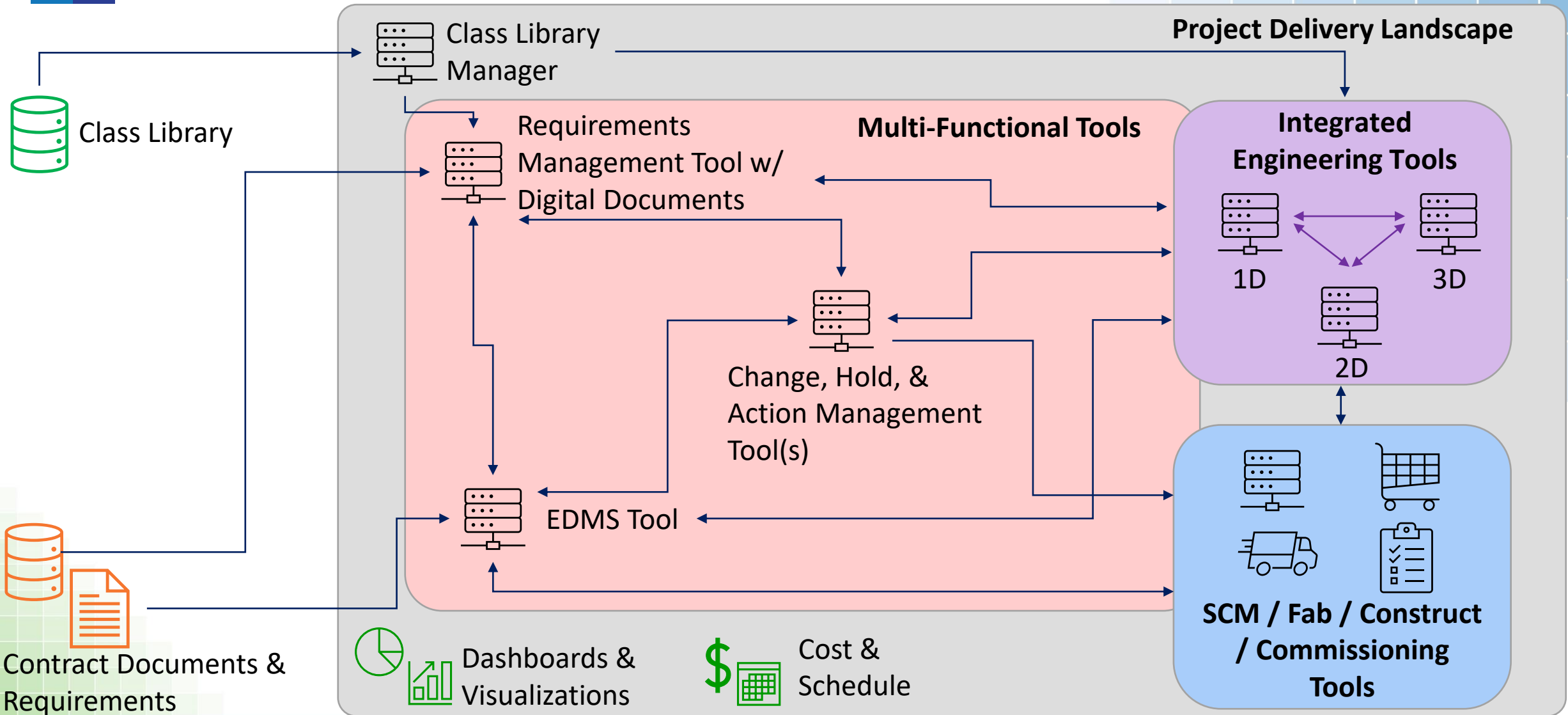
The skid shall be all welded construction designed and carried out in accordance with the specification of the American Welding Society, Structural Welding Code AWS D1.1/D1.1M, latest edition, and Specifications B5729-S-SP000-TS-2002-00 and B5729-Q-PP000-TS-0356-00. All welds shall be continuous welds and all welded attachments must be seal welded.

ROTARY PUMPS			
VENDOR BORNEMANN	PURCHASE ORDER NO. 2191-MM113757	P.O. SUPP. NO.	REQUISITION NO. 224001
TITLE Multi Phase Pumps	EQUIPMENT NO. 303-PBA-6360A/B/C	ENGR. PROJ/JOB NO. 09060	SPECIFICATION NO. B5729-M-DS303
COMPANY NAME Petrobras Netherlands, B.V.	JOB DESCRIPTION Papa Terra Field Development TLWP P-61		
CONTRACTOR NAME J Ray McDermott Engineering LLC	Rev No.	By	Date
COMP. JOB NO./COMP. APP. NO.	A	SES	5/5/2010
ORIGINATOR S. Saleh	B	BJW	3-Jun
ORIG. DATE 2/25/2010	C	SCM	8-Jun
	D	SCM	1-Jul
	E	BJW	16-Nov
	F	BJW	16-Nov
	G	GA	16-Nov
	H	ZFC	
APPLICABLE TO: NOTE: <input type="radio"/> PROPOSAL <input checked="" type="radio"/> PURCHASE	<input type="radio"/> INDICATES INFORMATION TO BE COMPLETED BY CONTRACTOR <input type="checkbox"/> TO BE COMPLETED BY VENDOR		
ITEM NO.	SERVICE	ROTARY PUMPS	
MFR BORNEMANN PUMPS	MULTI-PHASE PUMPING	MODEL NO.	MPC 400
APPLICABLE CODES	API 676 (Positive Displacement Pumps - Rotary)		
OPERATING CONDITIONS ea. (3X50%) (note 15)			
GAS PUMPED	CAPACITY @ P.T.	Note 24	ACTUAL CAPACITY
PUMPING TEMP DES/OP	100 / 50 to 80 °C	DISCHARGE DES/OP:	65-58.84 barg
SPEC.GR.@P.T.		SUCTION	14.71 barg
MAX. VISC.	CP	MAX. SUCTION	barg
VISC.@P.T.	CP	DIFF. PRESS.	barg
CAUSED BY: Produced Water, CO ₂ , Sand, H ₂ S	NPSHA		m
MATERIALS (note 1)		CONSTRUCTION	
REPLACEABLE	DIN 1.0481 Ni resist D2	CASE MAX. ALLOW. PRESS.	100 barg @
	Hard Chromium Plated	SUPPORT TYPE	SPLIT: <input type="radio"/> HOR <input type="radio"/> VER
MOTOR/SCREWS	DIN 1.4906 Tungsten Carbide Coated	TIMING GEAR TYPE:	
SHAFT	DIN 1.4542	ROTATION FACING PUMP CPLG.	CW
SHAFT SLEEVES	DIN 1.4462	RELIEF VALVES(INT.,EXT.)RECOMM.PRESS.SETTING	
TIMING GEARS	DIN 1.7139 Nitrided steel	COUPLING MANUF.	SF
		API SEAL PLAN	54 53
		MECH. SEAL MAKE & TYPE	BURGMANN HRKS1-D-EX
		MATL. ROT. FACE	STAT. FACE
		BASE PLATE TYPE	
		BEARINGS:	
CONNECTIONS		SPEED REDUCER	
NOZZLES	SIZE RATING & FACING LOCATION MAKE	CASE MATL.	GEAR MATL.
SUCTION	20" 600 RF	TYPE	AGMA CLASS
DISCHARGE	20" 600 RF	SPEED RATIO	SERVIDE FACTOR
VENTS	600 RF		
DRAINS	2" 600 RF		
COOLING WATER		DRIVER (see motor data sheet)	
BEARINGS (YES)(NO)	GPM	MOTOR MAKE	MODEL
STUFF BOX (YES)(NO)	GPM	ITEM NO.	FRAM
DRAWINGS		WEIGHTS	
ENCLOSURE: IEC-79-Zone 2, Grp II A, T3		KW RPM VOLTS 13.8 kv PH 3	
BEARINGS		BEARING LUBE	
SERIAL NUMBER	PUMP	KG	BASE
		KG	DRIVER
		KG	





Project Architecture (getting closer to Utopia)





DATA IS IN OUR DNA

Lighthouse Scope

ALM Primary use cases

Engineering system of record
for the Digital Twin

Core Capabilities

Deliverable Management (Unified Engineering Integration)

Engineering Change & Workflow Management

Requirements Management

Configuration Management

AVEVA  aras

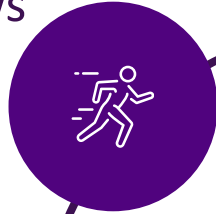
Lighthouse Program

Early access to cutting-edge technology



Lighthouse Programme

Contributing to Agile Sprint Reviews



Contributing questions and advice at System Demos



Sharing and demoing current working practices



Participating in workshop sessions on solution design



Lighthouse Program

Early access to cutting-edge technology



Why Aras?

“A leader in PLM” - The Forrester Wave, Q1 2023



23+

Years in PLM

500+

Customers

4M+

Users

Adaptable

Highly extensible with composable building blocks and integrated low-code development tools

Scalable

Performance at the scale that you work at

Open

Connectivity across your enterprise software ecosystem

AVEVA



Why Asset Lifecycle Management?



Owner Operators

“A data centric approach to managing Asset Information to deliver trusted asset data”



Highly Regulated Industries

“A digital twin to manage requirements, configuration, and change management; through the entire lifecycle”



EPC Capital Projects

“An integrated Digital Platform For efficient project delivery, modular design & re-use and improved supply chain collaboration”



Marine

“Traceability between requirements, CAD, equipment, BOM, sourcing, cost management, planning, and sister ship configuration”

Bring PLM concepts to the Asset Lifecycle

Focus on the capabilities important to you



Data-centric
Deliverables



Change
Management



Requirements
Management



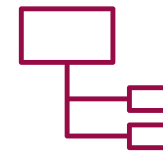
Configuration
Management



Supplier
Exchange



Workflow

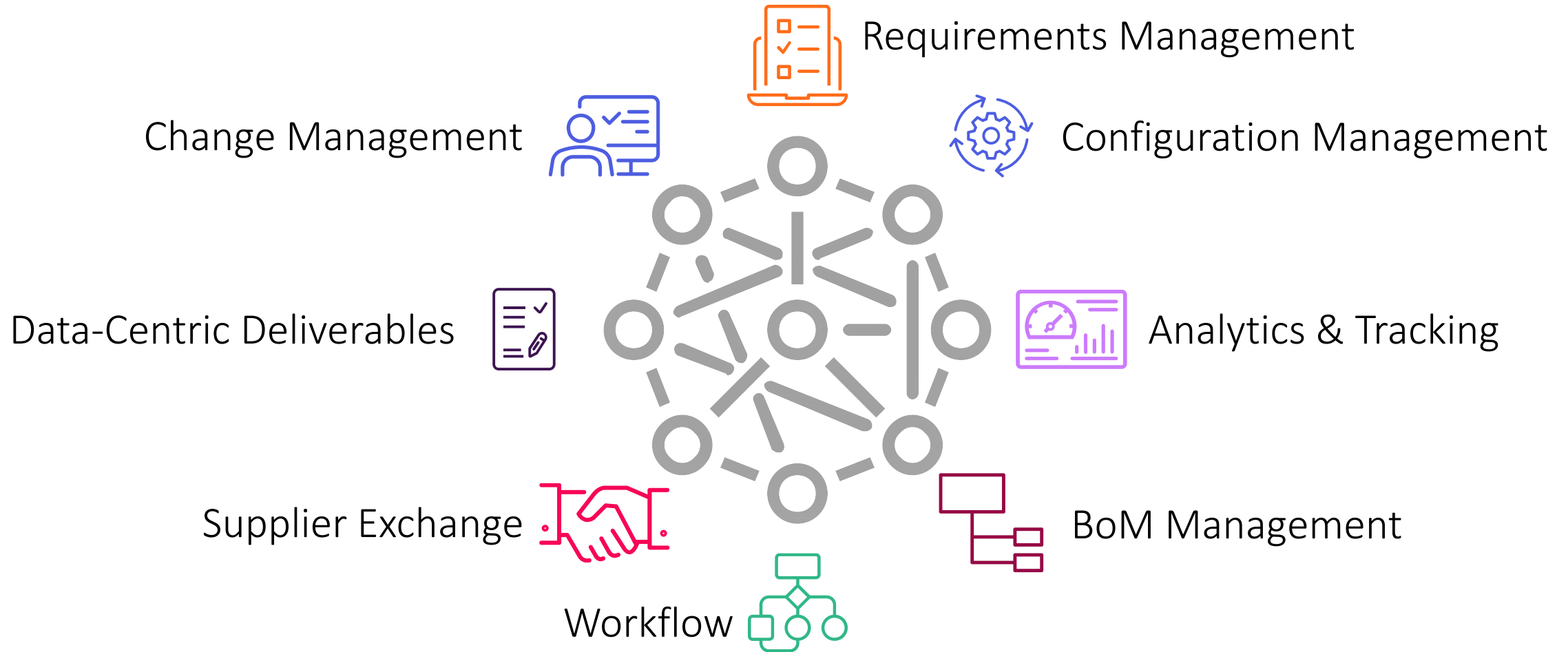


BoM
Management



Analytics &
Tracking

And place them in a data-centric context



In defence of documents

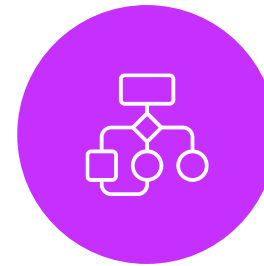
And why we need them



Human-readable



Portable



Flexible

The data-centric approach to Lifecycle Management

And the value it adds



Automated Validation



Integration



Analysis

“The integration of these two toolsets presents a strong digital-centric execution solution... to digitalize industry processes that have been document-centric for too long”

Vaseem Khan, SVP Global Operations, McDermott

From Data to Knowledge: Empower your lifecycle using a Digital Thread

The AVEVA/Aras Partnership brings you Asset Lifecycle Management

Malcolm Panthaki | VP of Global Alliances | Aras

AVEVA



The Aras Corp Commitment

PURPOSE

Enable our customers to create safe and innovative products that play an **essential** role in our lives



VISION

Transform the way the world makes products



MISSION

Reinvent software for engineering and manufacturing to empower our customers with the **flexibility** to overcome tomorrow's challenges



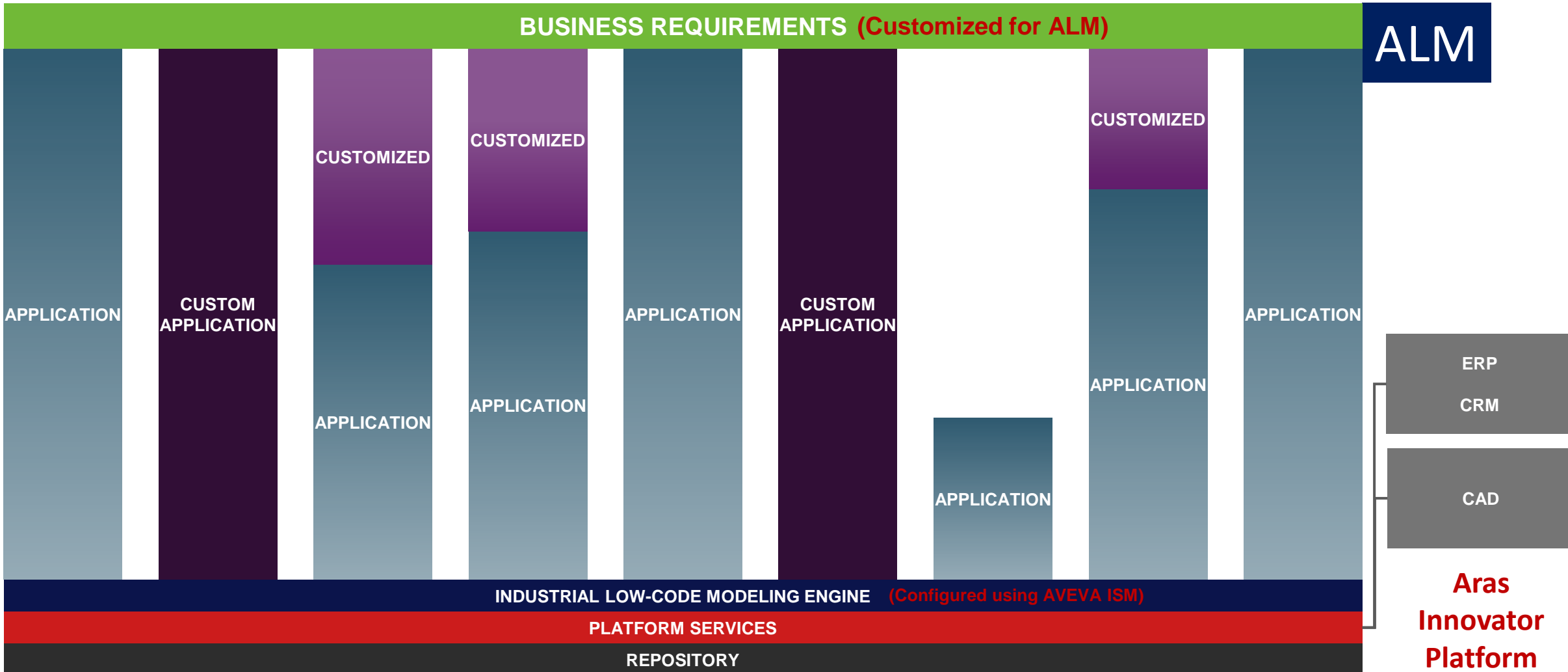
Why Aras for Asset Lifecycle Management?

“A leader in PLM” - The Forrester Wave, Q1 2023

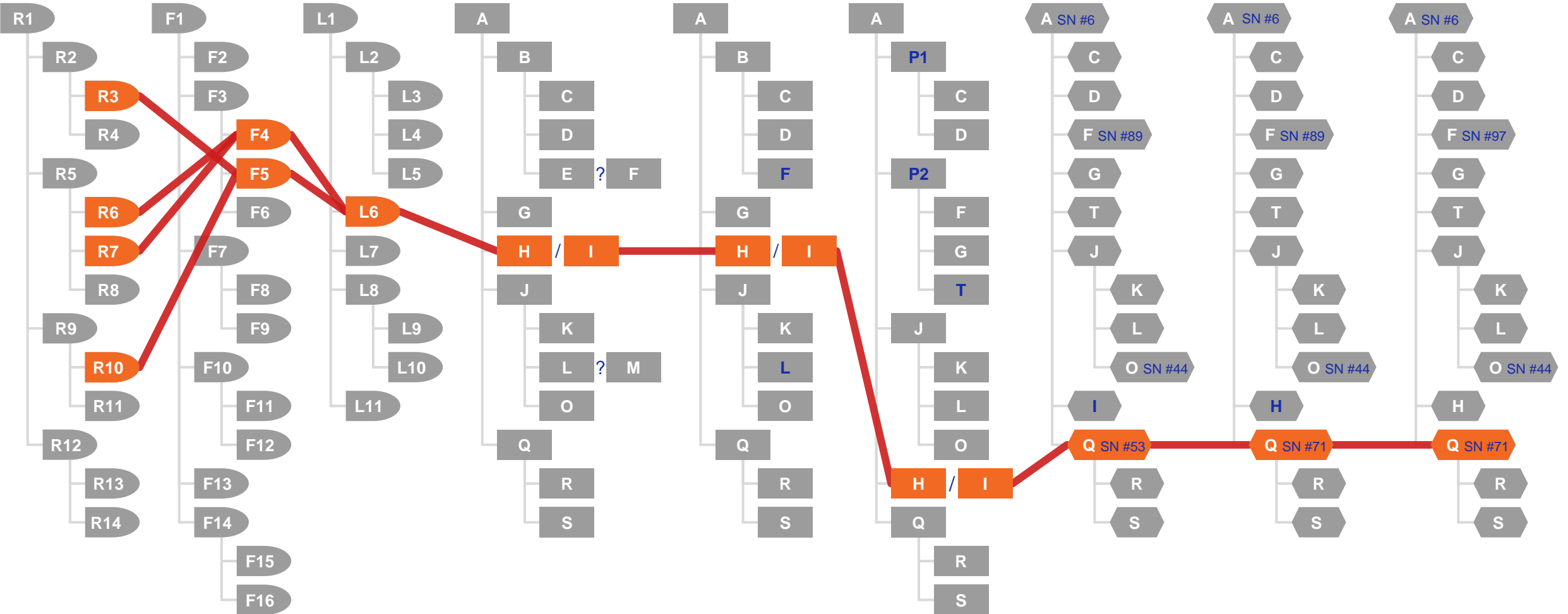
Adaptable

Scalable

Open



Benefit from a Full Lifecycle Digital Thread



Joint Value Proposition Example: Deliverables Management Workflow

Efficient Process and Plant Design – Compliance – CAPEX Optimization


Efficient and Sustainable Operations



Any Users

View | Decide | Share

Data Aggregation Platform
AIM and AVEVA CVS



Deliverables made available for visualisation via data hub

5

Community Applications Customer Applications

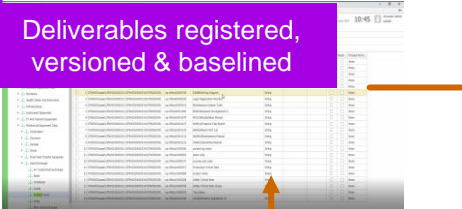


Requirements Engineer / Program Manager

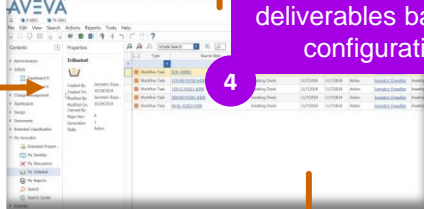
Analyze | Investigate | Validate

Asset Lifecycle Management (ALM)


3 Deliverables registered, versioned & baselined



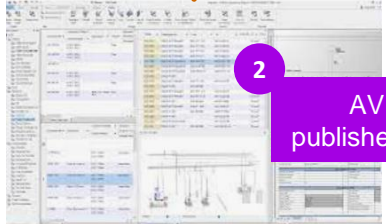
4 Approval workflows executed and deliverables baselined & attached to configuration / requirements



4a Comments on Deliverables are addressed in UE



Unified Engineering



aras Innovator

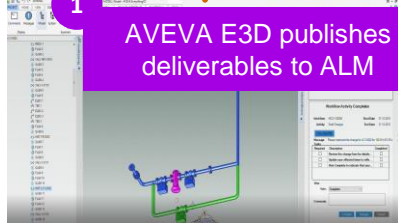


3D Designer

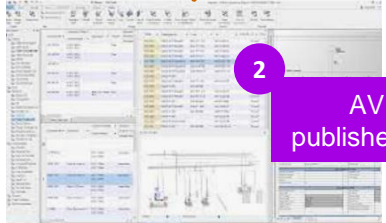
Design | Modify

Process and Plant Design

1 AVEVA E3D publishes deliverables to ALM



2 AVEVA Engineering publishes deliverables to ALM



AVEVA





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- mpanthaki@aras.com

Questions?

Please speak to us after the session is over or visit us in our booths:

Aras Partner Booth

AVEVA Digital Twin Booth



Please remember to...

Navigate to this session in the mobile app to complete the survey.



Thank you!

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ABOUT AVEVA

AVEVA is a world leader in industrial software, providing engineering and operational solutions across multiple industries, including oil and gas, chemical, pharmaceutical, power and utilities, marine, renewables, and food and beverage. Our agnostic and open architecture helps organizations design, build, operate, maintain and optimize the complete lifecycle of complex industrial assets, from production plants and offshore platforms to manufactured consumer goods.

Over 20,000 enterprises in over 100 countries rely on AVEVA to help them deliver life's essentials: safe and reliable energy, food, medicines, infrastructure and more. By connecting people with trusted information and AI-enriched insights, AVEVA enables teams to engineer efficiently and optimize operations, driving growth and sustainability.

Named as one of the world's most innovative companies, AVEVA supports customers with open solutions and the expertise of more than 6,400 employees, 5,000 partners and 5,700 certified developers. The company is headquartered in Cambridge, UK.

Learn more at www.aveva.com