

NOVEMBER 2022

Digital Engineering: Performing Engineering Project, Integration and Replication using AVEVA UE / AVEVA IE&D in a Complete Digital Way

Mauricio Arakaki
Osvaldo Bernardo
Rodrigo Gonçalves

promon
engenharia **AVEVA**

Promon Engenharia

An uncommon company



62 years

a Brazilian company founded in 1960

63%

NPI in 2022s*

R\$+200

millions

revenue in 2023s*

+1000

employees and an extensive network of employees

87

index of client satisfaction history



HSE

Sustainable development guideline



PMI

state of the art in engineering, management, processes and tools

45

EPC and EPCM projects executed in the last 10 years

+40

countries since its foundation

+2.600

projects carried out throughout its 62 years of history

ESG

Sustainable development guideline



100%

belonging to its employees and ex-employees (*employee owned*)





Who we are

Mauricio Arakaki

Engineering Manager at Promon Engenharia

Has been working in Promon since 2004, starting as a process engineer and working on different types of projects

User of Aveva's solutions for process simulations and detailed engineering tools



Who we are

Osvaldo Bernardo

Chief Operating Officer at Promon Engenharia since 2018.

Has been working in Promon since 2002, in different sectors: oil and gas, energy, biofuels, chemical, petrochemical, mining and infrastructure segments.

Participation in the management of large projects in various EPC, EPCM and Engineering contracting modalities.



Who we are

Rodrigo Gonçalves

Has been working in Promon since 2008. Engineering Systems Coordinator since 2020. AVEVA specialist since 2003.

Has been working in the most complex and largest Industrial projects in Brazil since 2003

Master's and PhD in Engineering with a focus on technologies related to reality capture.

Biofuel Plant



Develop a replication program of a 2nd generation ethanol plant with focus on:

- Design phase:
 - Scalability
 - Efficiency of production processes
 - Quality
 - Cost
- Operation and maintenance phase:
 - Real-time asset management
 - Operational efficiency
 - Maintenance efficiency throughout its useful life.

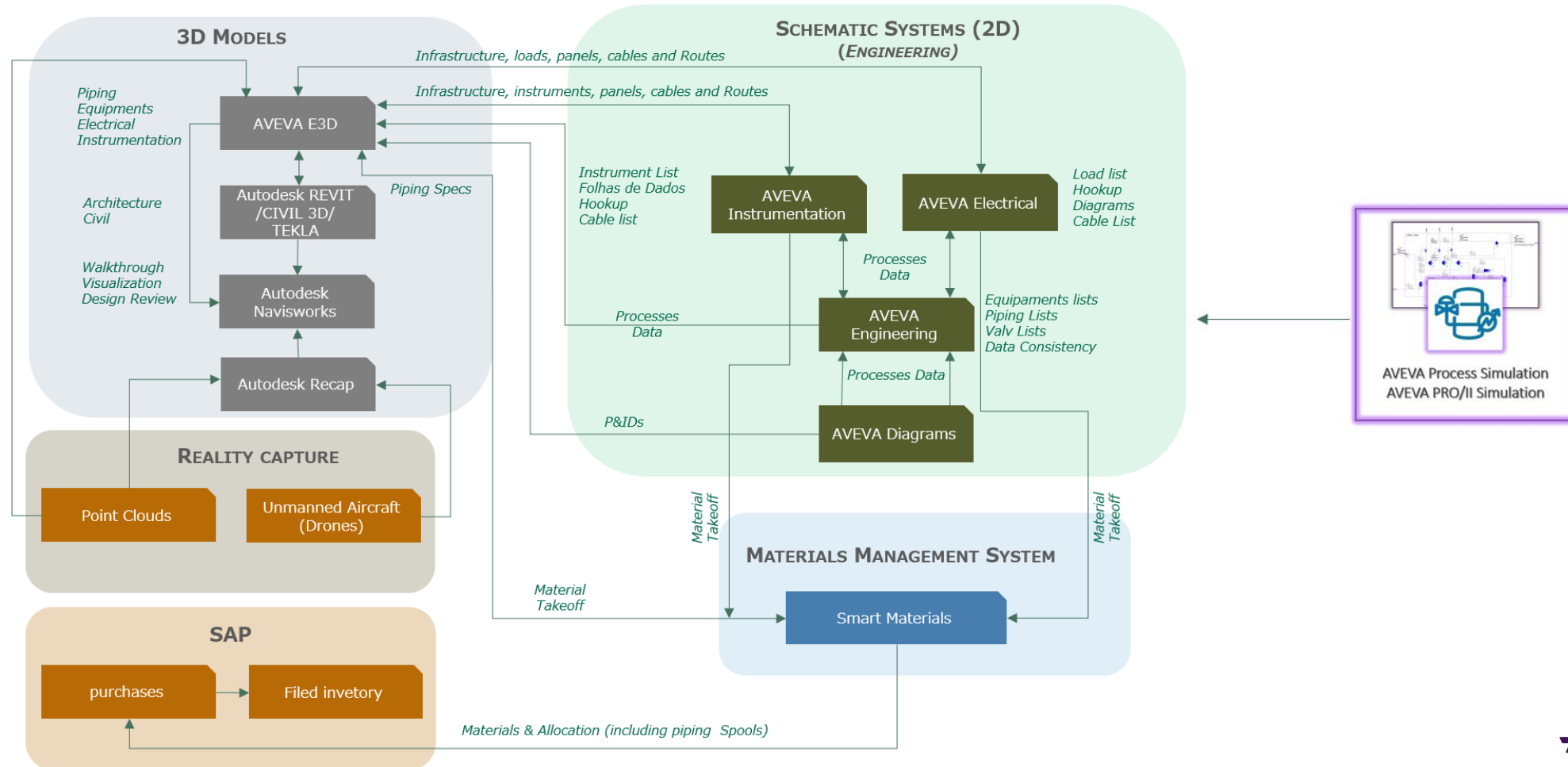
DataCentric concept usage, developing work standards, disseminating the culture of Digital Engineering.

Develop new projects from a mature, centralized, consistent and auditable database to bring technical improvements, financial earning and time saving to the customer.

Allow this database to be used during operation and maintenance to manage the asset throughout the life of the plant.

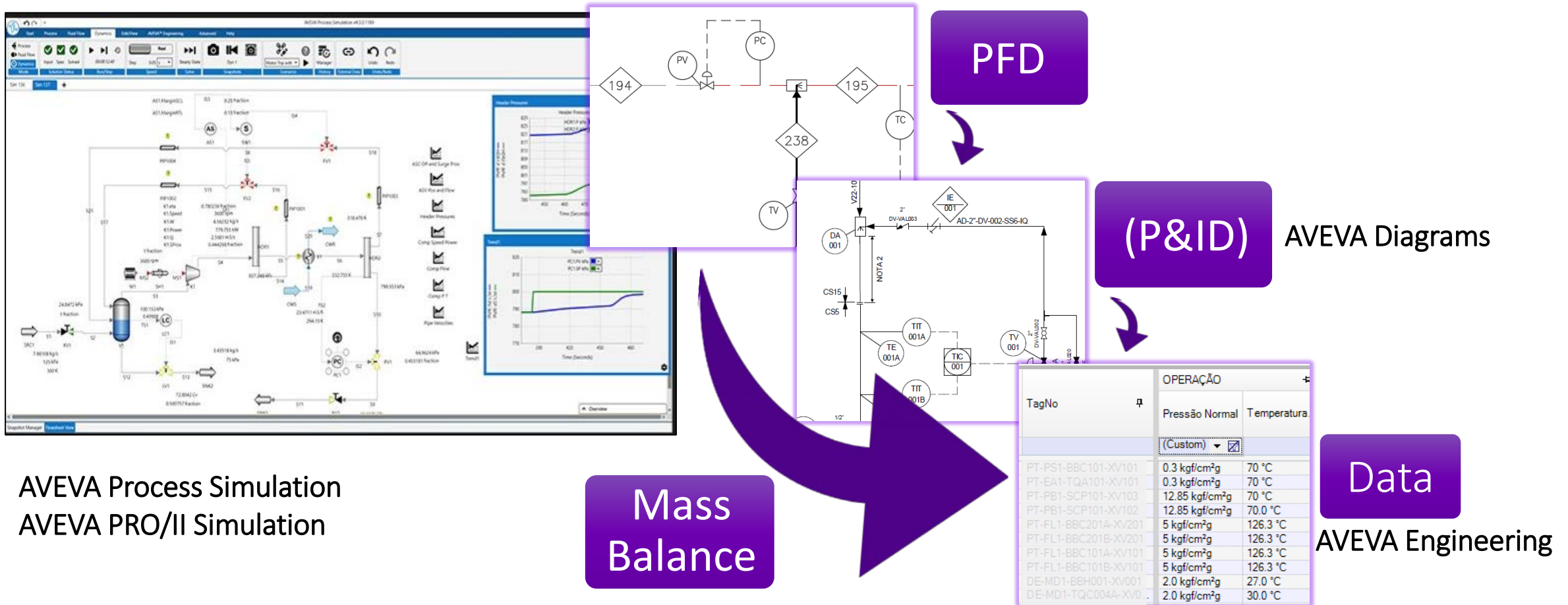
Implementation Details – First Challenge

Putting everything to work together



Process Engineering team: Overview

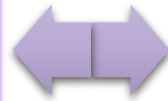
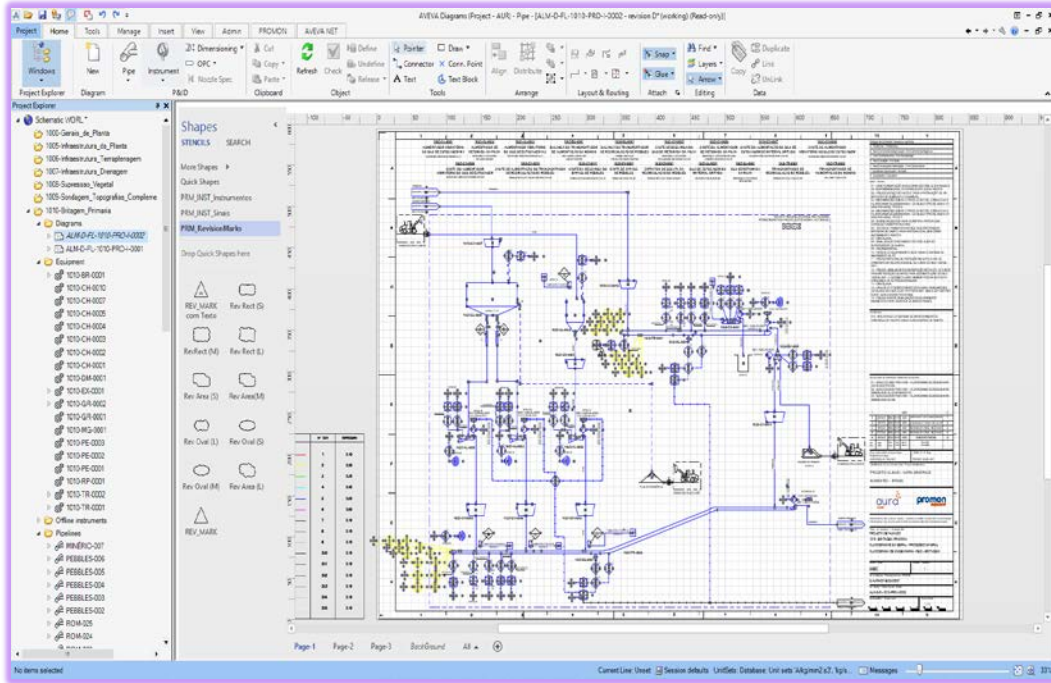
From Simulation to Engineer



AVEVA Process Simulation
AVEVA PRO/II Simulation

Process Engineering Team

Compare & Update

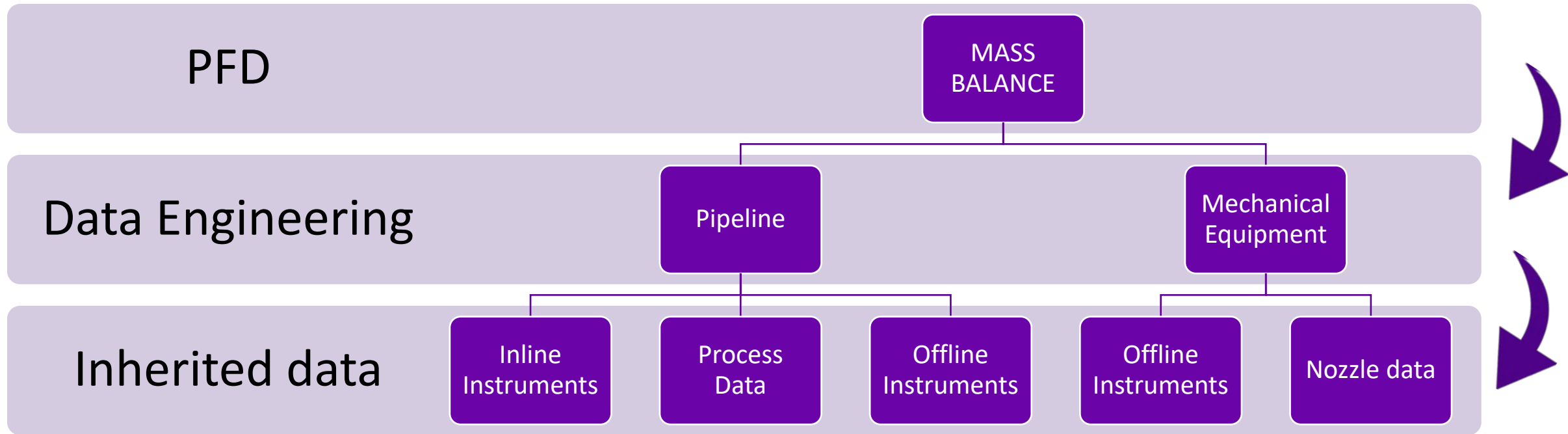


The screenshot shows the AVEVA NET interface with a data table displayed. The table has columns for 'Obj.', 'TPO', 'ID Object', 'Diagram', 'Status TAG', 'Status Datas', 'TAG', 'Diâmetro', 'Fluido', 'Area', 'Especificação', 'Sequencial', and 'Instalacao'. The table contains multiple rows of data, including equipment tags like '11-ABR-2022-C1A-010-N0' and '12-PBA-1030-C1N-023-N0'. On the right side, there is a 3D model of a robotic arm and a smaller diagram view at the bottom right.

Obj.	TPO	ID Object	Diagram	Status TAG	Status Datas	TAG	Diâmetro	Fluido	Area	Especificação	Sequencial	Instalacao
PRO_ENGGPPE				Approved	Approved	11-ABR-2022-C1A-010-N0	1"	ABR	2020	C1A	010	NI
PRO_ENGGPPE				Approved	Approved	11-ABR-2022-C1A-012-N0	1"	ABR	2020	C1A	012	NI
PRO_ENGGPPE				Approved	Approved	12-PBA-1030-C1N-023-N0	12"	PBA	1030	C1N	023	NI
PRO_ENGGPPE				Approved	Approved	4-PAA-1030-C1N-051-N0	4"	PAA	1030	C1N	051	NI
PRO_ENGGPPE				Approved	Approved	16-PAA-1030-C1N-027-N0	16"	PAA	1030	C1N	027	NI
PRO_ENGGPPE				Approved	Approved	14-PAA-1030-C1N-023-N0	14"	PAA	1030	C1N	023	NI
PRO_ENGGPPE				Approved	Approved	14-PAA-1030-C1N-033-N0	14"	PAA	1030	C1N	033	NI
PRO_ENGGPPE				Approved	Approved	14-PAA-1030-C1N-055-N0	14"	PAA	1030	C1N	055	NI
PRO_ENGGPPE				Approved	Approved	14-PAA-1030-C1N-054-N0	14"	PAA	1030	C1N	054	NI
PRO_ENGGPPE				Approved	Approved	14-PAA-1030-C1N-006-N0	14"	PAA	1030	C1N	006	NI
PRO_ENGGPPE				Approved	Approved	12-PBA-1030-C1N-023-N0	12"	PBA	1030	C1N	023	NI
PRO_ENGGPPE				Approved	Approved	10-PBA-1030-C1N-023-N0	10"	PBA	1030	C1N	023	NI
PRO_ENGGPPE				Approved	Approved	8-PBA-1030-C1N-021-N0	8"	PBA	1030	C1N	021	NI
PRO_ENGGPPE				Approved	Approved	1-PBA-1045-C1N-055-N0	1"	PBA	1045	C1N	055	NI
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PRO_ENGGPPE				Approved	Approved	4-PBA-1045-C1N-012-N0	4"	PBA	1045	C1N	012	NI
PRO_ENGGPPE				Approved	Approved	12-PBA-1045-C1N-016-N0	12"	PBA	1045	C1N	016	NI
PRO_ENGGPPE				Approved	Approved	12-PBA-1045-C1N-015-N0	12"	PBA	1045	C1N	015	NI
PRO_ENGGPPE				Approved	Approved	6-PLC-1045-PMB-059-N0	6"	PLC	1045	PMB	059	NI
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PRO_ENGGPPE				Approved	Approved	6-PLC-1045-PMB-055-N0	6"	PLC	1045	PMB	055	NI
PRO_ENGGPPE				Approved	Approved	4-PBA-1045-C1N-010-N0	4"	PBA	1045	C1N	010	NI
PRO_ENGGPPE				Approved	Approved	6-PLC-1045-PMB-054-N0	6"	PLC	1045	PMB	054	NI
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PRO_ENGGPPE				Approved	Approved	6-PLC-1045-PMB-052-N0	6"	PLC	1045	PMB	052	NI
PRO_ENGGPPE				Approved	Approved	4-PBA-1045-C1N-013-N0	4"	PBA	1045	C1N	013	NI
PRO_ENGGPPE				Approved	Approved	4-PBA-1045-C1N-023-N0	4"	PBA	1045	C1N	023	NI
PRO_ENGGPPE				Approved	Approved	6-PLC-1045-PMB-051-N0	6"	PLC	1045	PMB	051	NI
PRO_ENGGPPE				Approved	Approved	6-PLC-1045-PMB-050-N0	6"	PLC	1045	PMB	050	NI
PRO_ENGGPPE				Approved	Approved	2-PBA-1045-C1N-064-N0	2"	PBA	1045	C1N	064	NI
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PRO_ENGGPPE				Approved	Approved	2-PBA-1045-C1N-052-N0	2"	PBA	1045	C1N	052	NI
PRO_ENGGPPE				Approved	Approved	4-PBA-1045-C1N-022-N0	4"	PBA	1045	C1N	022	NI
PRO_ENGGPPE				Approved	Approved	6-APD-2025-G1A-021-PP	6"	APD	2025	G1A	021	PP
PRO_ENGGPPE				Approved	Approved	1.102-APD-2025-G1A-014	1.102	APD	2025	G1A	014	PP
PRO_ENGGPPE				Approved	Approved	1.102-APD-2025-G1A-015	1.102	APD	2025	G1A	015	PP
PRO_ENGGPPE				Approved	Approved	1.102-APD-2025-G1A-017	1.102	APD	2025	G1A	017	PP
PRO_ENGGPPE				Approved	Approved	1.102-APD-2025-G1A-018	1.102	APD	2025	G1A	018	PP
PRO_ENGGPPE				Approved	Approved	7-APD-2025-G1A-019-PP	7"	APD	2025	G1A	019	PP
PRO_ENGGPPE				Approved	Approved	1.102-APD-2025-G1A-026	1.102	APD	2025	G1A	026	PP
PRO_ENGGPPE				Approved	Approved	1.102-APD-2025-G1A-020	1.102	APD	2025	G1A	020	PP

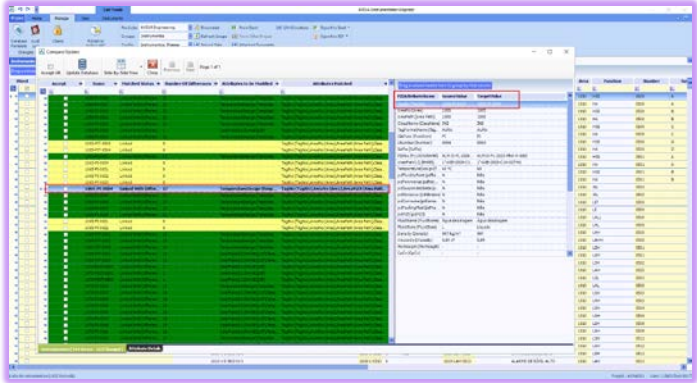
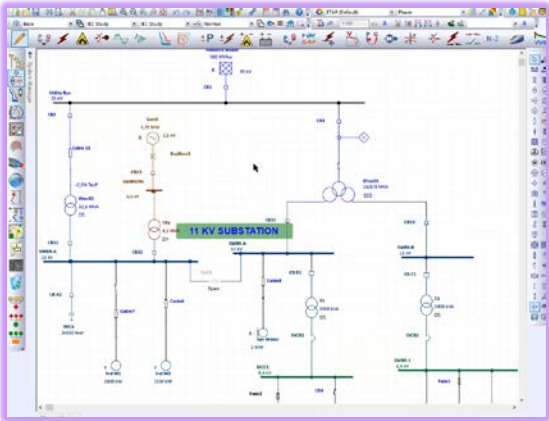
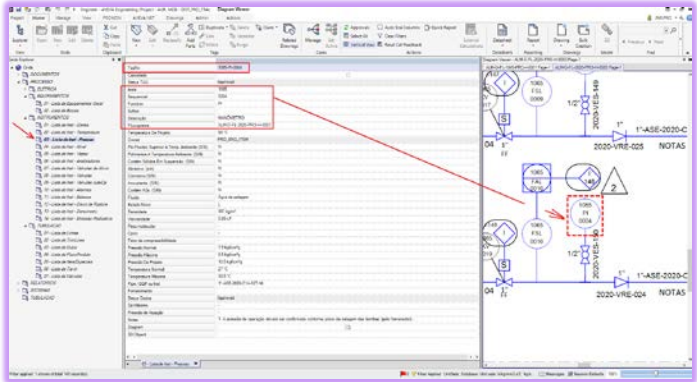
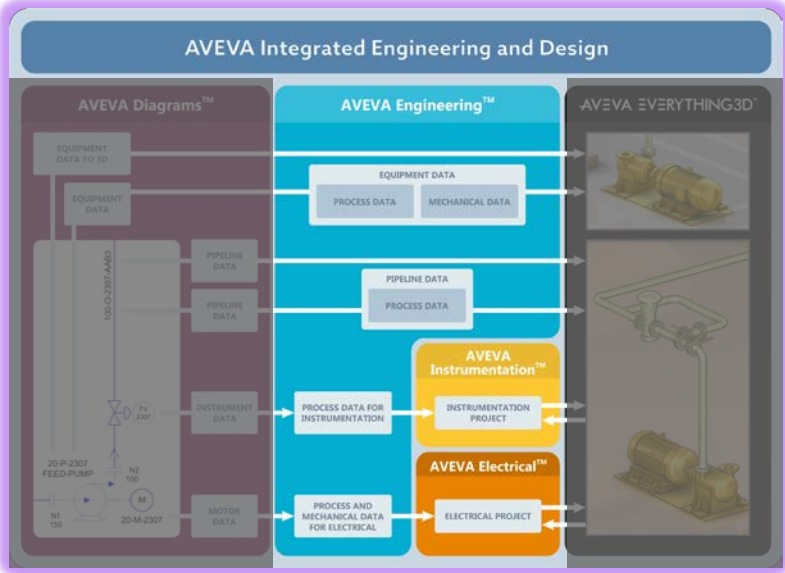
Process Engineering team: Overview

Data Consistency



Electrical/Instrumentation & Process Engineering Team

Tags, data, information – All integrated



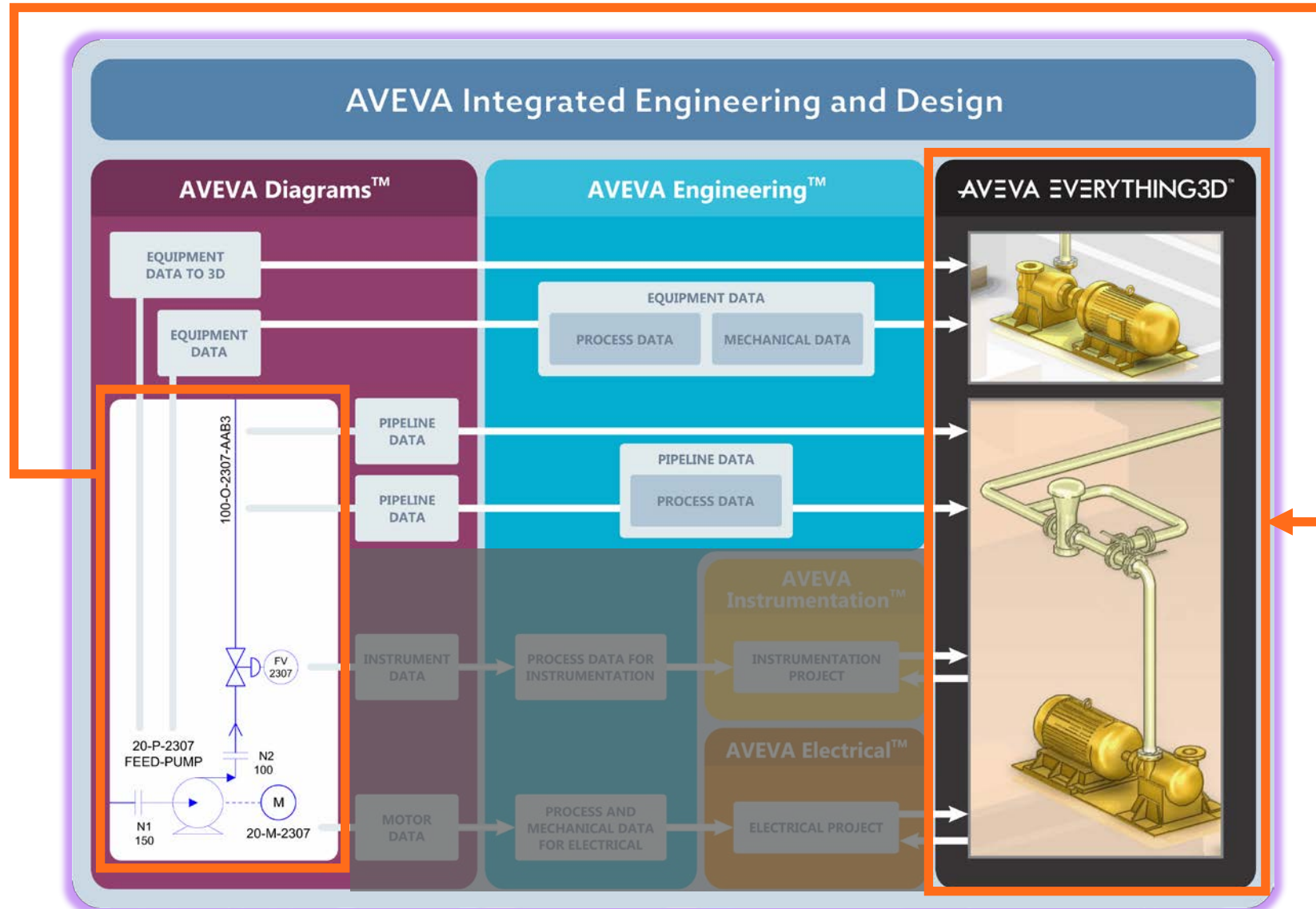
etap

AVEVA

Aveva E3D Design

Tags, data, information – All integrated

P&ID Directly
referenced in E3D
Design

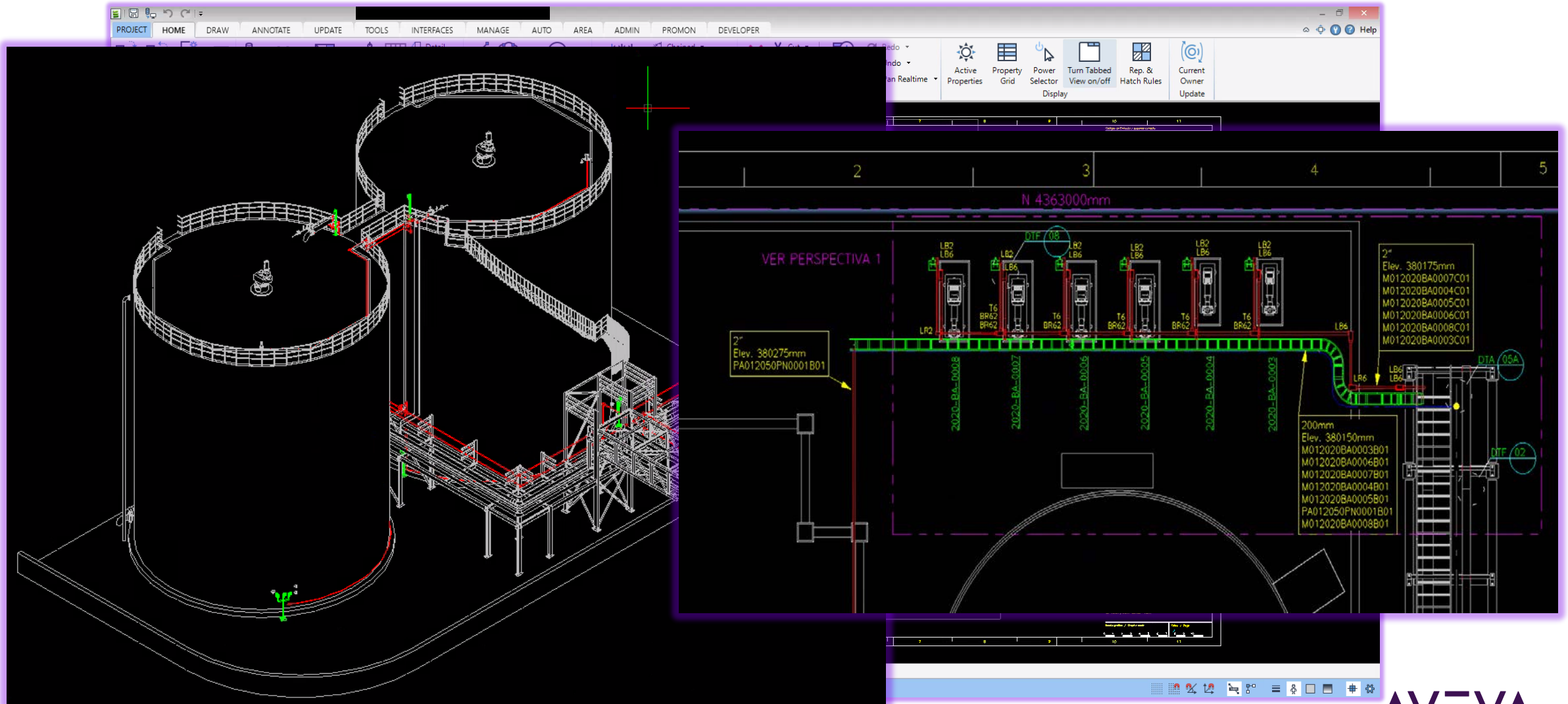


Aveva E3D Design – Piping & Mechanical Equipments

AVEVA E3D Design & AVEVA Diagrams – Piping/Equipments & PI&D

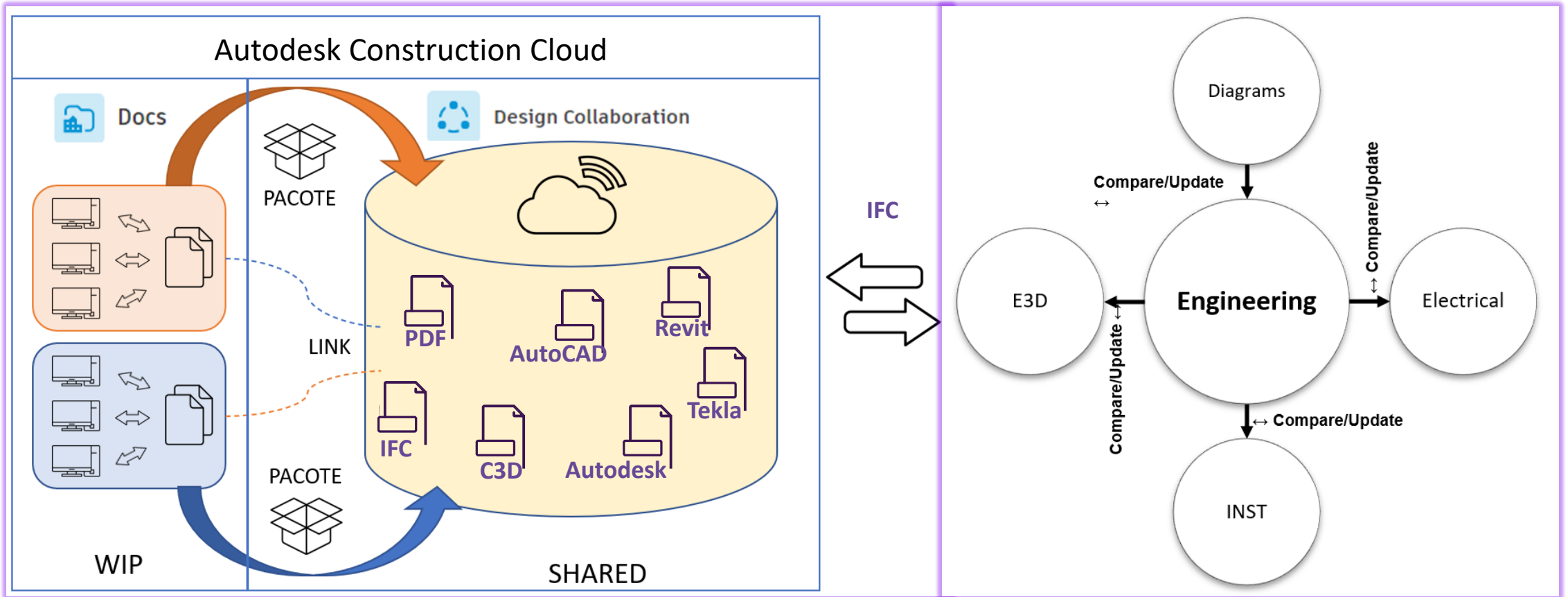
The screenshot displays the AVEVA E3D Design software interface. The main window shows a 3D model of industrial piping and equipment, including large yellow cylindrical tanks and a complex network of green and red pipes. The interface includes a menu bar with options like PROJECT, HOME, VIEW, TOOLS, INTERFACES, MANAGE, DESIGN AIDS, GENERAL, EQUIPMENT, INTEGRATOR, DIAGRAM VIEWER, PROMON, ADMIN, and DEVELOPER. A toolbar on the left contains icons for zooming, printing, and saving. A Model Explorer on the left lists various components, with 'PIPE 1.1/2"-APO-2025-G1A-023-PP' selected. A Diagram Viewer window is open in the foreground, showing a 2D piping diagram with labels such as '1070-FSH-0009', '2025-VGA-010', 'NOTA 19', 'CIANETO DE SÓDIO ÁREA1070', 'PREPARAÇÃO E DISTRIBUIÇÃO DE CAL ÁREA1070', '1070-CS-0002', and '1070-CS-0001'. The diagram includes various symbols for pipes, valves, and equipment. A 3D Viewport at the bottom center shows a compass and orientation controls. The bottom status bar indicates '3D View(1) - DrawList(1)'. The AVEVA logo is visible in the bottom right corner.

Aveva E3D Design – Electrical & Instrumentation



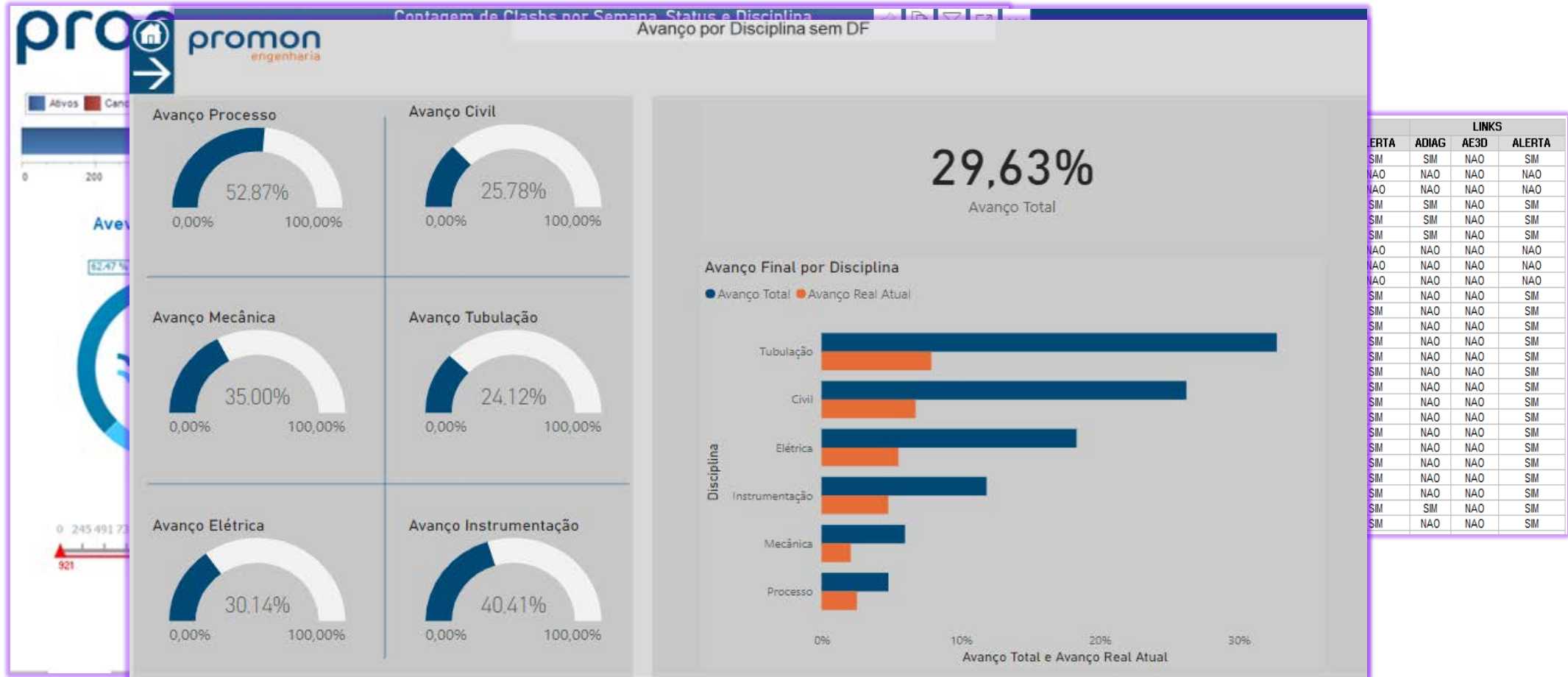
Civil Engineering Team

Integration among different databases - Interoperability

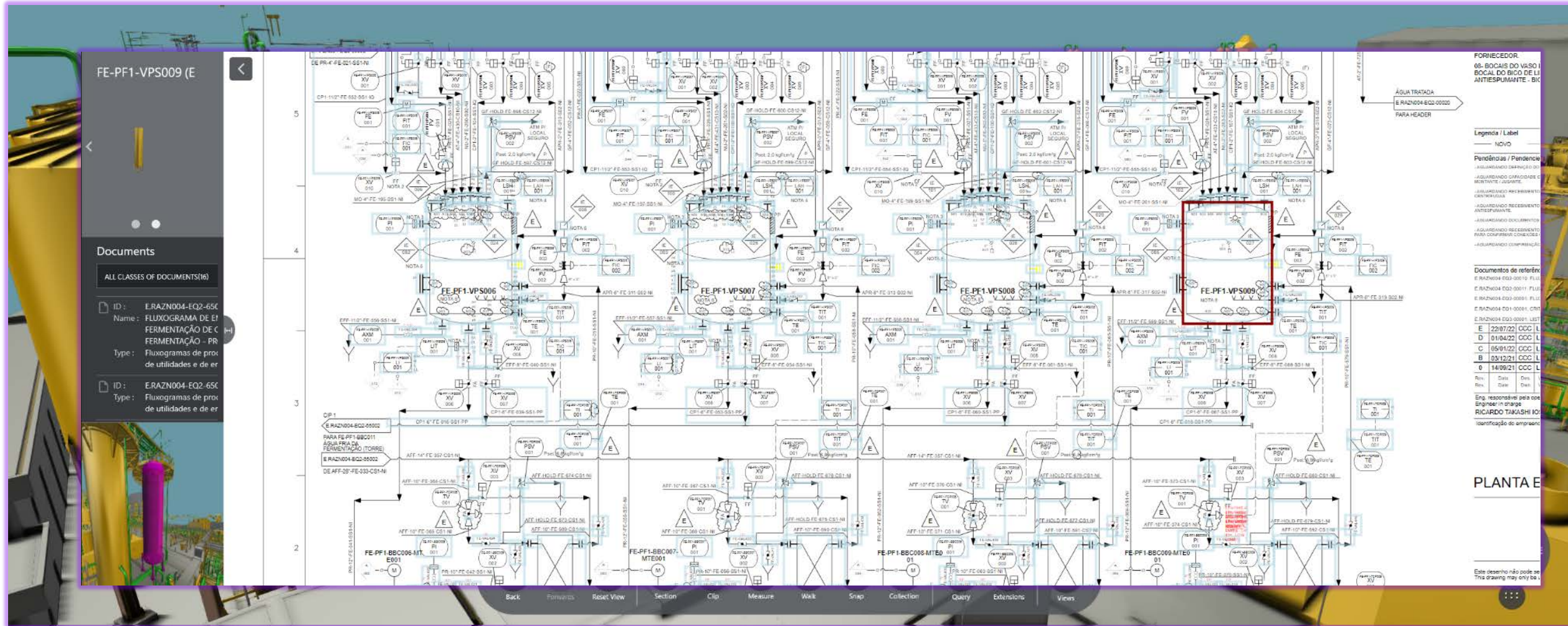


Transparency and Quality

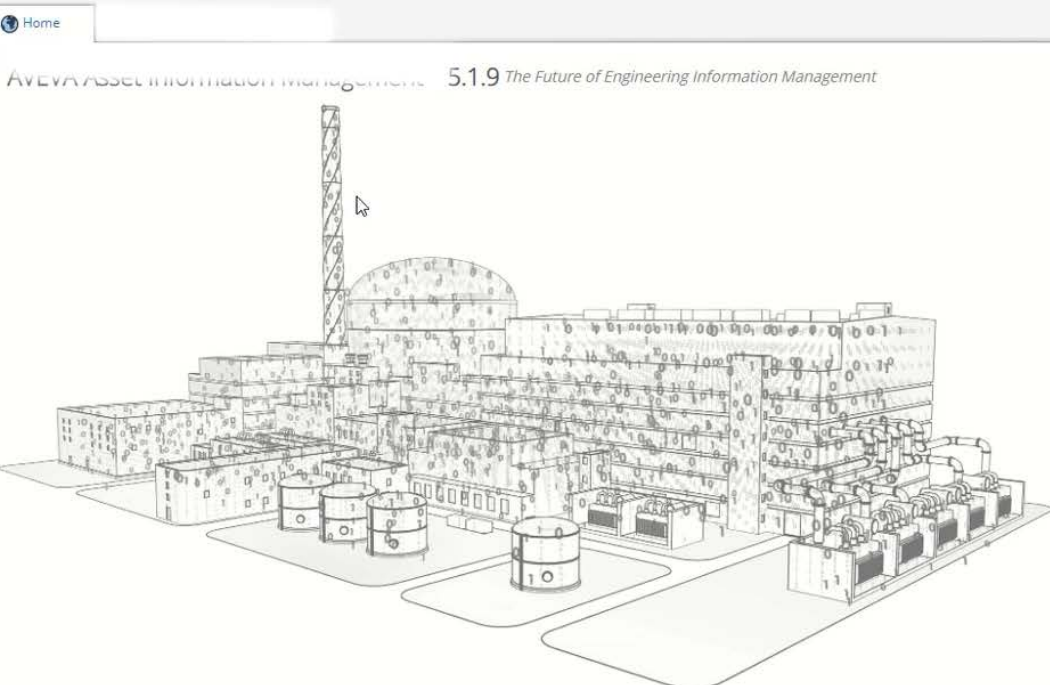
Project Consistency Report, Interference Analysis and Physical Progress



Digital Twin



Digital Twin



Home

AVEVA Asset Information Management 5.1.9 *The Future of Engineering Information Management*

Powerful and effective
Information Management for
Engineering and Operations

Collect
Bring together information in multiple formats and from various source systems to create a complete cross-reference index with links to, and associations between, all items in the digital asset.

Locate
Provide fast and powerful search capabilities which, combined with its knowledge of tag and document associations, delivers efficient and effective location of information required for decision making.

Discover
Automatically extract and maintain tag to tag, tag to document, and document to document relationships. Exploiting this interconnectivity, it provides efficient navigation of the digital assets and aids in the discovery of new insights in your information.

View
Deliver high-quality web-based visualisation of tag data, documents, drawings, 3D models and laser scans. Automatic creation of hotspots and hyperlinks provides additional intelligence for easy identification and navigation of tags.

Report
Improve project and operational compliance by aggregating project and asset data to report on the quality, consistency, and completeness of your information.

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Outcomes

- Assurance the **information integrity**, even in projects with high dynamism **between Stakeholders** (Customers, suppliers and engineering companies) generates time and financial gain and avoids rework;
- **Full Transparency** in the project progress to the customer;
- **Datacentric adoption is the foundation for ASSET Control (O&M)**. Allows this database to be used during O&M to manage the asset throughout the plant life cycle;
- The control of information is inherent to the database itself – no need for parallel controls in spreadsheets. **Important gain for remote and/or hybrid work mode;**
- When we have a digital Twin, **information is easier to be accessed** even after the project ends and by areas not always familiarized with the day by day of engineering projects;
- **Improves Scope Control**, being fundamental in the Procurement, Construction and Erection stages;
- **Reduction** in plant start-up time.



New possibilities

Data: Reuse and Replication

- Implementation time and costs **reduction** for similar projects;
- Build a database to use as our knowledge base (useful for developing new projects **faster** and more **efficiently**);
- Design/building data **handover** to use in the **O&M** phase;
- **Data Replication** to build new similar Plants;
- Consider **partial and similar areas** or systems as a possibility for data **replication**.

“The first rule of any technology used in a business is that automation applied to an efficient operation will magnify the efficiency. The second is that automation applied to an inefficient operation will magnify the inefficiency.”

Bill Gates



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Questions?

Please wait for the microphone.
State your name and company.



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 global leader in industrial software, driving digital transformation and sustainability. By connecting the power of information and artificial intelligence with human insight, AVEVA enables teams to use their data to unlock new value. We call this Performance Intelligence. AVEVA's comprehensive portfolio enables more than 20,000 industrial enterprises to engineer smarter, operate better and drive sustainable efficiency. AVEVA supports customers through a trusted ecosystem that includes 5,500 partners and 5,700 certified developers around the world. The company is headquartered in Cambridge, UK, with over 6,500 employees and 90 offices in over 40 countries.

Learn more at www.aveva.com