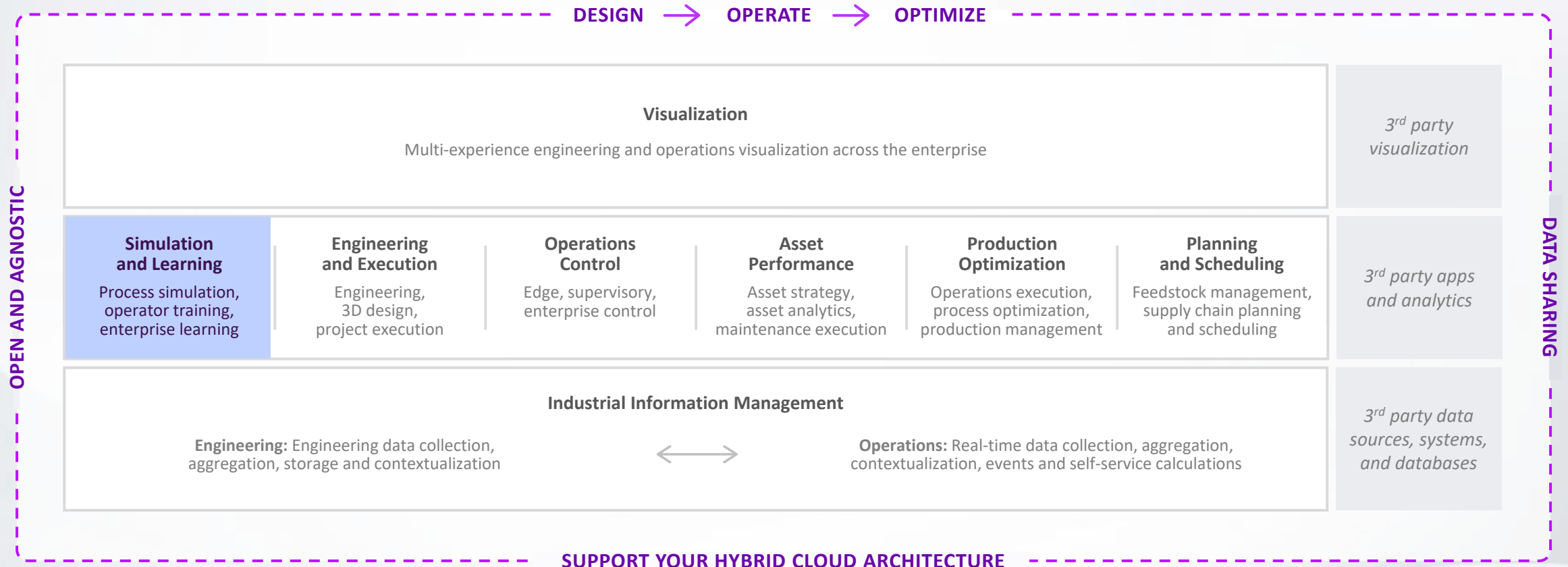17 MAY 2022

AVEVA Simulation & Learning

Portfolio Overview

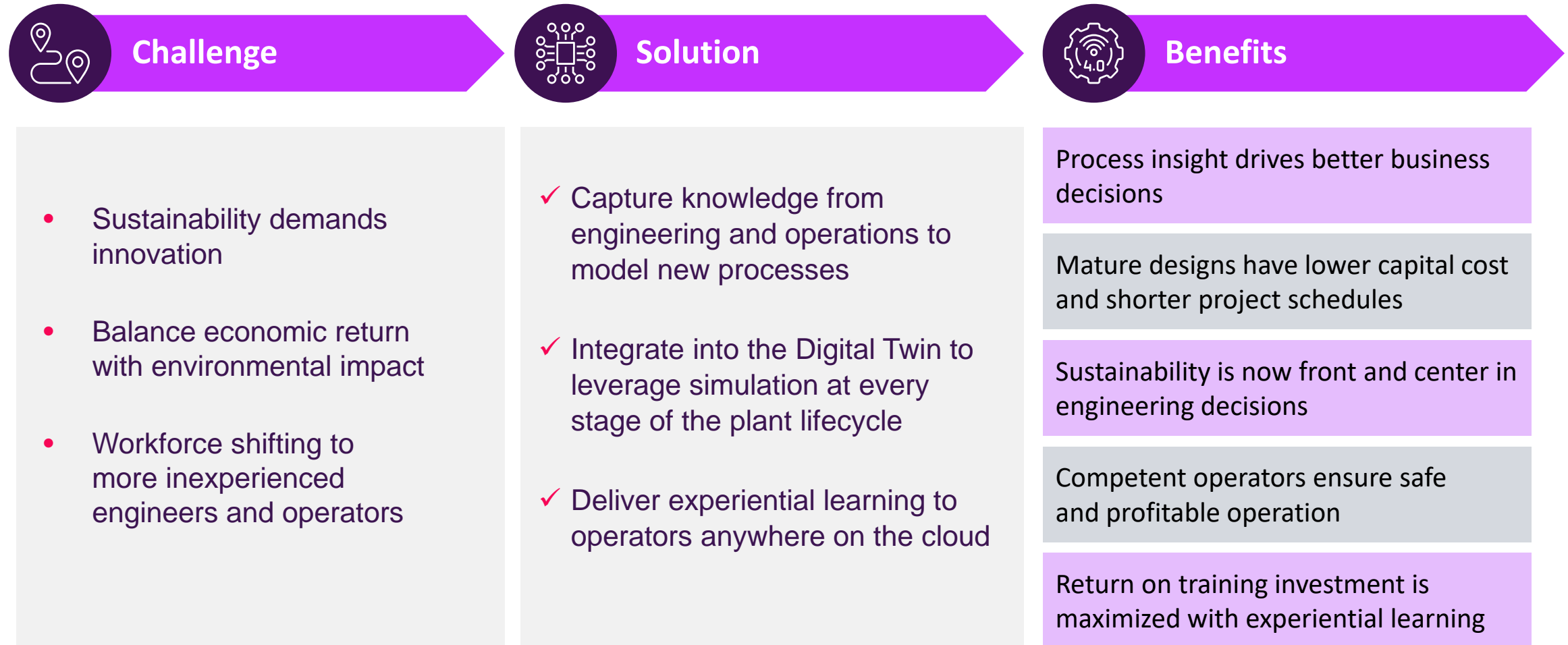Chloe Smith – Director of Product Management, Simulation & Learning

AVEVA

Delivering a complete digital thread, purpose-built for industry

Accelerate time to value with flexible, scalable, and trusted industrial hybrid SaaS solutions

DESIGN → OPERATE → OPTIMIZE

OPEN AND AGNOSTIC

DATA SHARING

Visualization
Multi-experience engineering and operations visualization across the enterprise

3rd party visualization

Simulation and Learning	Engineering and Execution	Operations Control	Asset Performance	Production Optimization	Planning and Scheduling
Process simulation, operator training, enterprise learning	Engineering, 3D design, project execution	Edge, supervisory, enterprise control	Asset strategy, asset analytics, maintenance execution	Operations execution, process optimization, production management	Feedstock management, supply chain planning and scheduling

3rd party apps and analytics

Industrial Information Management

Engineering: Engineering data collection, aggregation, storage and contextualization

←→

Operations: Real-time data collection, aggregation, contextualization, events and self-service calculations

3rd party data sources, systems, and databases

SUPPORT YOUR HYBRID CLOUD ARCHITECTURE

AVEVA

AVEVA Simulation and Learning

Challenge

- Sustainability demands innovation

- Balance economic return with environmental impact

- Workforce shifting to more inexperienced engineers and operators

Solution

- ✓ Capture knowledge from engineering and operations to model new processes

- ✓ Integrate into the Digital Twin to leverage simulation at every stage of the plant lifecycle

- ✓ Deliver experiential learning to operators anywhere on the cloud

Benefits

Process insight drives better business decisions

Mature designs have lower capital cost and shorter project schedules

Sustainability is now front and center in engineering decisions

Competent operators ensure safe and profitable operation

Return on training investment is maximized with experiential learning

AVEVA

Decades of expertise

AVEVA has over 50 years' experience in developing leading process simulation software

80% of refining capacity in the world has been designed with AVEVA PRO/II Simulation

AVEVA is the only company to have developed a next generation simulation platform

Complete end-to-end offering from Design to Operations

AVEVA

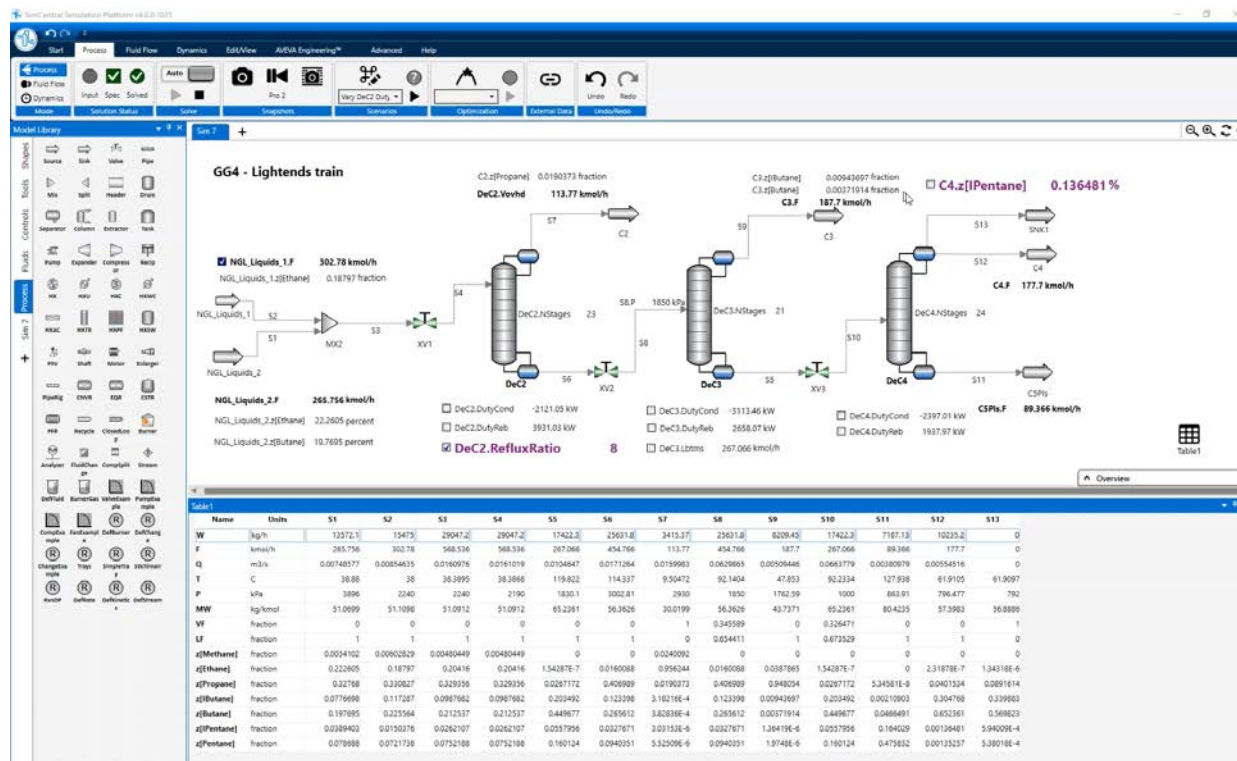# Improved business decisions throughout the process lifecycle

Process Digital Twin

- Fast Evaluation
- Reduced Cost
- Reduced Hours
- Reduced Risk
- Reduced Downtime

Conceptual Design
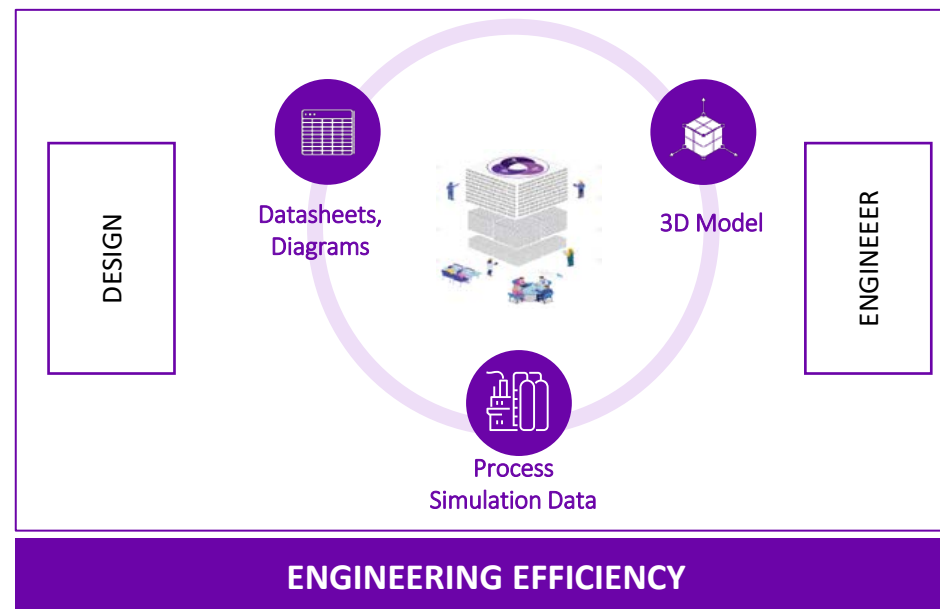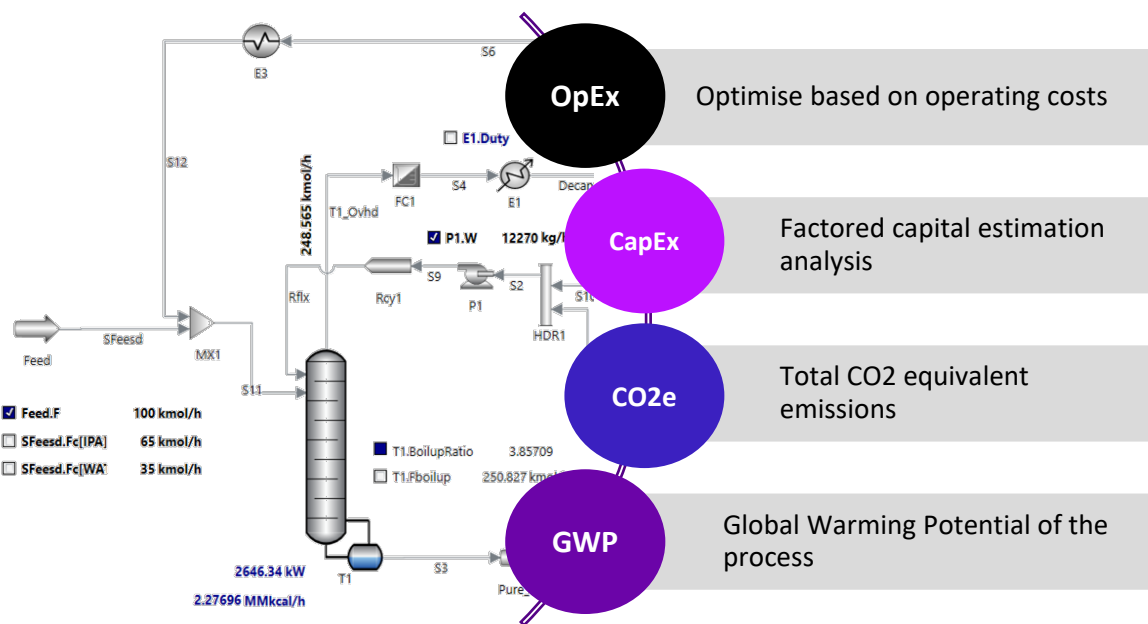Fast evaluation of design alternatives

FEED
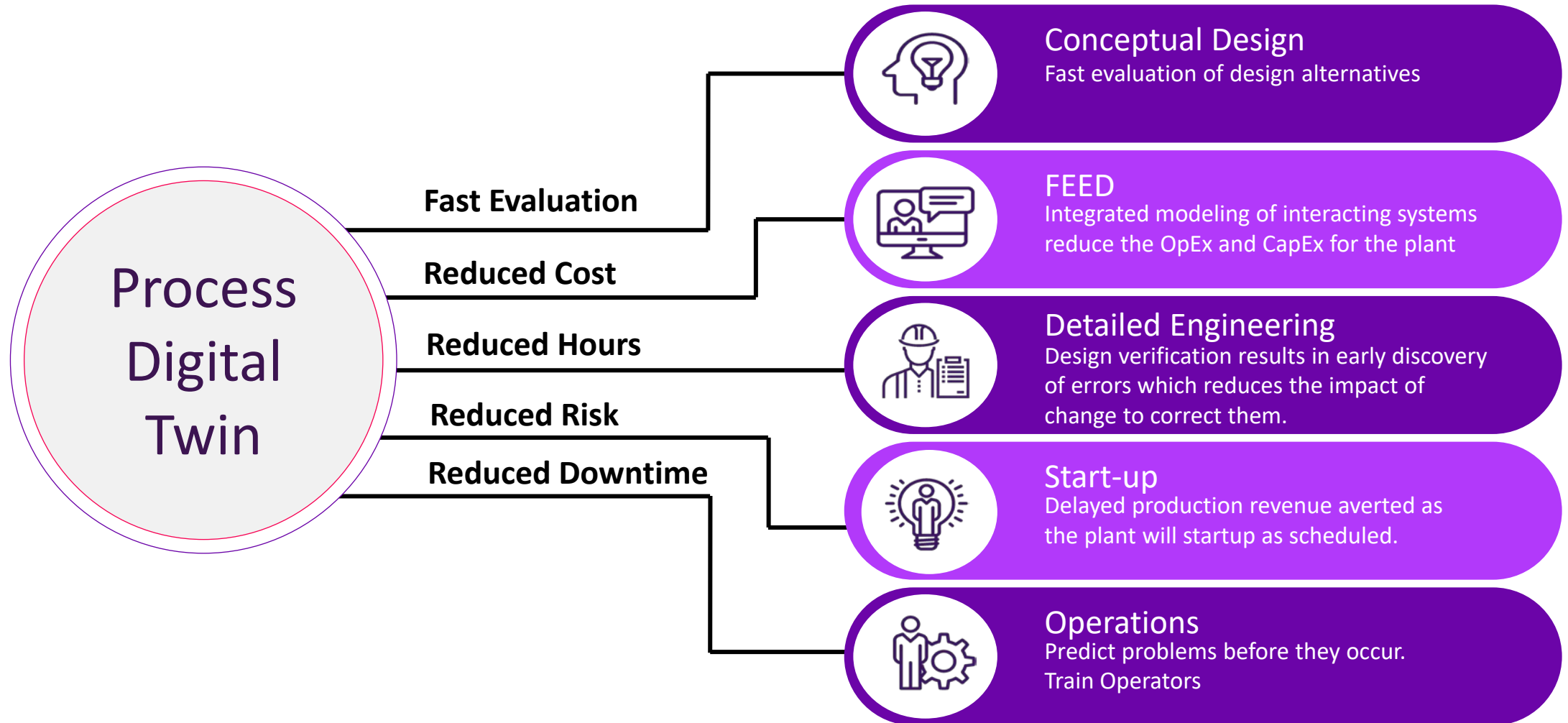Integrated modeling of interacting systems reduce the OpEx and CapEx for the plant

Detailed Engineering
Design verification results in early discovery of errors which reduces the impact of change to correct them.

Start-up
Delayed production revenue averted as the plant will startup as scheduled.

Operations
Predict problems before they occur. Train Operators

AVEVA

Improved business decisions throughout the process lifecycle

Conceptual Design
Fast evaluation of design alternatives

Fast Evaluation

Process Digital Twin

AVEVA

Agile process development

Conceptual Design
Fast evaluation of design alternatives

Highly interactive, flexible and easy to use interface

Steady state, hydraulics and dynamic simulation

Speed

Open and easy model writing

Equation oriented solver

Power

Improved business decisions throughout the process lifecycle

Process Digital Twin

Fast Evaluation

Reduced Cost

Reduced Hours

Conceptual Design
Fast evaluation of design alternatives

FEED
Integrated modeling of interacting systems reduce the OpEx and CapEx for the plant

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AVEVA
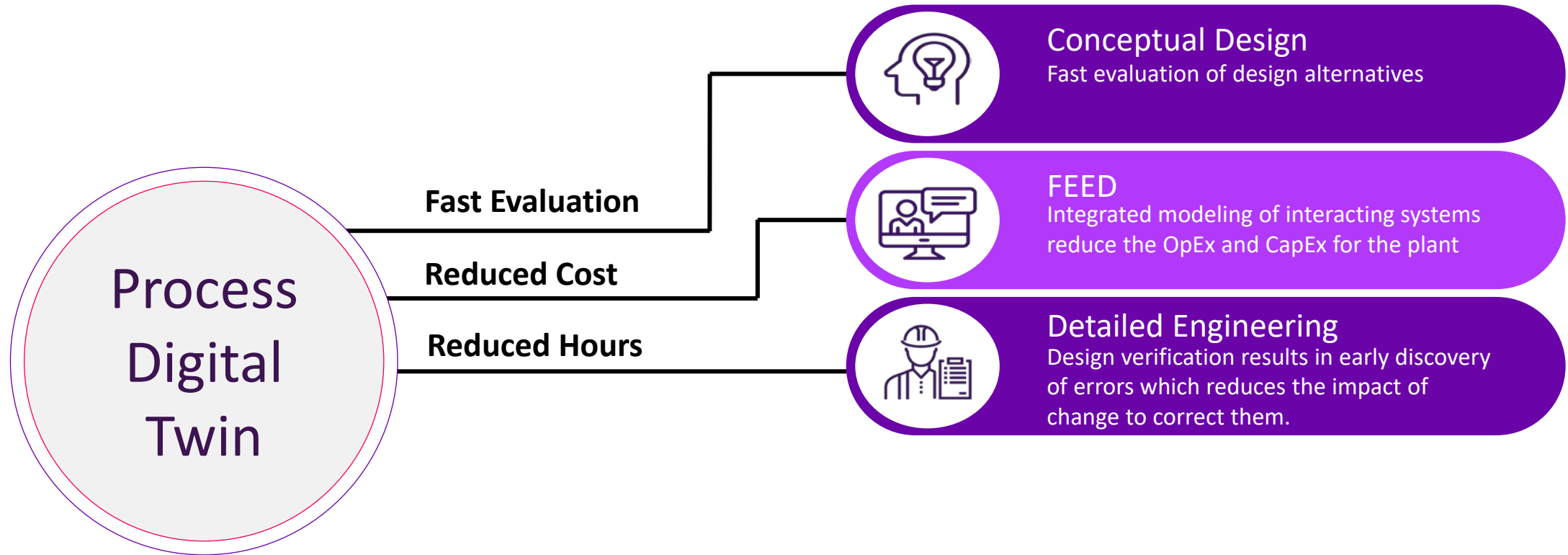
Improved engineering workflow and efficiency

FEED
Integrated modeling of interacting systems reduce the OpEx and CapEx for the plant

Detailed Engineering
Design verification results in early discovery of errors which reduces the impact of change to correct them.

OpEx — Optimise based on operating costs

CapEx — Factored capital estimation analysis

CO2e — Total CO2 equivalent emissions

GWP — Global Warming Potential of the process

DESIGN

Datasheets, Diagrams

3D Model

Process Simulation Data

ENGINEEER

ENGINEERING EFFICIENCY

AVEVA

Improved business decisions throughout the process lifecycle

Process Digital Twin

Fast Evaluation

Reduced Cost

Reduced Hours

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Predict problems before they occur. Train Operators

AVEVA

Streamline start up and shutdown

Start-up
Delayed production revenue averted as the plant will startup as scheduled

- Validation of startup and shutdown procedures

- Uncovering of potential hazards

- Virtual commissioning
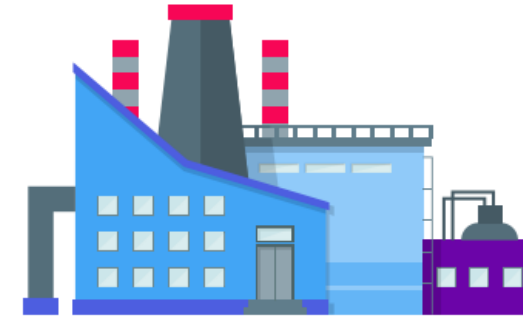
Dynamic process simulations

Replicated interfaces

Emulated control systems

AVEVA

Train plant workforce for sustainable operations

Operations
Predict problems before they occur
Train Operators
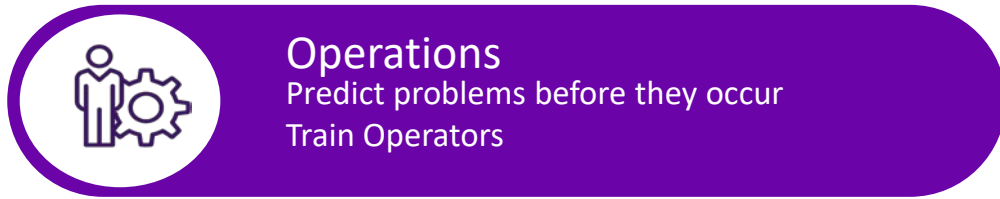
Use high fidelity simulation, virtual reality and experiential learning to train operators to:

- Identify emergencies and mitigate risks
- Prevent leakages and emissions that might cause damage to the environment
- Avoid major accidents
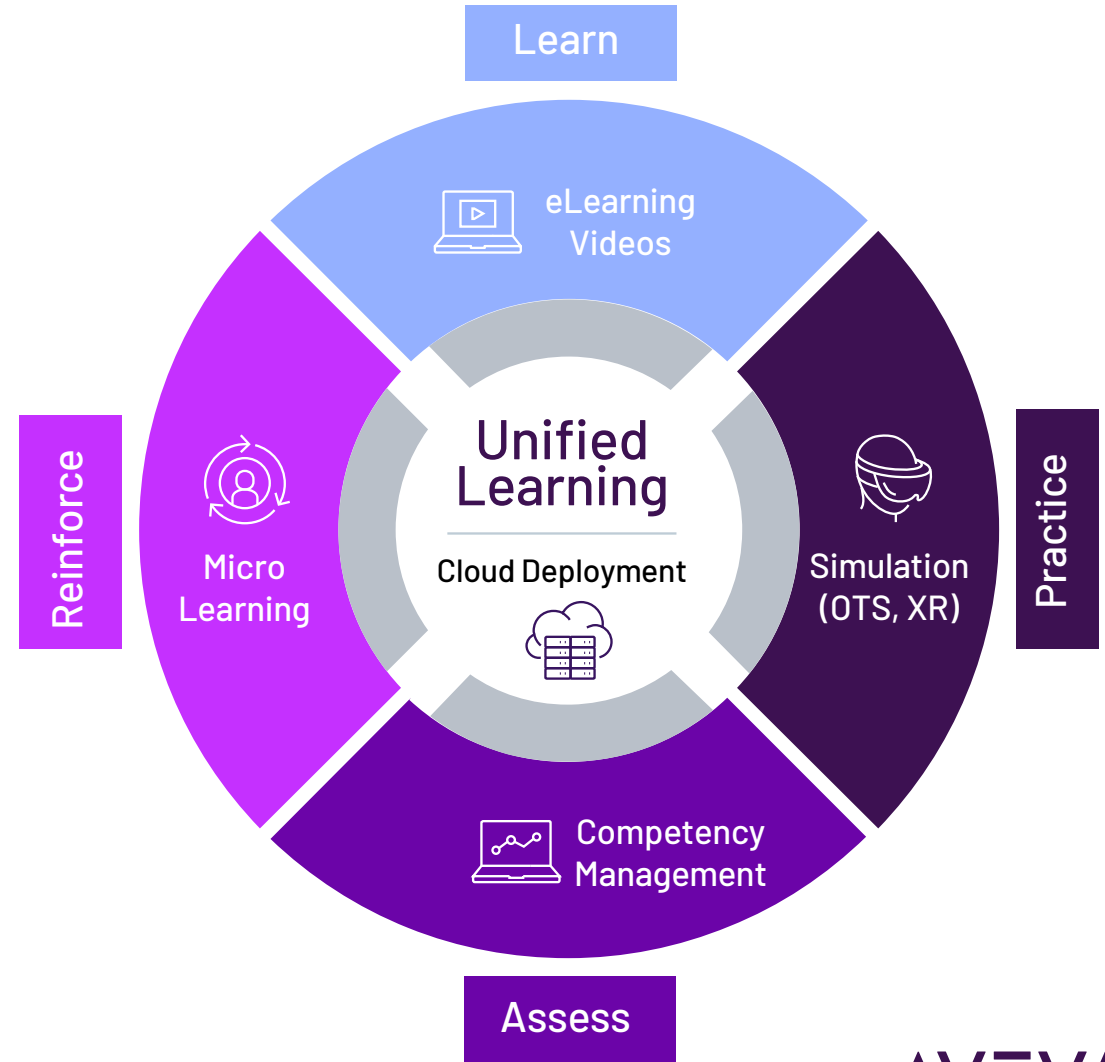
Learn

eLearning Videos

Practice

Simulation (OTS, XR)

Unified Learning

Cloud Deployment

Reinforce

Micro Learning

Competency Management

Assess

AVEVA

Train plant workforce for sustainable operations

Operations
Predict problems before they occur
Train Operators

Learn

eLearning Videos

Reinforce

Micro Learning

Unified Learning

Cloud Deployment

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Assess
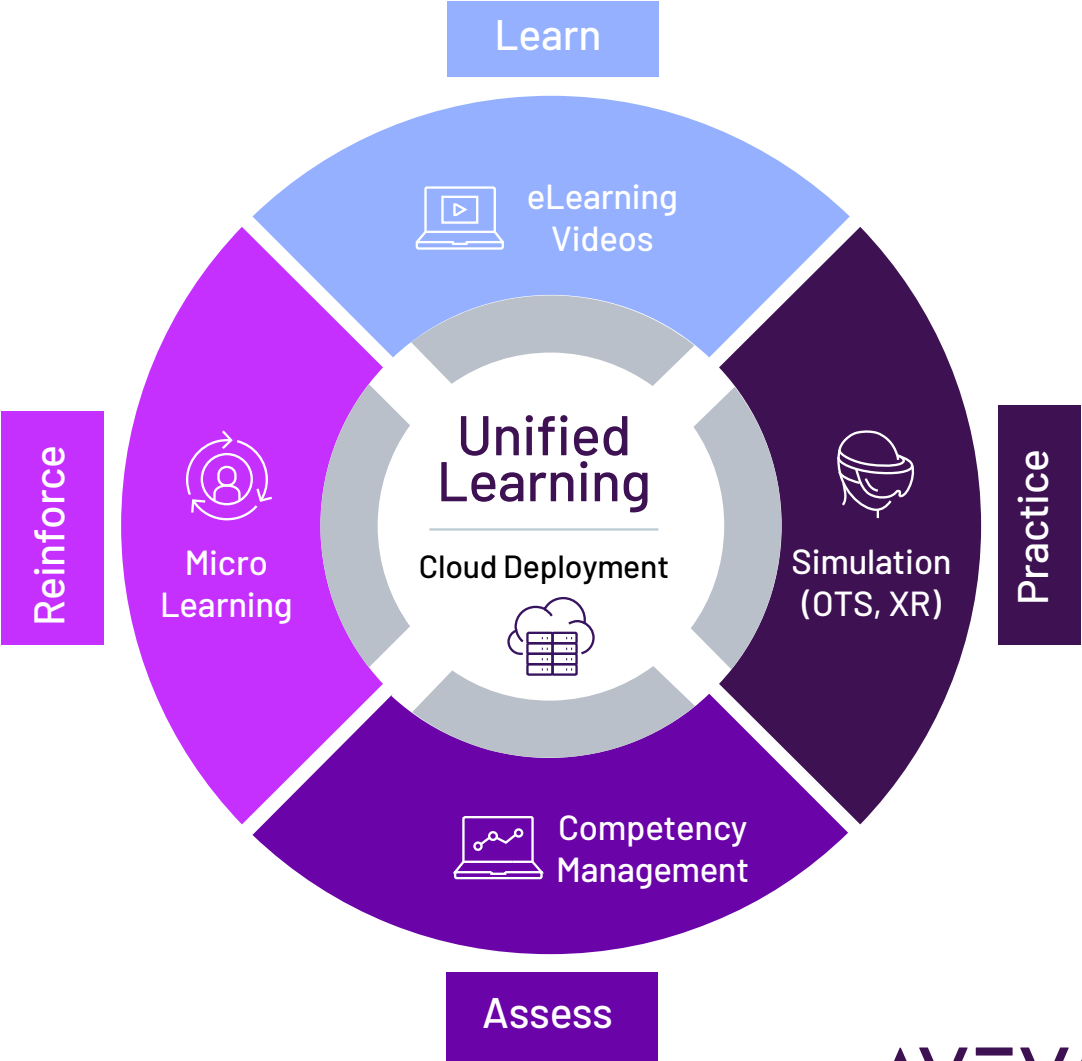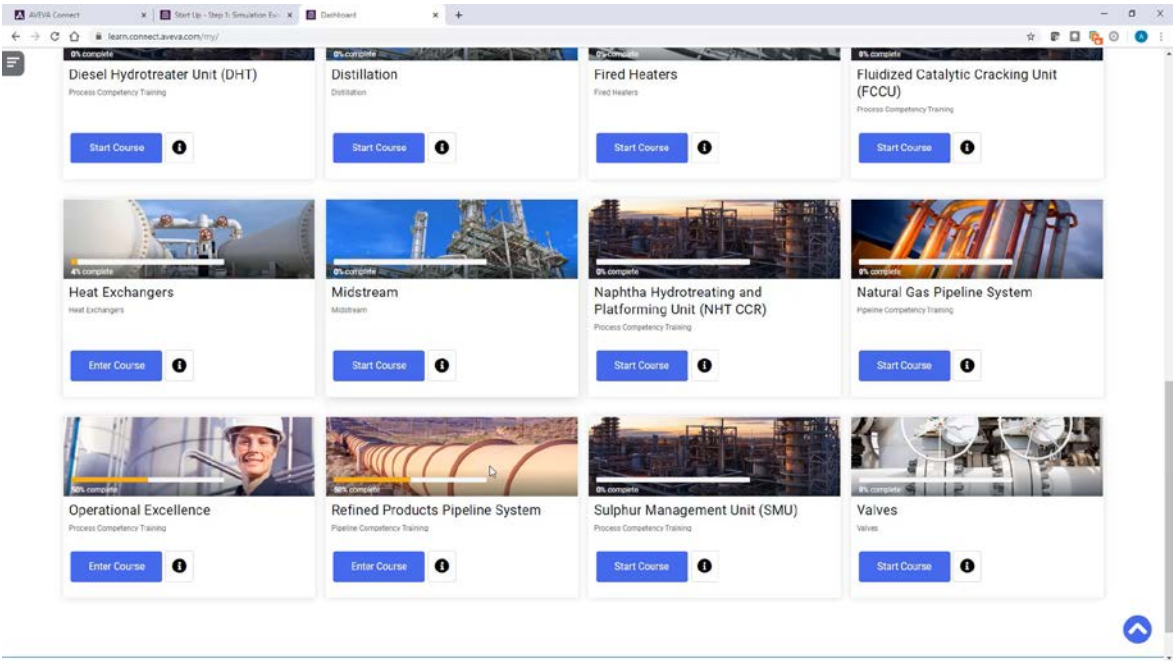
AVEVA

TotalEnergies

TotalEnergies uses AVEVA's cloud-based training to safely simulate dangerous environments

Training programs reduced in length from several weeks to a few hours

The cloud-based training provides access from anywhere and at any time

Train operators how to cope with dangerous incidents that are otherwise difficult to practice

Solution: AVEVA Operator Training Simulators

"It was key to combine AVEVA's proven leadership in OTS training with the secure operational agility of a cloud-based platform. This has never been more important than today when global lockdowns force many teams to operate remotely."
Meriam Chebre, Competences Program Manager, Total

AVEVA

AI-driven predictive asset optimization

Combine engineering knowledge and machine learning for operational insight

Equipment Asset
Sensor Data

PI System

AVEVA Predictive Analytics

- Bearings
- Vibrations

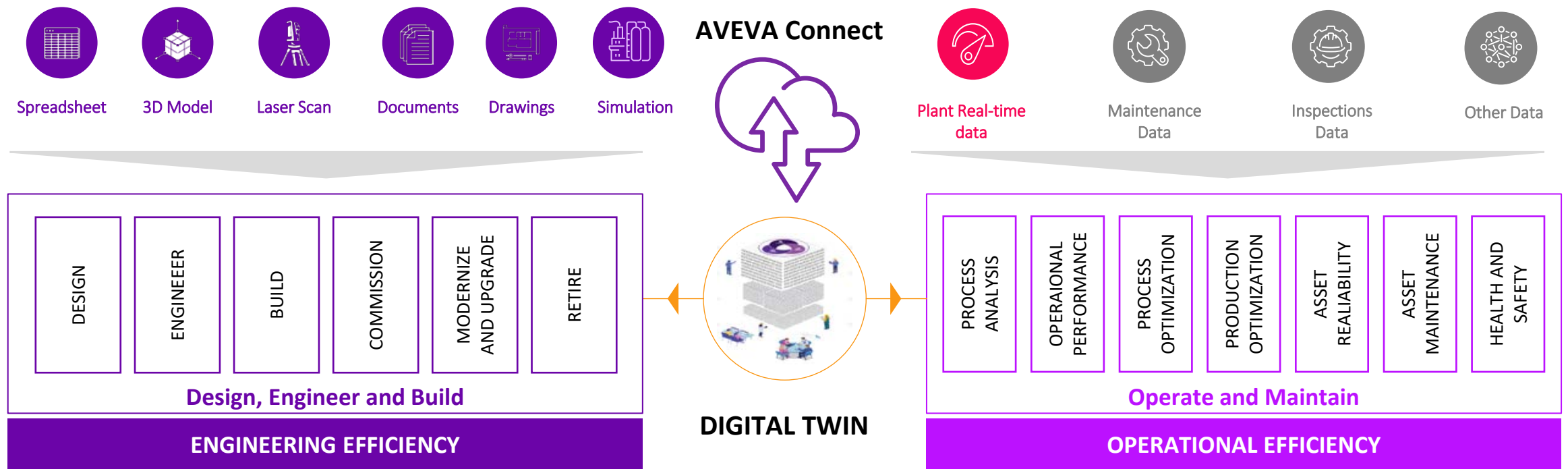**AVEVA Process Simulation**

- Pump NPSH
- Efficiency
- Compressor Head
- HX Fouling
- Instruments

Dashboards

- Time to Failure
- Remaining Useful Life Estimation (RULE)
- Prescriptive Analytics
- Performance Analysis
- Impact Analysis
- Process Optimization
- Early Warning Notification System

360°
View
of
Risk

AVEVA

Faster and more trusted decision making with the creation of a digital thread

Spreadsheet · 3D Model · Laser Scan · Documents · Drawings · Simulation

AVEVA Connect

Plant Real-time data · Maintenance Data · Inspections Data · Other Data

DESIGN · ENGINEEER · BUILD · COMMISSION · MODERNIZE AND UPGRADE · RETIRE

Design, Engineer and Build

ENGINEERING EFFICIENCY

DIGITAL TWIN

PROCESS ANALYSIS · OPERAIONAL PERFORMANCE · PROCESS OPTIMIZATION · PRODUCTION OPTIMIZATION · ASSET REALIABILITY · ASSET MAINTENANCE · HEALTH AND SAFETY

Operate and Maintain

OPERATIONAL EFFICIENCY

Industrial Information Integrity (Enterprise-wide governance for compliance, consistency and completeness)

Engineering Information Management   Operations Information Management   Transactional Information

AVEVA

Sustainability through Process Simulation

An integrated platform to design and optimize sustainable processes

- **Accelerate the engineering cycle** to design sustainable processes and plants at the speed the market demands

- **Design processes that will meet net zero targets** with dynamic renewable power and hydrogen systems

- **Collaborate across disciplines** to explore all dimensions of a potential design and quantify the impact on sustainability, feasibility, and profitability

AVEVA Process Simulation

Bring agility to the entire process lifecycle of design, simulation, training, and operations to deliver the process side of the Digital Twin.

Renewables

Hydrogen

Greenhouse Gas Calculations
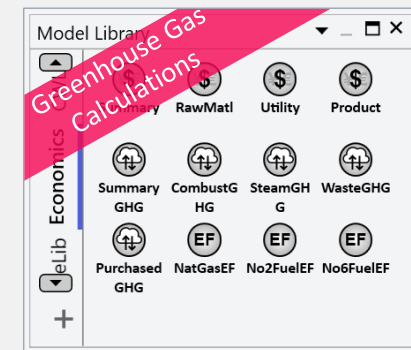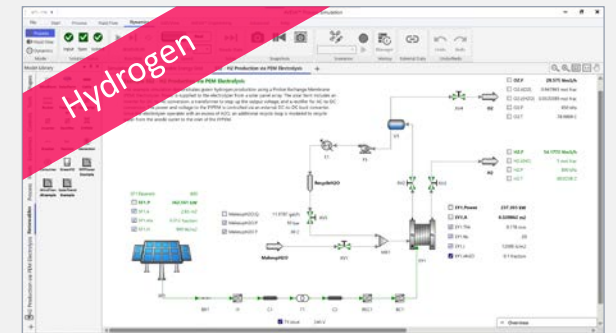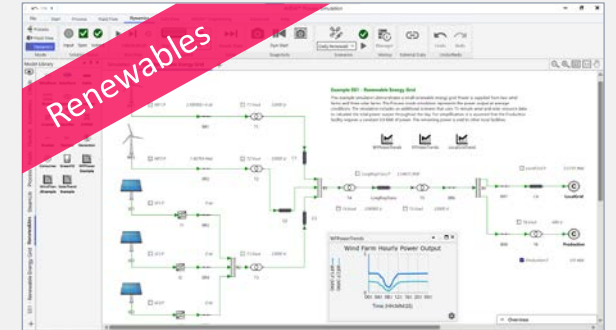
As one of the world's largest polymer manufacturers, Covestro is entirely committed to the Circular Economy

AVEVA™ Process Simulation cuts inefficiencies in process design, engineering, and simulation

Covestro can make new, bio-based processes as reliable and profitable as the processes they've been optimizing for decades

Accelerate digital transformation of process industries

Leading the path to a sustainable future

1

Lifecycle modeling: from Concept to Operations

2

Improved Engineering workflow

3

Sustainable process design and operations

AVEVA

Thank you

Contact for more information:

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Director of Product Management – Simulation & Learning

chloe.smith@aveva.com

AVΞVA

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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

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