

29 OCTOBER 2025

Process Simulation

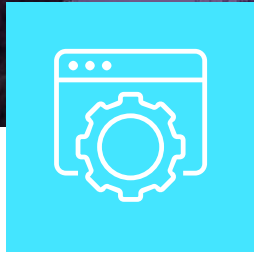
AVEVA Select California – Industrial Intelligence Summit

Ryan Muir – Senior Product Manager, AVEVA Process Simulation

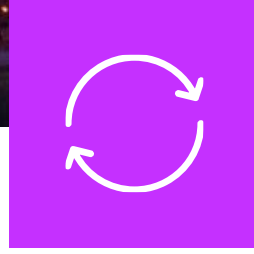
Andres Lipinski – Principal Presales Consultant, Simulation & Learning

AVEVA

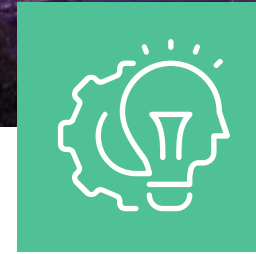
Core themes behind our product strategy



Next generation simulation driven by ease of use and more power to the user



Lifecycle simulation approach with data continuity into Engineering and Operations and breaking down silos

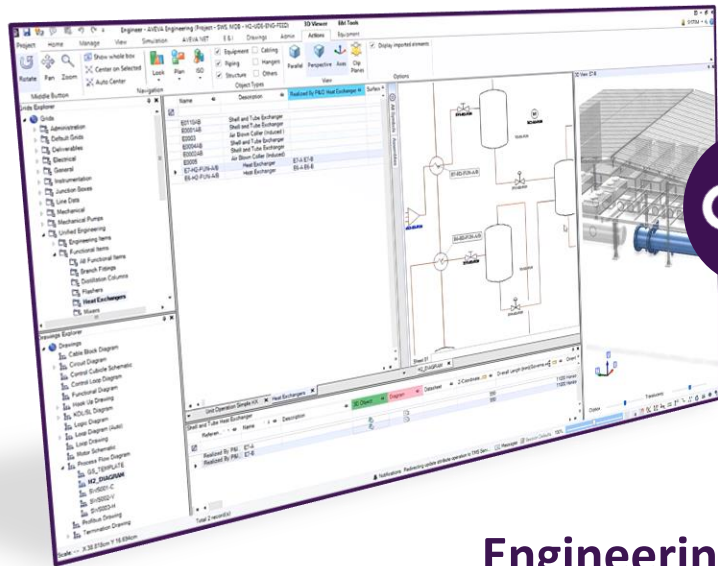


Focus on innovation, leveraging new technology, AI and cloud

Lifecycle Simulation

Use the same process model for engineering and operations

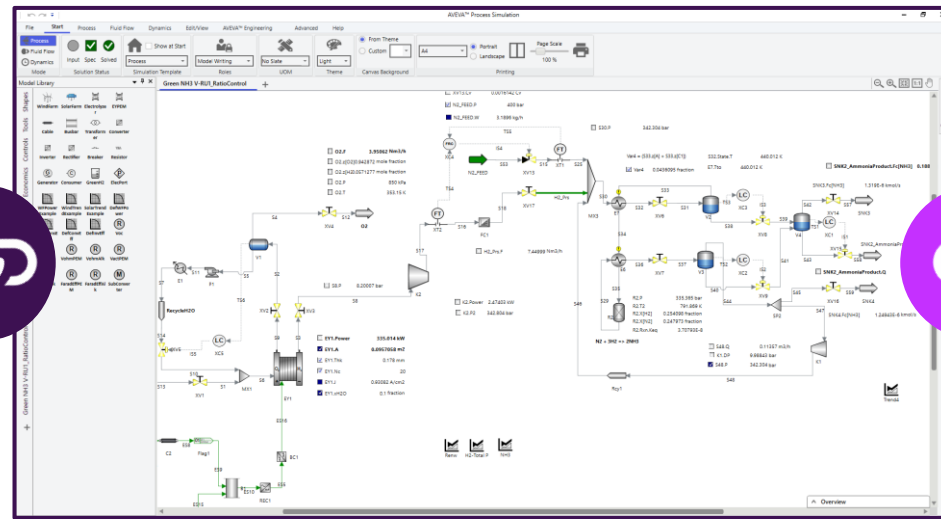
1D / 2D / 3D Engineering Data



Engineering Digital Twin

- Design verification and validation
- Apply changes across all designs
- Global cloud collaboration
- Automated case execution

Process Simulation



Operating Digital Twin

- Troubleshoot past operations
- Provide soft sensors
- Improve future operation and efficiency
- Predict equipment degradation and failure

Live / Archived Process Data



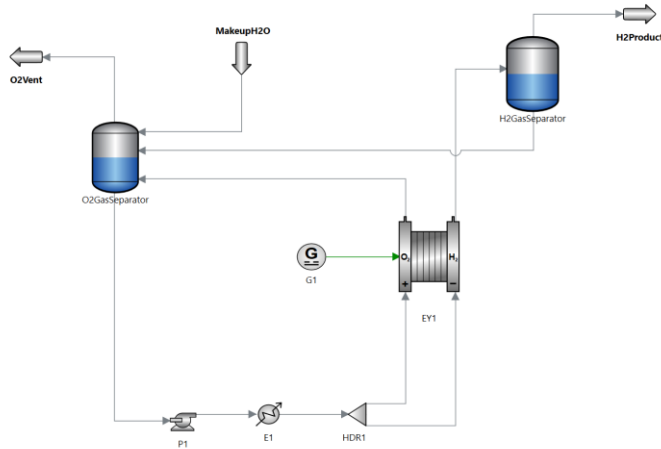
Process Simulation for Engineering



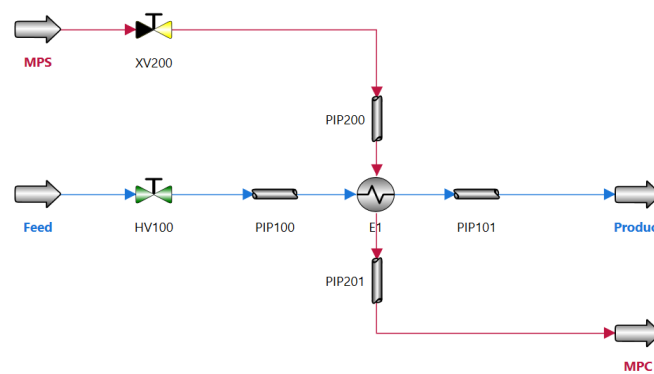
The role of process simulation in design

How is process simulation used throughout the design process?

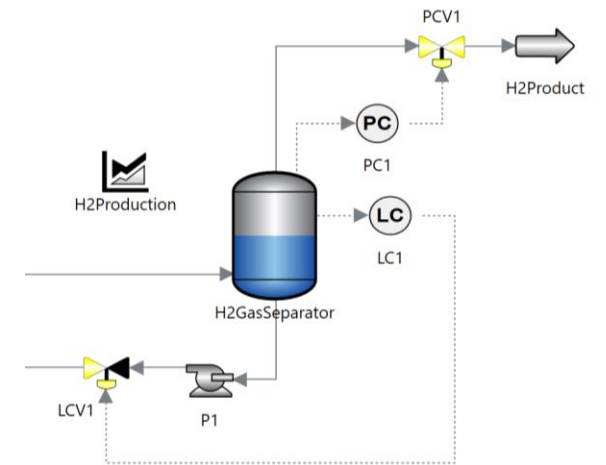
Mass & Energy Balances



Equipment Sizing & Rating



Dynamic Control Studies

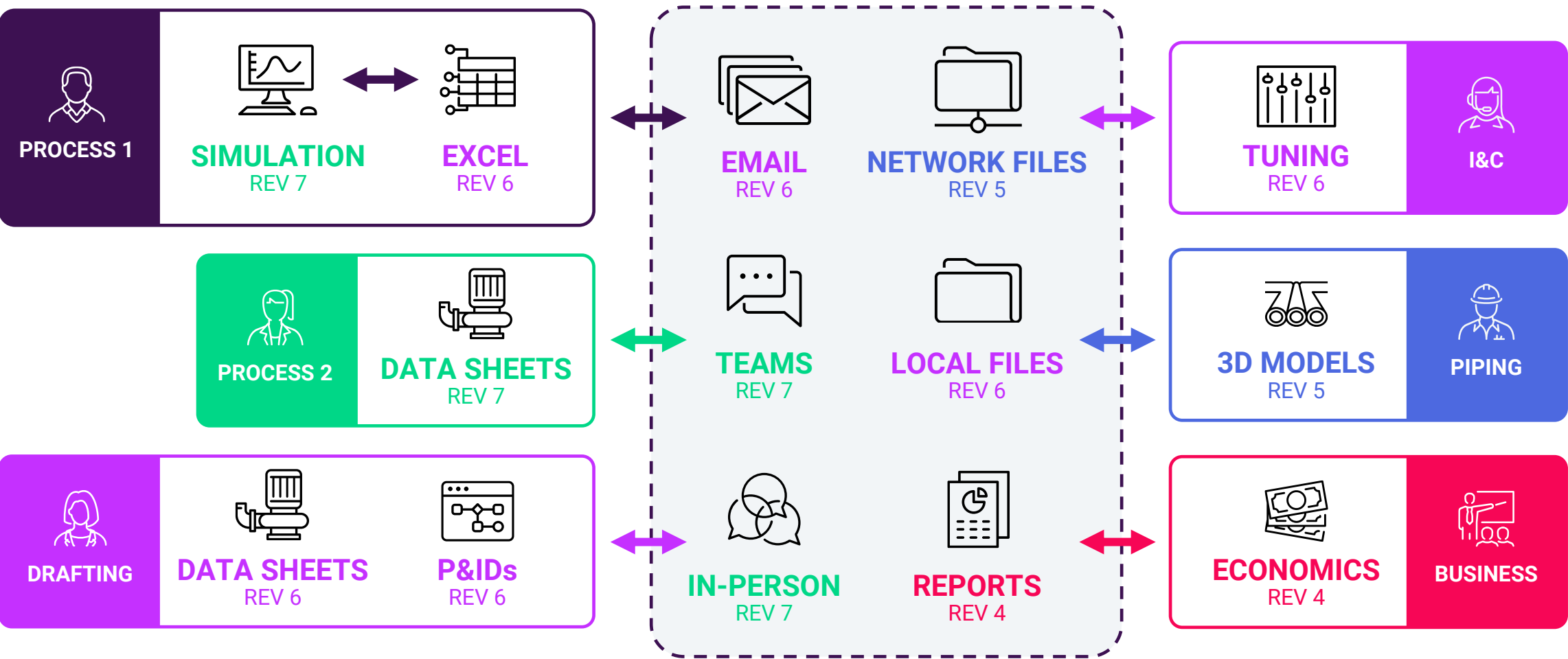


Thermodynamics

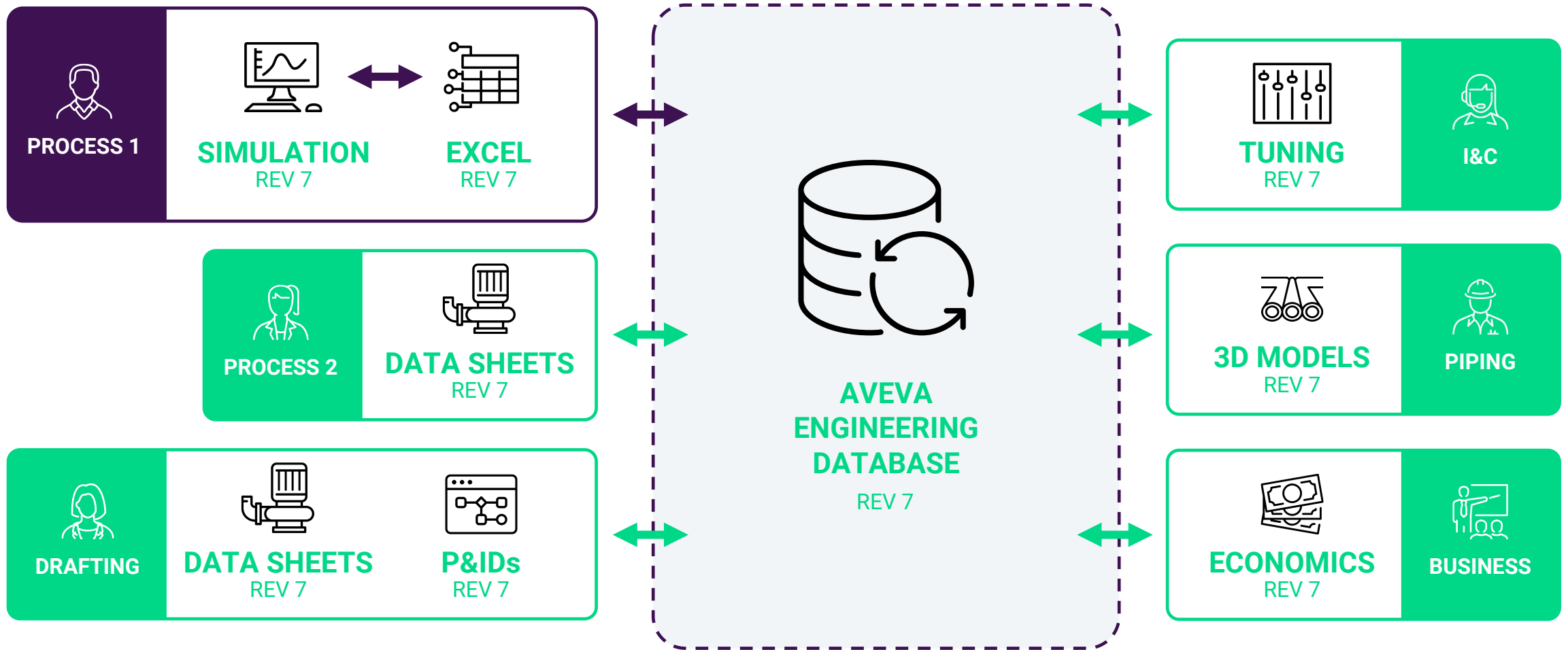
Optimization and Case Studies

Reporting

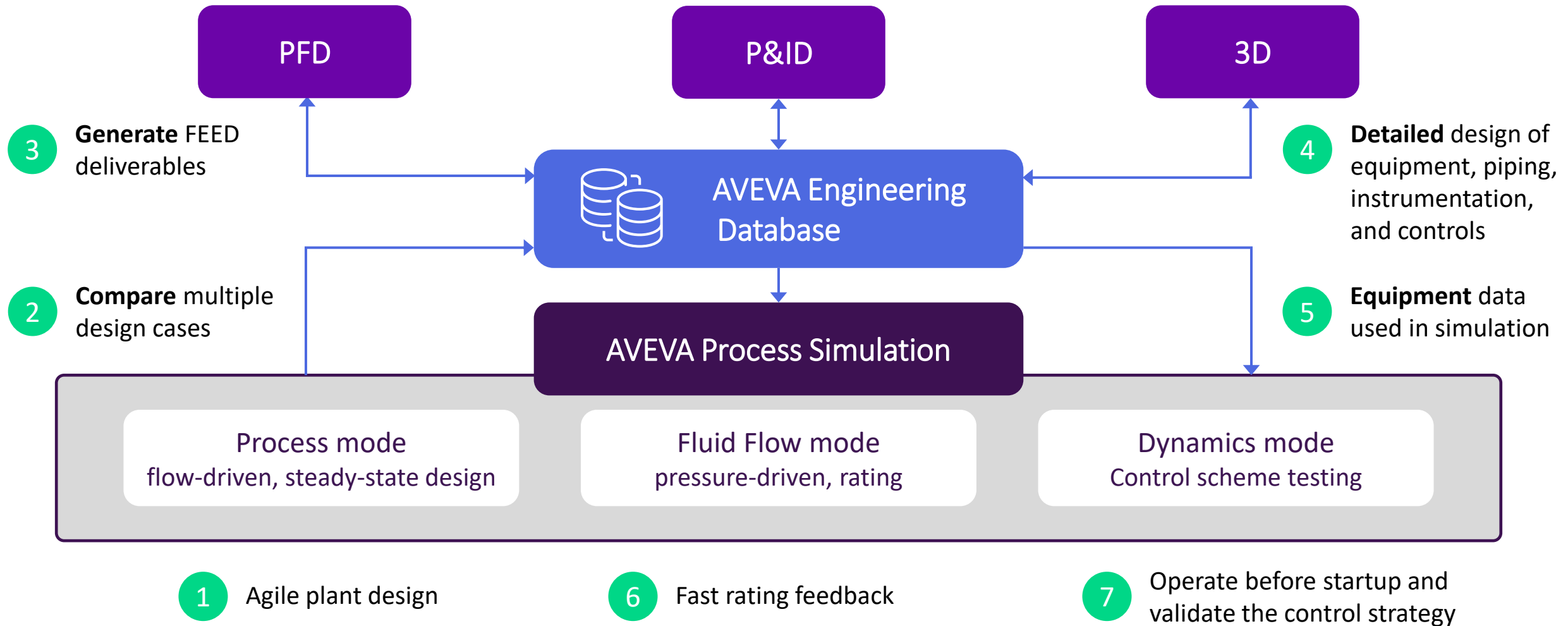
How did process data move within projects in the past?



How does process data move within modern projects?



Integrated Process Simulation and Engineering



Process Simulation for Operations



Operating Digital Twin – PI + APS

Unlocking new value

- **What?**

- An **Operating Digital Twin** for your processes

- **Why?**

- Empower remote and central engineering teams to engage in troubleshooting and provide operations feedback
- Increase transparency of process information to drive business value
- Gain insights into areas of the process where physical transmitters are not available



Monitor KPIs alongside real-time process measurements

Real-time monitoring

- **How?**

- Combine real time process measurements from PI and first-principles simulation
- Leverage PI Asset Framework to quickly scale-out the digital twin
- Incorporate soft sensors into your monitoring program to track KPIs that can't be measured in the plant (e.g tray efficiencies, heat exchanger fouling, Column flooding, reactor temperature profiles)
- Create alerts for when abnormal process conditions are detected, or sustainability goals are at risk



Enabling better outcomes

Analytics that enable a 360° Risk Assessment of your processes

Detect heat exchanger fouling
in a preheat train exchanger

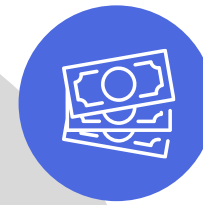


HDR Models

Detect issues
earlier and with
greater clarity

Impact

Assess the impact
of the issue on
your process



Model the impact on required
fuel feed, GHG emissions, and
process performance

Determine when to service
the exchanger based on the
RUL estimate



Remaining Useful Life

Determine the
urgency and
intervention
window

Optimize

Improve outcomes
with optimized
corrective
actions



Leverage recommended
corrective actions to determine
an optimal path forward

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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.

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