OCTOBER 2021

Digital Transformation in Oil and Gas Industry

AVEVA's PERSPECTIVE

Naveen Kumar - Vice President Global Sales, Value Chain Optimization

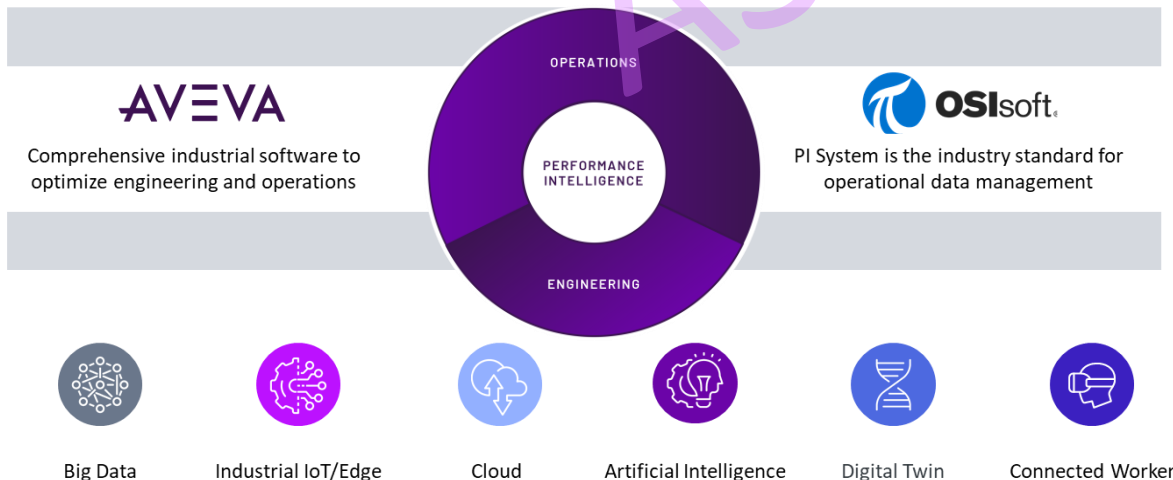AV∃VA

AVEVA - a leader in industrial digital transformation

Business Update:

- FTSE 100 listed on the London Stock Exchange
- Strong Performance, recurring revenue and margins
- Cloud growth accelerated, increase of nearly 200% TCV YoY
- Market capitalization > US $13BN
- Revenue > US $1.6BN

Recent News of AVEVA and OSIsoft: unifying world-leading operational data management and industrial software

AVEVA
Comprehensive industrial software to optimize engineering and operations

OPERATIONS
PERFORMANCE INTELLIGENCE
ENGINEERING

OSIsoft.
PI System is the industry standard for operational data management

Big Data | Industrial IoT/Edge | Cloud | Artificial Intelligence | Digital Twin | Connected Worker

1 Better data
Accuracy, reliability, context, scope and scale

2 Smarter solutions
With better integration, while maintaining neutrality

3 Proven outcomes
Efficiency, agility, reliability, sustainability

Ecosystem

20,000+ customers	**8+** industries
6,500+ employees	**5,500+** partners

RESULTS

|	
20% reduction in capital project costs	**16%+** reduction in energy usage
30%+ improvement in overall equipment effectiveness	**$100M** saved from preventing asset downtime

Combining world-class software to drive Performance Intelligence

Accelerating digital transformation of the industrial world with complementary product offerings
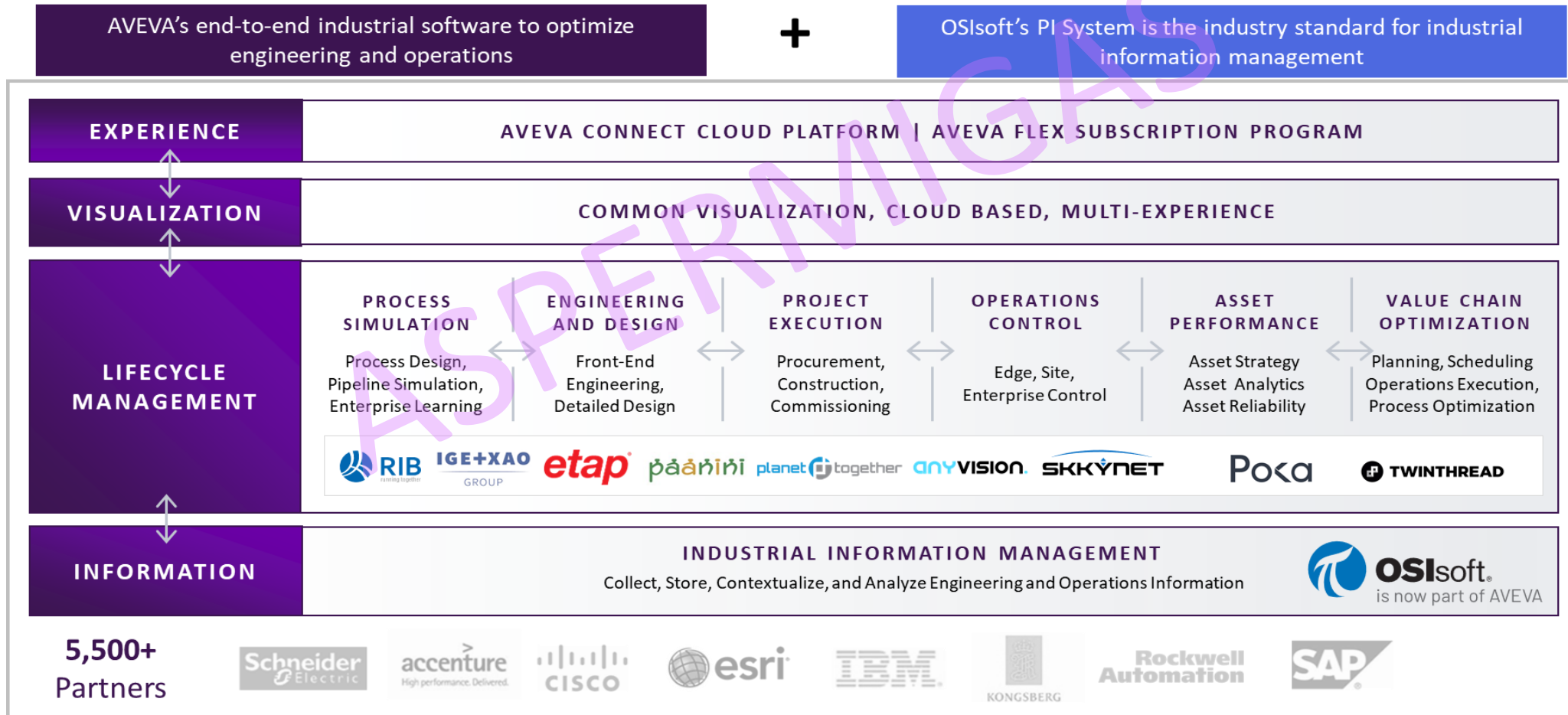
Industry & Market Pressures

The growing importance of sustainability
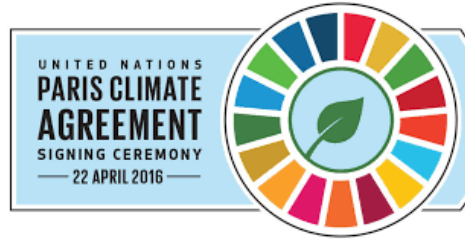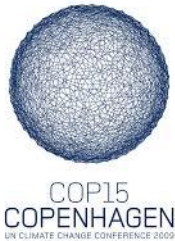
2010

2015

2020

Employees

64% of millennials will not take a job from a company that lacks strong corporate sustainability practices

Cone Communications

Customers & Partners

99% of Fortune 500 CEOs believe sustainability will be important to the future of success of their business

Accenture/ UNGC CEO Study

Investors

In Q2 2020, sustainable investment funds surpassed **$1 trillion** for the first time on record
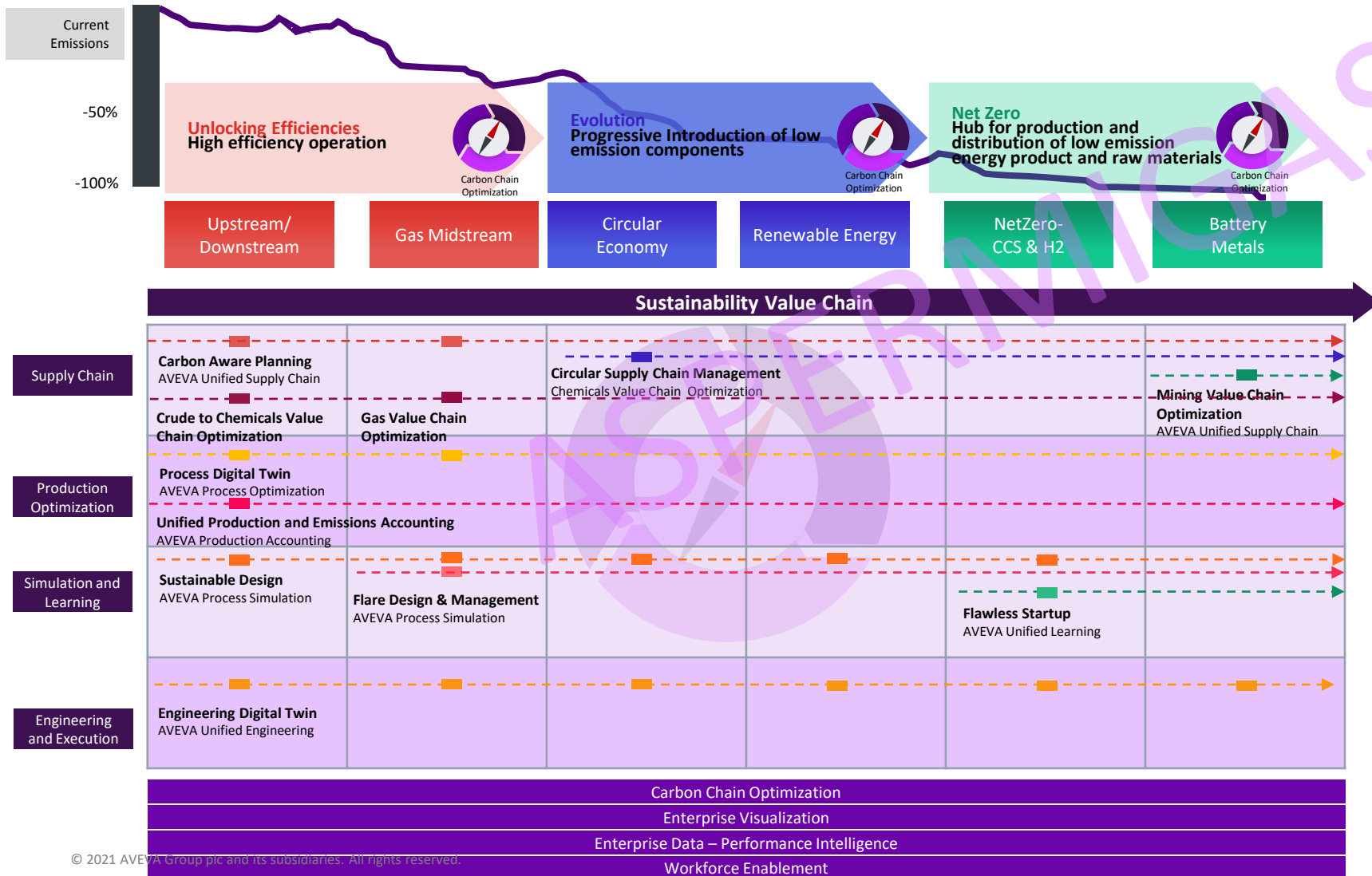
Morningstar

Governments/Civil Society

The world needs **US$ 3 trillion** each year until 2030 to make the UN SDGs a reality. That's 3% of global GDP or 1% cent of global wealth

UN Global Compact

AVEVA Net Zero Framework

Current Emissions

-50%

-100%

Unlocking Efficiencies
High efficiency operation

Carbon Chain Optimization

Evolution
Progressive Introduction of low emission components

Carbon Chain Optimization

Net Zero
Hub for production and distribution of low emission energy product and raw materials

Carbon Chain Optimization

| Upstream/ Downstream | Gas Midstream | Circular Economy | Renewable Energy | NetZero- CCS & H2 | Battery Metals |

Sustainability Value Chain

Supply Chain	Carbon Aware Planning AVEVA Unified Supply Chain		Circular Supply Chain Management Chemicals Value Chain Optimization			Mining Value Chain Optimization AVEVA Unified Supply Chain
	Crude to Chemicals Value Chain Optimization	Gas Value Chain Optimization				
Production Optimization	Process Digital Twin AVEVA Process Optimization					
	Unified Production and Emissions Accounting AVEVA Production Accounting					
Simulation and Learning	Sustainable Design AVEVA Process Simulation	Flare Design & Management AVEVA Process Simulation			Flawless Startup AVEVA Unified Learning	
Engineering and Execution	Engineering Digital Twin AVEVA Unified Engineering					

Carbon Chain Optimization

Enterprise Visualization

Enterprise Data – Performance Intelligence

Workforce Enablement

- Comprehensive Portfolio to Digitally Support Decarbonization

- Carbon Chain Optimization to Guide the Net Zero Journey
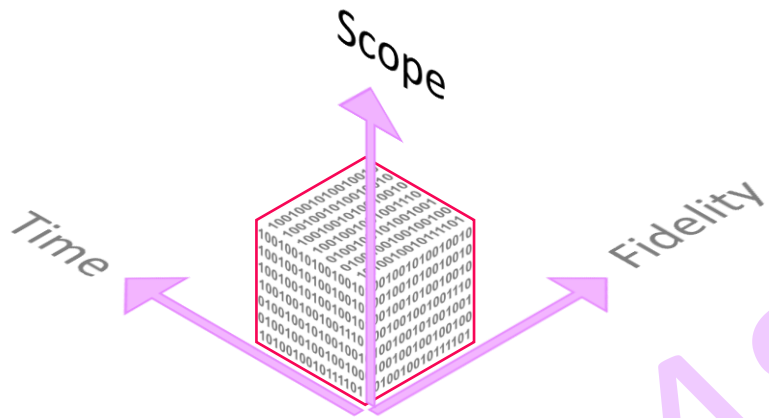
AVEVA

PERTAMINA Initiatives

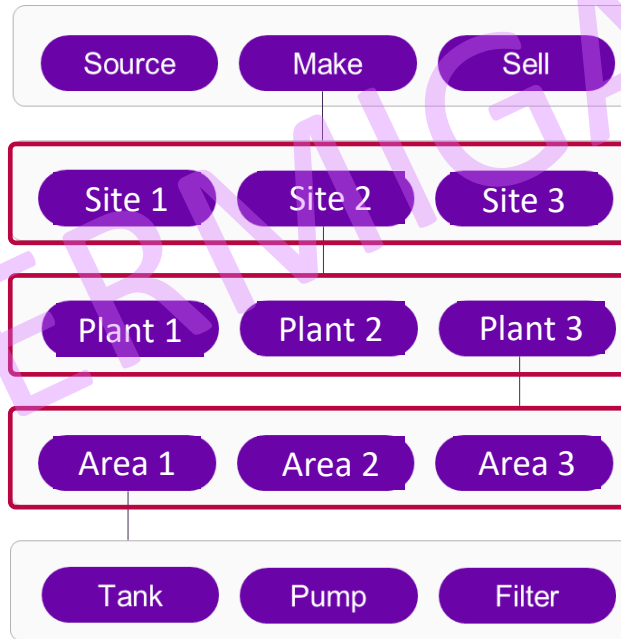Cost Efficiency and revenue performance improvement thru (partial list)

- Optimizing production of high-value products

- Flexibility in procuring crudes to increase GRM

- Preventive maintenance in each refinery

- Reducing losses by applying digitization

- Implement New Ways of Working (Agile Working)

AVEVA

Digital Twin: Aveva Approach

Scope

Time

Fidelity

Engineering Digital Twin

| Source | Make | Sell | **Value Chain Twin** |

| Site 1 | Site 2 | Site 3 |

Process Digital Twin

| Plant 1 | Plant 2 | Plant 3 |

| Area 1 | Area 2 | Area 3 |

Operations Digital Twin

| Tank | Pump | Filter |

Digital Twin ➤➤ **Digital Transformation**
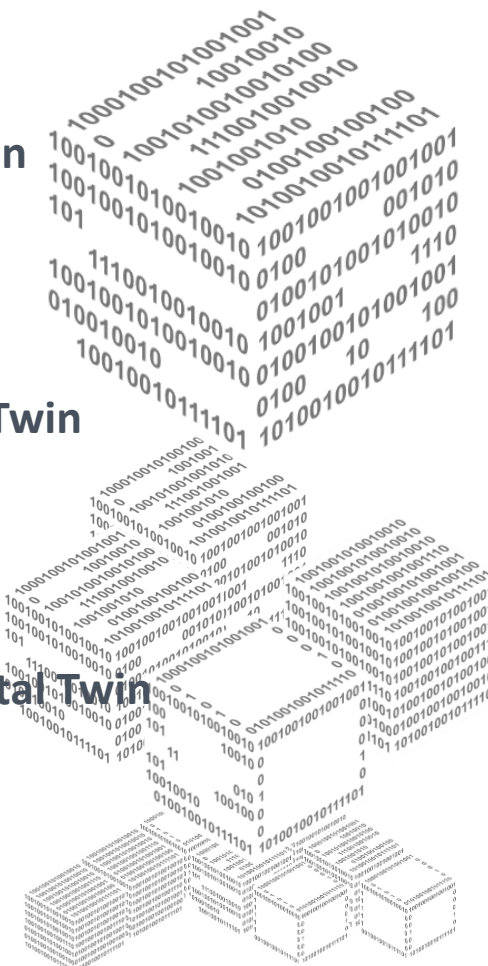
AVEVA

Client Successes

Digital Agility Forges Digital Resilience

Value Chain Optimization

"With AVEVA's technology in the cloud, BP is able to make extremely complex decisions quickly and accurately. Our analysts can now get answers in just over 3 minutes, rather than 7 hours"

Claire Dickson, Downstream CIO - BP

Enabled by:
AVEVA™ Unified Supply Chain Management

Transform Schedule Operators to Value Chain Strategists

"We are confident that this achievement will result in a new generation of schedulers that will significantly change the traditional concept of try-and-error simulation-based scheduling. we look forward to initiating further developments and lead to great results"

Seiji Yoshii, Manager, System Development & Maintenance Section

Enabled by:
AVEVA™ Unified Value Chain Optimization (incl. Schedule AI Assist)

Increased margins and reduced crude evaluation time

"Through the AVEVA's Unified Supply Chain software, we have adopted a more integrated business process which optimizes our productivity, allowing us to deliver with less"

Mr. Yusri Yusof- Vice President of Refining and Trading

Enabled by:
AVEVA™ Unified Supply Chain Management
AVEVA™ Process Optimization

Increase Return on Asset digitally

Predictive Asset Optimization infused with First Principles Simulation Suncor is driving its digital transformation journey via AVEVA's AI-driven Process Simulation and ML Predictive Analytics to deliver a warning detection system driving performance optimization, thus driving down GHG emissions and energy usage

Enabled by:
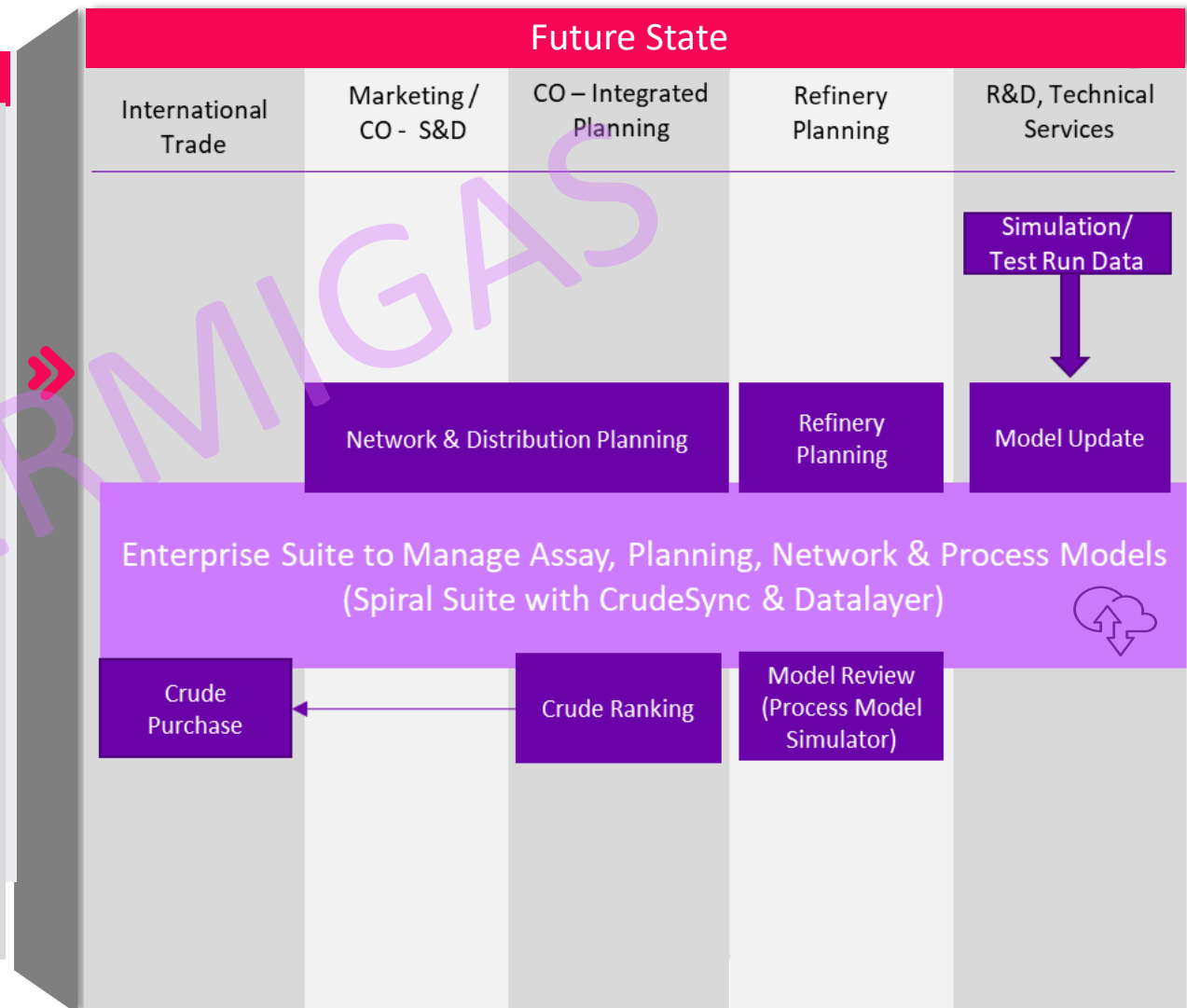*AVEVA™ Process Optimization*
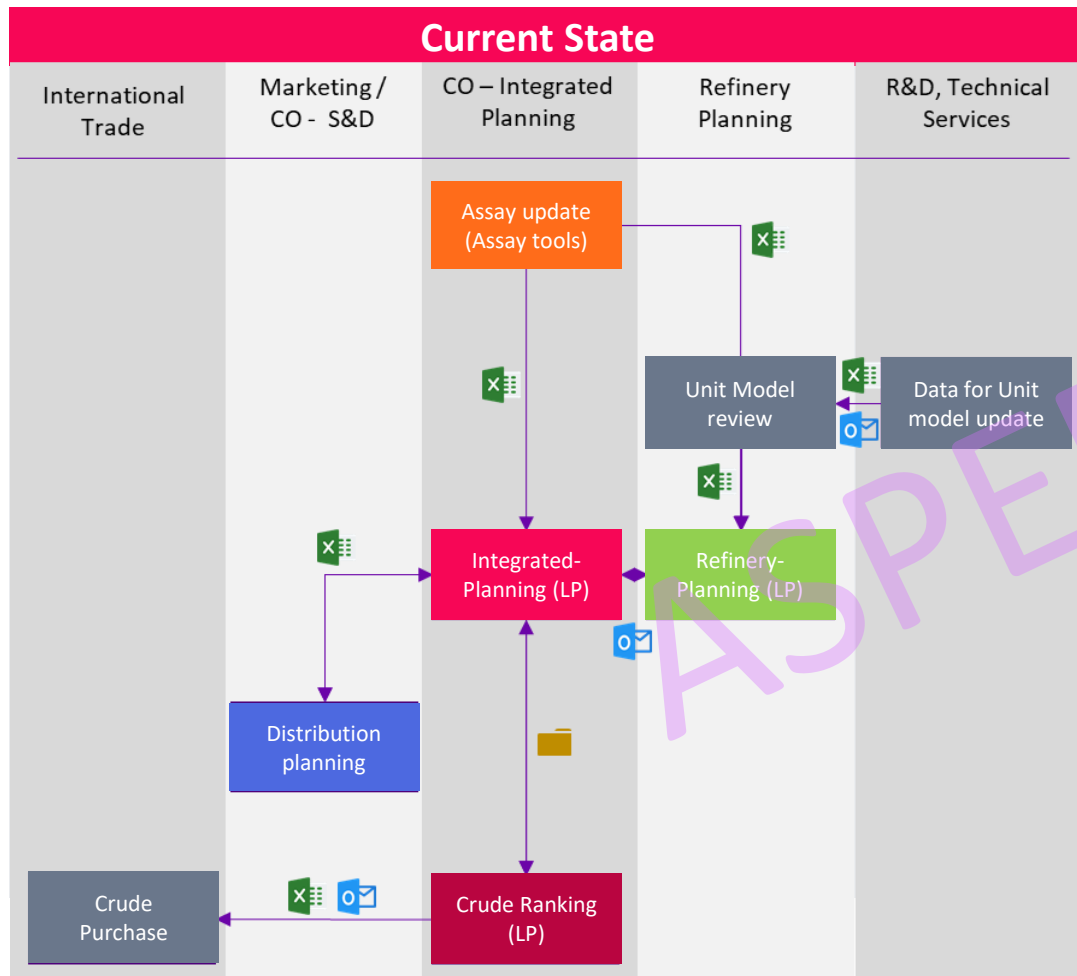*AVEVA™ Predictive Analytics*
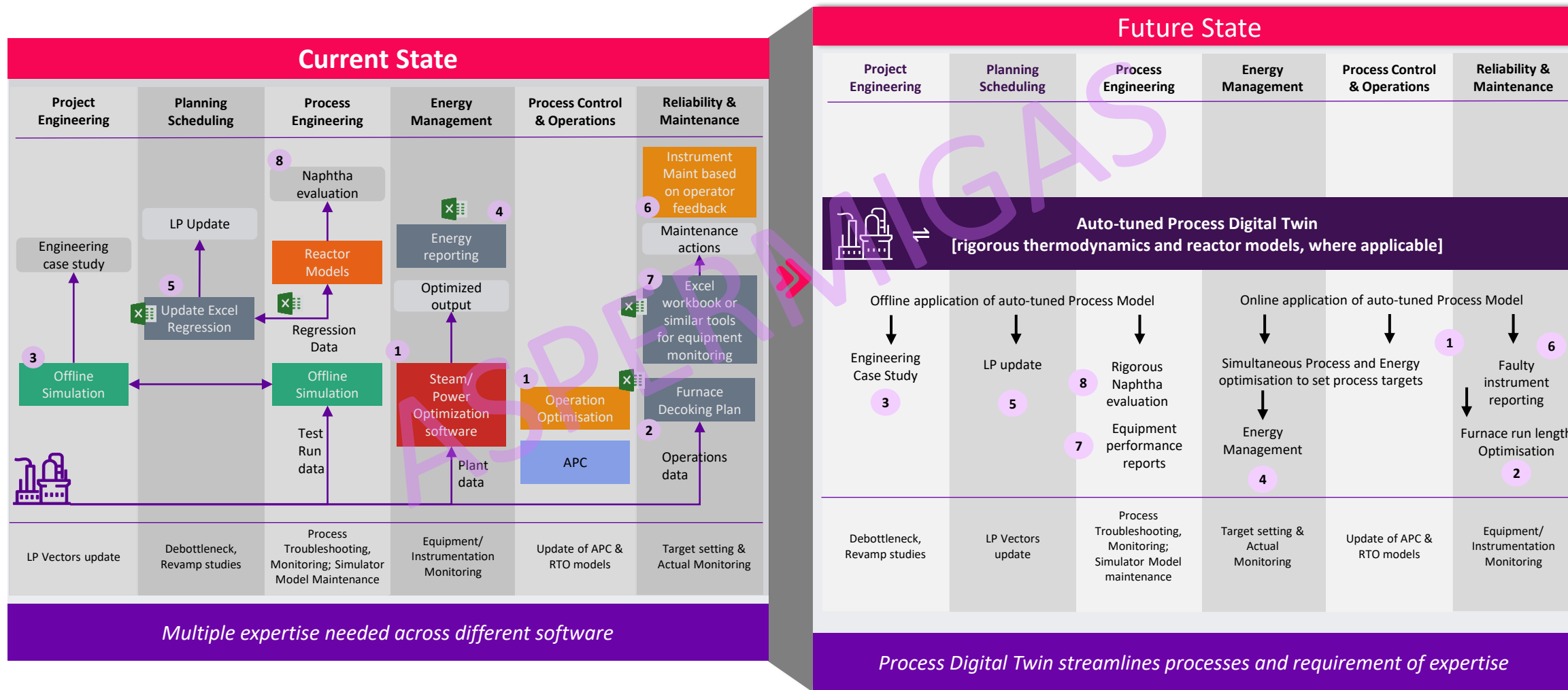
Client Successes

Digital Agility Forges Digital Resilience

Complex-wide optimization across entire enterprise

$500MM/year in molecular management program
$4-10 / (ton of ethylene) of improved profitability

Enabled by:
AVEVA™ Process Optimization

ExxonMobil

Partnership with ROMeo beyond real time optimization

$1000 benefits for every $25 spent from Optimization
Flow meter error reduction from 20% to 5%

Enabled by:
AVEVA™ Process Optimization
AVEVA™ Offsites Management

Reduce OPEX Costs & Risk

$34.5M on a single early warning catch for a turbine generator preventing catastrophic failure

Enabled by:
AVEVA™ Asset Performance Management

DUKE ENERGY®

Increase Return on Asset digitally

Achieved 50% reduction in engineering man-hours per equipment.
Early validation of sustainability goals and KPIs

Enabled by:
AVEVA™ Asset Information Management

Shell

AVEVA

Value Chain Digital Twin

Current State

International Trade	Marketing / CO - S&D	CO – Integrated Planning	Refinery Planning	R&D, Technical Services
		Assay update (Assay tools)		
			Unit Model review	Data for Unit model update
		Integrated-Planning (LP)	Refinery-Planning (LP)	
	Distribution planning			
Crude Purchase		Crude Ranking (LP)		

Future State

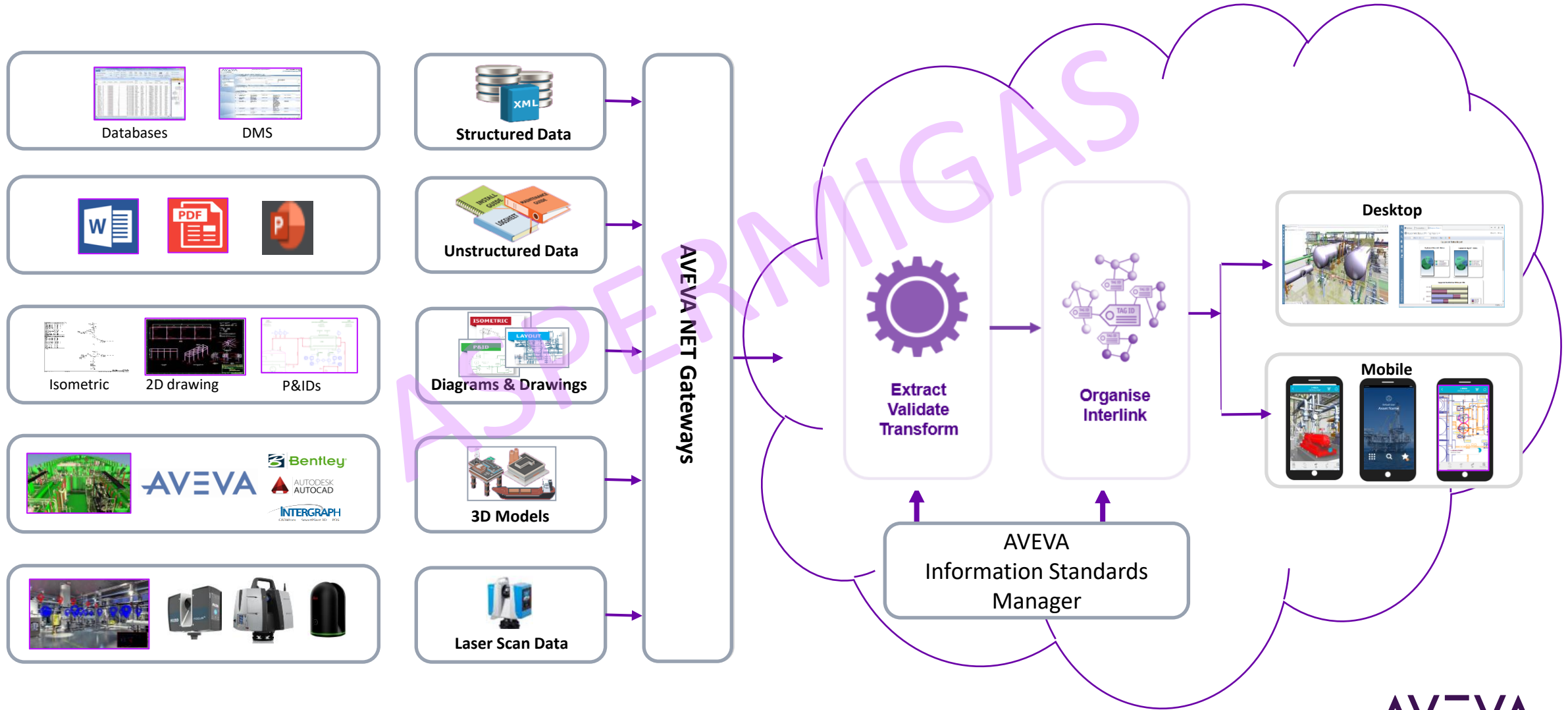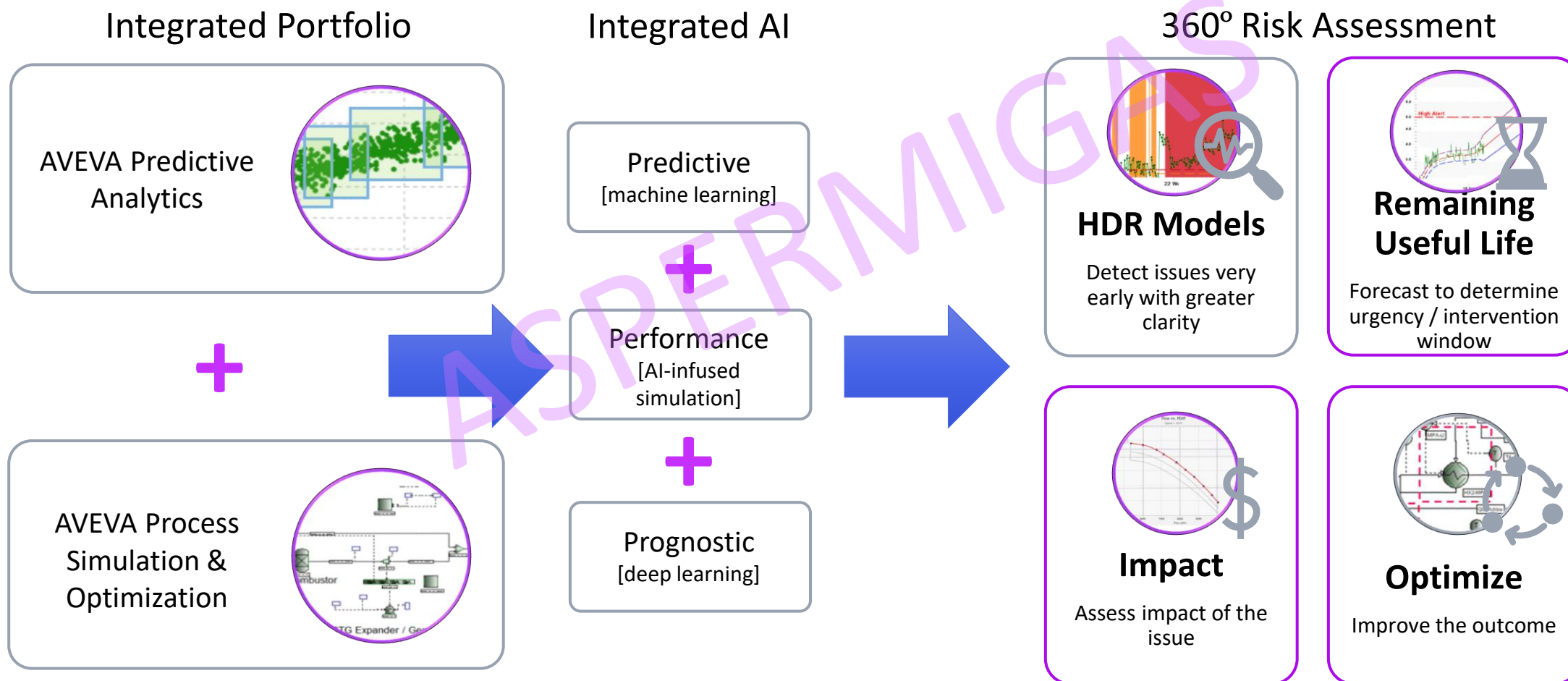| International Trade	Marketing / CO - S&D	CO – Integrated Planning	Refinery Planning	R&D, Technical Services
				Simulation/ Test Run Data
	Network & Distribution Planning		Refinery Planning	Model Update
Enterprise Suite to Manage Assay, Planning, Network & Process Models (Spiral Suite with CrudeSync & Datalayer)				
Crude Purchase		Crude Ranking	Model Review (Process Model Simulator)	

AVEVA

Process Digital Twin

Engineering Digital Twin

Predictive Asset Optimization

AI Infused Predictive Analytics and First Principles Simulation

Integrated Portfolio

AVEVA Predictive Analytics

+

AVEVA Process Simulation & Optimization

Integrated AI

Predictive [machine learning]

+

Performance [AI-infused simulation]

+

Prognostic [deep learning]

360° Risk Assessment

HDR Models
Detect issues very early with greater clarity

Remaining Useful Life
Forecast to determine urgency / intervention window

Impact
Assess impact of the issue

Optimize
Improve the outcome

AVEVA

Workforce Competency Development

Learn

eLearning Videos

Practice

Simulation (OTS, XR)

Assess

Competency Management

Reinforce

Micro Learning

LEARN

Targeted training content to build KNOWLEDGE

PRACTICE

Simulation and XR to allow people to EXPERIENCE risk situations and practice in safe environment

ASSESS

Built-in asessments managed by LMS to ensure competency

REINFORCE

AI infused micro-learning reinforcement sessions to ingrain safe practeces and esure knowledge retainment

AVEVA

Summary

- AVEVA's Industrial Software portfolio can help you create multiple Digital Twins – Engineering, Supply Chain, Process & Operational

- These Digital Twins can support your Digital Transformation journey leading to :

  - Cost Efficiency, and Revenue Performance through the optimized supply chain and increased reliability & operational efficiency.

- AVEVA is uniquely positioned to simultaneously support your Sustainability journey towards Net-Zero

  - AVEVA's software increases energy efficiency, minimizes emissions and optimizes the effective use of valuable natural resources

For more details reach out to Miranthi Dewi (miranthi.dewi@aveva.com)

AVEVA

This presentation may include predictions, estimates, intentions, beliefs and other statements that are or may be construed as being forward-looking. While these forward-looking statements represent our current judgment on what the future holds, they are subject to risks and uncertainties that could result in actual outcomes differing materially from those projected in these statements. No statement contained herein constitutes a commitment by AVEVA to perform any particular action or to deliver any particular product or product features. Readers are cautioned not to place undue reliance on these forward-looking statements, which reflect our opinions only as of the date of this presentation.

The Company shall not be obliged to disclose any revision to these forward-looking statements to reflect events or circumstances occurring after the date on which they are made or to reflect the occurrence of future events.

AVEVA

linkedin.com/company/aveva

@avevagroup

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

AVEVA