OCTOBER 25, 2023

Integrating Real-Time Operational Data with Engineering Data to Increase Efficiency and Sustainability

AVEVA™ PI System™ with AVEVA™ Asset Information Management

Kari Berte Bye

YINSON Production

AVEVA

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Energy demand modelling aims to replicate system dynamics of the global energy system, requiring simplifications to limit a great deal of complexity. In addition, energy demand scenarios require assumptions on a variety of parameters. As such, the outcome of any given scenario using an energy demand model comes with a high degree of uncertainty. Third-party scenarios discussed in this document reflect the modelling assumptions and outputs of their respective authors, not Yinson, and their use or inclusion herein is not an endorsement by Yinson of their underlying assumptions. likelihood or probability. A reference to Yinson's support of a third-party organization within this document does not constitute or imply an endorsement by Yinson of any or all of the positions or activities of such organization.

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A more comprehensive discussion of the risk factors that may impact Yinson's business can be found in the Group's latest Annual Report, a of copy which can be found on the Group's corporate website, www.yinson.com.

Yinson at a glance

USD1.85 billion

Market capitalisation
(listed on Bursa Malaysia)

18 countries

Presence across the globe

~ USD22.3 billion

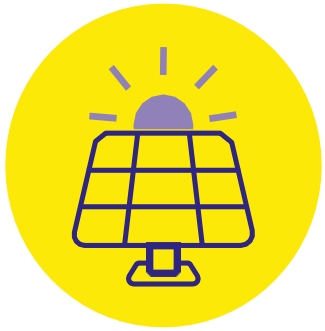
Contracted revenue

A1 / A + ratings

From RAM and MARC

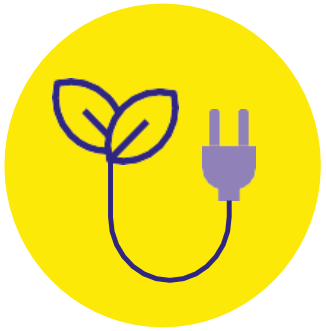
Top tier

FPSO contractor



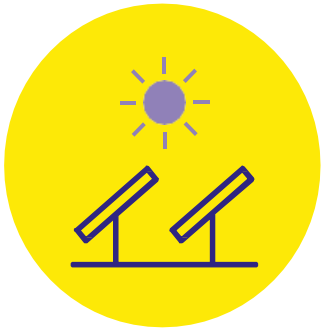
951 MW

Renewables assets operational and under construction



Green Technologies

Active investments and business developments in Marine, Mobility and Energy segments



> 5000 MW

Renewables pipeline

As of 27 February 2023

YINSON Production

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Business Divisions

YINSON Production

FPSO and FSO services

YINSON Renewables

Focusing on
wind and solar

YINSON GreenTech

Sustainable energy &
net zero focused

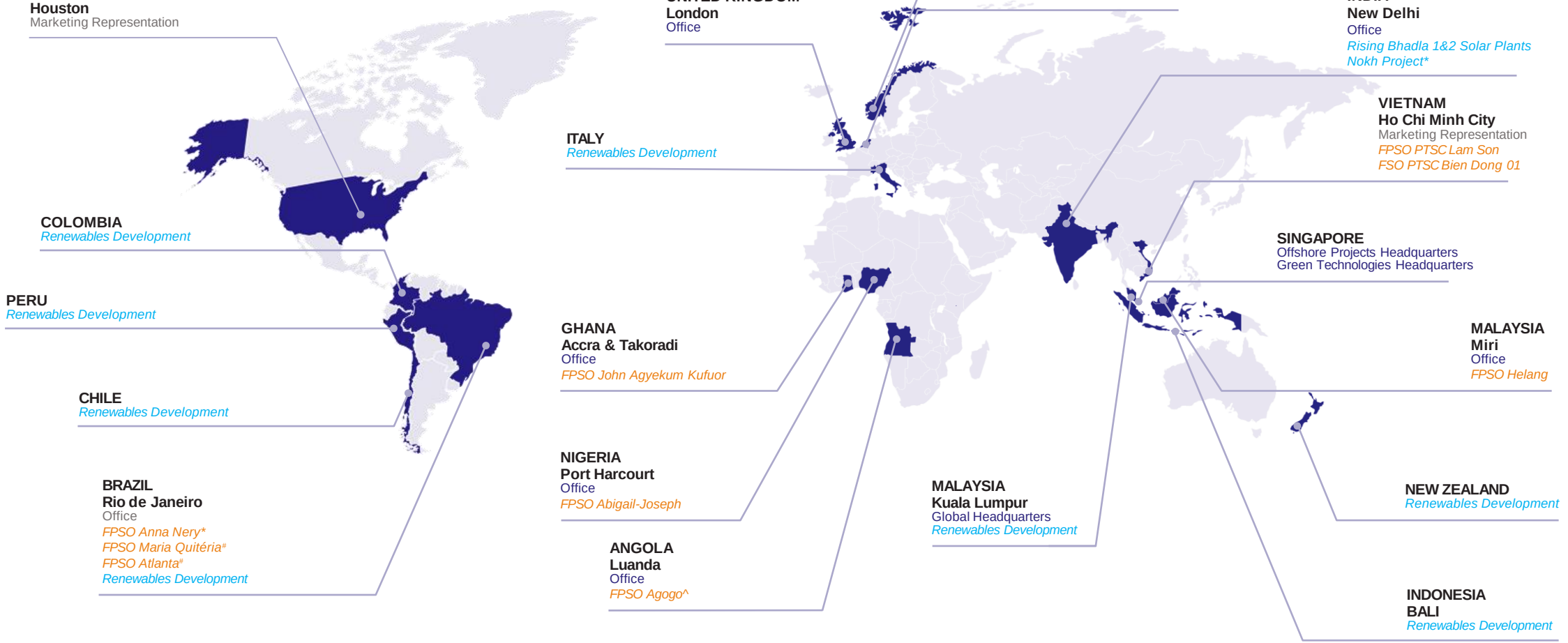
FAROSSON

Advisory, Investment
and Asset Management

Regulus OFFSHORE

Integrated OSV services

Our Global Presence



UNITED STATES
Houston
Marketing Representation

COLOMBIA
Renewables Development

PERU
Renewables Development

CHILE
Renewables Development

BRAZIL
Rio de Janeiro
Office
*FPSO Anna Nery**
FPSO Maria Quitéria#
FPSO Atlanta#
Renewables Development

NORWAY
Oslo
Offshore Operations Headquarters
Renewables Headquarters

NETHERLANDS
The Hague
Office

UNITED KINGDOM
London
Office

ITALY
Renewables Development

GHANA
Accra & Takoradi
Office
FPSO John Agyekum Kufuor

NIGERIA
Port Harcourt
Office
FPSO Abigail-Joseph

ANGOLA
Luanda
Office
*FPSO Agogo^*

INDIA
New Delhi
Office
Rising Bhadla 1&2 Solar Plants
*Nokh Project**

VIETNAM
Ho Chi Minh City
Marketing Representation
FPSO PTSC Lam Son
FSO PTSC Bien Dong 01

SINGAPORE
Offshore Projects Headquarters
Green Technologies Headquarters

MALAYSIA
Kuala Lumpur
Global Headquarters
Renewables Development

MALAYSIA
Miri
Office
FPSO Helang

NEW ZEALAND
Renewables Development

INDONESIA
BALI
Renewables Development

YINSON Production

AVEVA

Our Transformation

1

1983 - 2010

TRANSPORT AND LOGISTICS

Began as a transport agency in Johor Bahru, Malaysia. Grew to become one of Malaysia's largest transport companies.

2

2011 - 2013

OFFSHORE PRODUCTION

Ventured into Offshore Production through a joint venture with PTSC Vietnam to build an FPSO and FSO.

3

2014 - 2018

FULL SCALE EXECUTION AND SERVICE FPSO PROVIDER

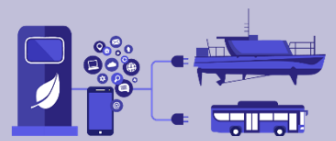
Acquired Fred. Olsen Production ASA and divested non-O&G subsidiaries. Increased fleet size to become one of the largest independent FPSO leasing companies globally.

4

2019 TO PRESENT

ENERGY INFRASTRUCTURE AND TECHNOLOGY COMPANY

Established Renewables and Green Technologies divisions. Ventured into new territories for Offshore Production. Established strategic collaborations for Offshore Marine.



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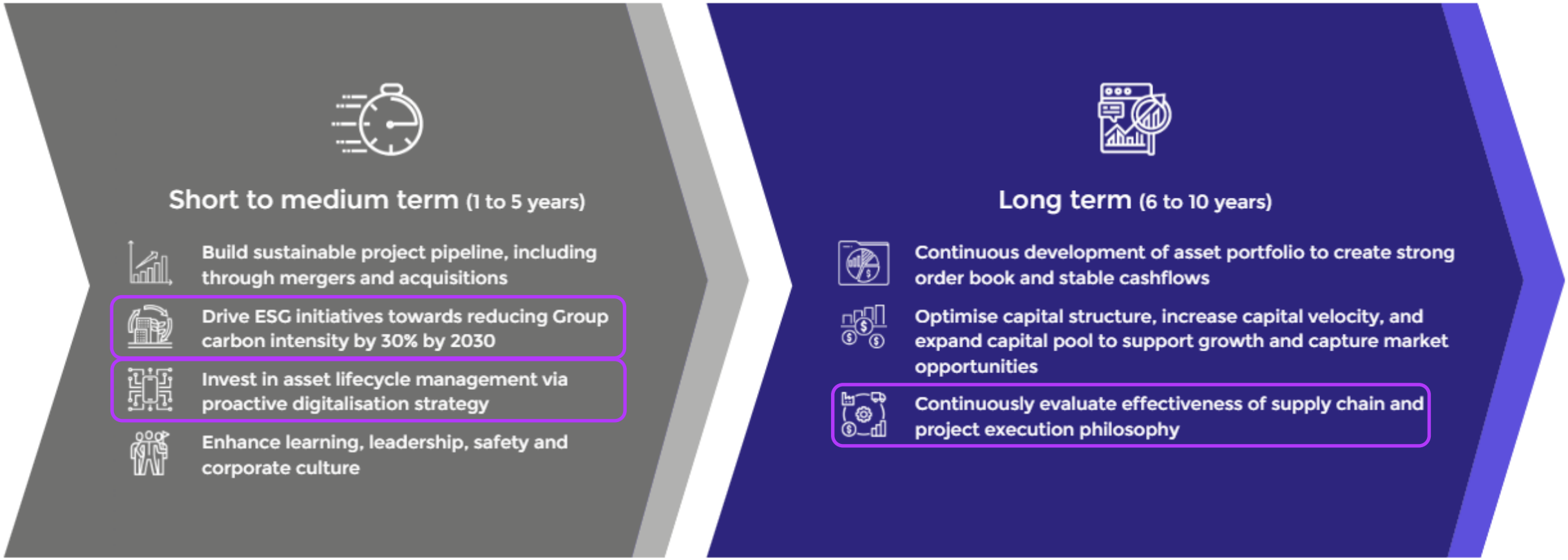
Yinson Production's Business Strategy

https://www.yinson.com/offshore-production/



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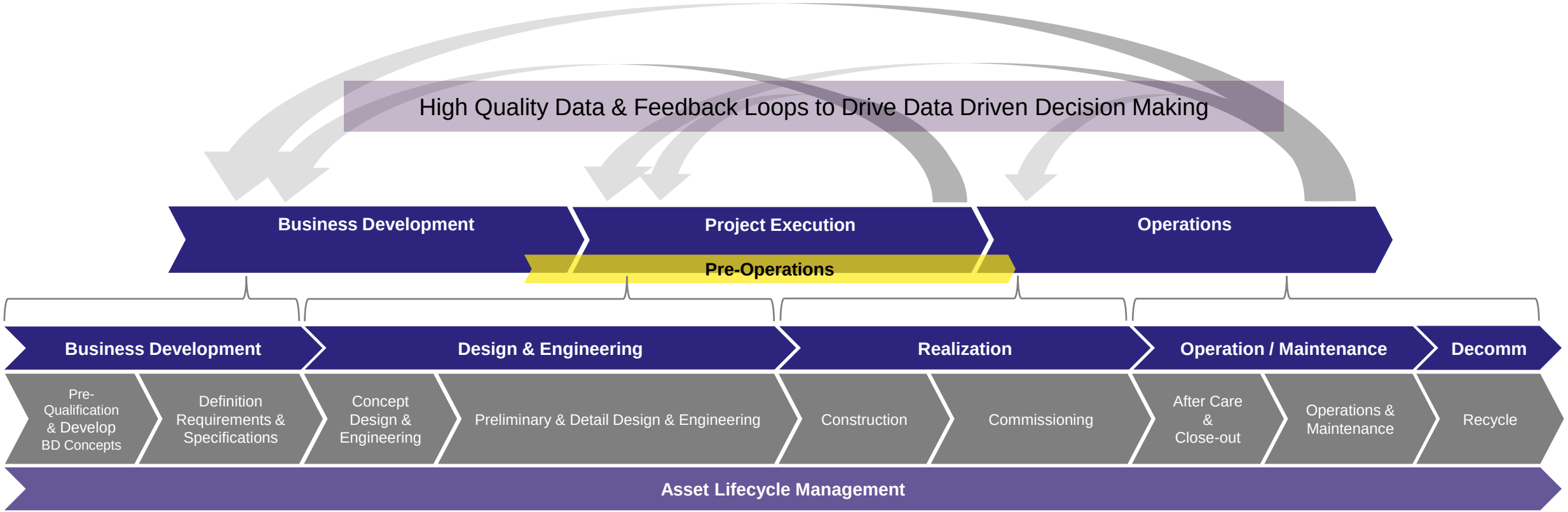
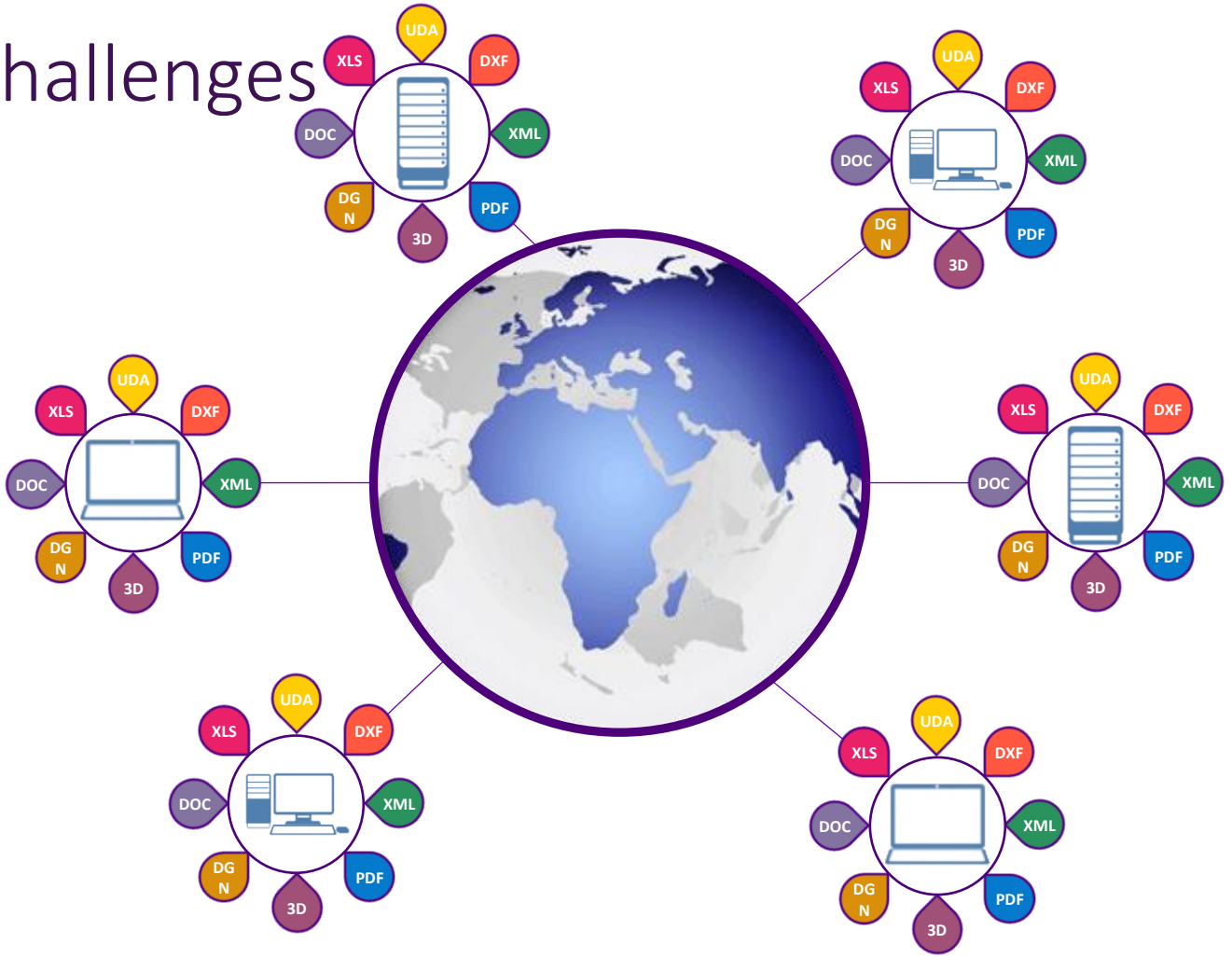
Asset Lifecycle Management (ALM)



Yinson Production's Business Challenges

Asset Lifecycle Management of Data



Challenges

- Global project execution
- Global asset operation
- Data structuring from multiple sources and format - data quality and data quantity

Solution

- Established shared digital platforms
  - AVEVA™ E3D Design
  - AVEVA™ Engineering
  - AVEVA™ Diagram
  - AVEVA™ Asset Information Management (AIM) – Master Tag Register
  - AVEVA™ PI System™

Results

- Access and interlinking of 1D, 2D and 3D data in all engineering source systems.
- Improved data quality and quantity of technical data for data-driven decision making. Continuous data improvement throughout asset lifecycle.
- Synchronization of engineering data with maintenance data also integrating real-time data in operations phase.

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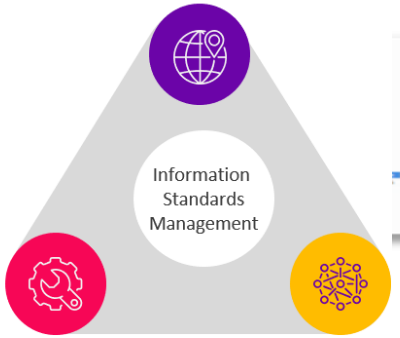
AVEVA™ Asset Information Management (AIM)

Bringing data from multiple sources / vendors in one place



CORPORATE STANDARDS

Digital Twin

Physical Asset

Native Formats | Spreadsheet | 3D Model | Laser Scan | Documents | Drawings | Images

Plant sequential Data

Maintenance Data | Inspections Data | Simulation Data | Spares Data

Asset Structured and Unstructured Data

Link to Real-time Data

Transactional Data

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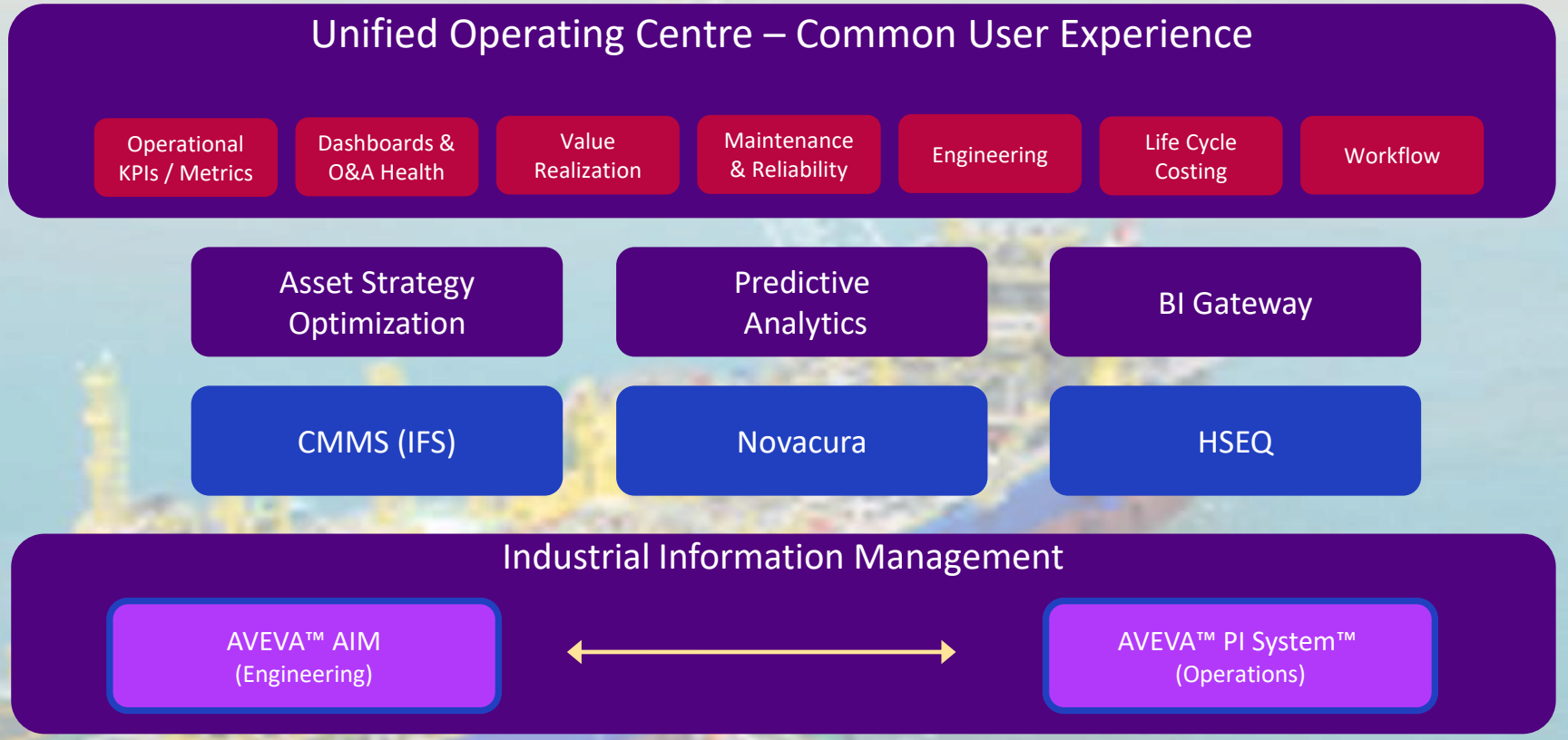
Integrated Asset Performance Management Solution



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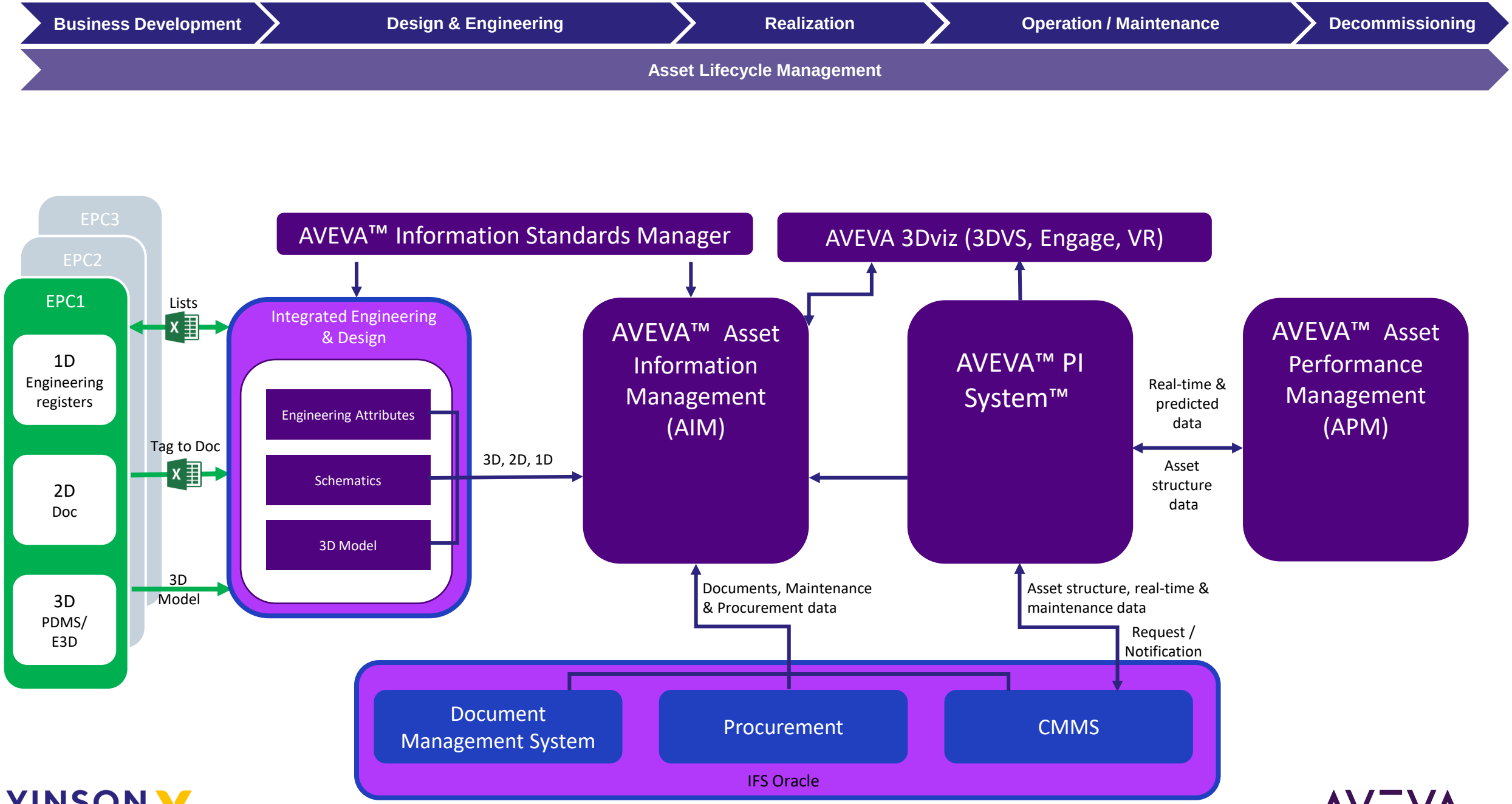
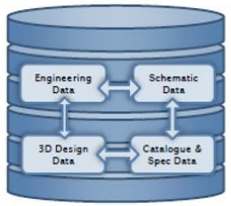

Business Development
Design & Engineering
Realization
Operation / Maintenance
Decommissioning
Asset Lifecycle Management
EPC3
EPC2
EPC1
1D
Engineering
registers
2D
Doc
3D
PDMS/
E3D
Lists
Tag to Doc
3D
Model
AVEVA™ Information Standards Manager
Integrated Engineering
& Design
Engineering Attributes
Schematics
3D Model
3D, 2D, 1D
AVEVA™ Asset
Information
Management
(AIM)
AVEVA 3Dviz (3DVS, Engage, VR)
AVEVA™ PI
System™
Real-time &
predicted
data
Asset
structure
data
AVEVA™ Asset
Performance
Management
(APM)
Documents, Maintenance
& Procurement data
Asset structure, real-time &
maintenance data
Request /
Notification
Document
Management System
Procurement
CMMS
IFS Oracle

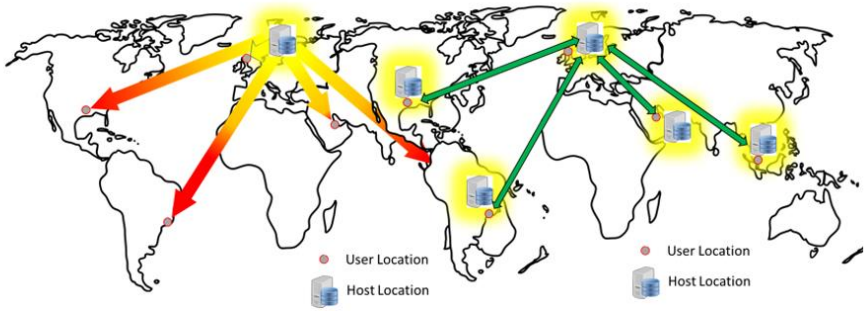
Digital Twin – “The Physical Twin”

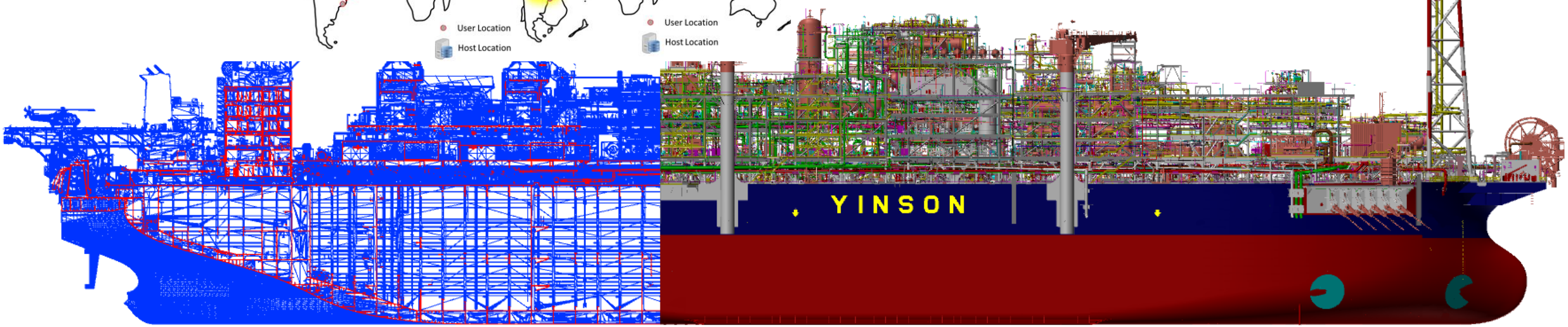
1D, 2D, 3D data from Integrated Engineering and Design applications

All Contractors working in one common 3D model through shared access



3D model files are created in E3D and assembled, coordinated and synchronized using AVEVA Global by use of Satellite and Hub servers.





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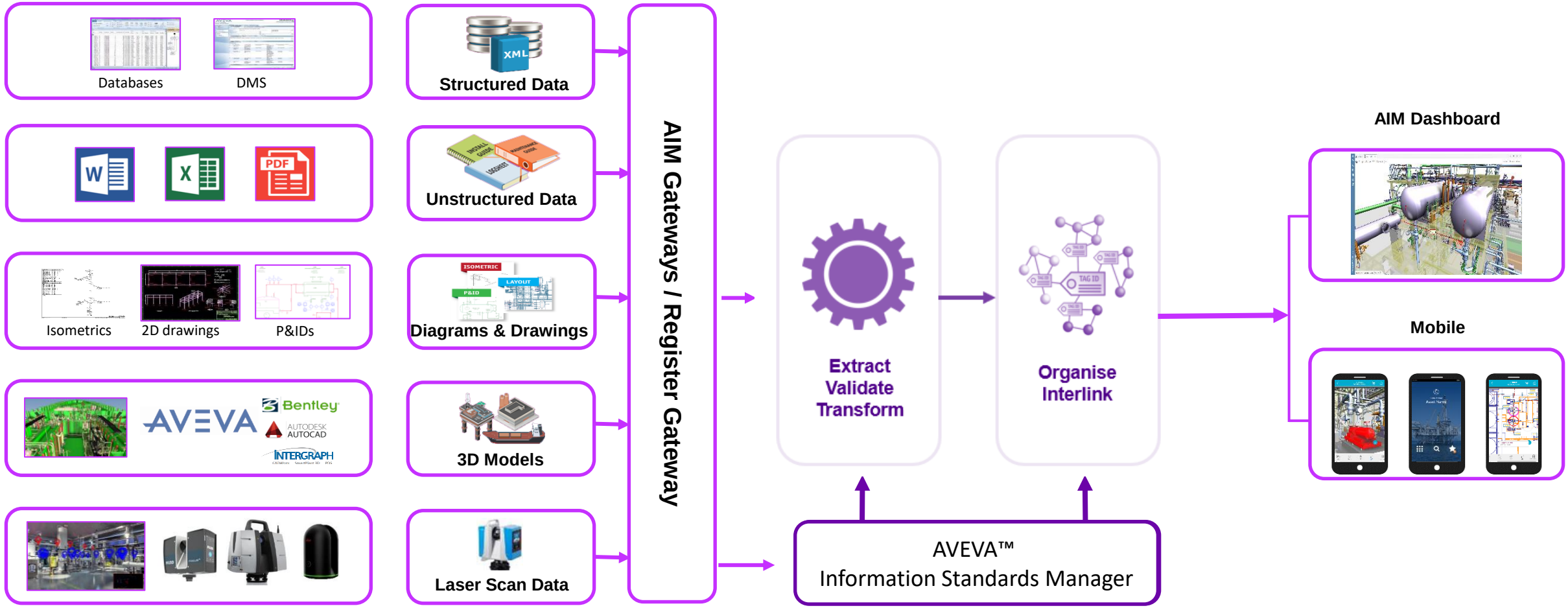
Asset Information Management

Collecting and structuring static data



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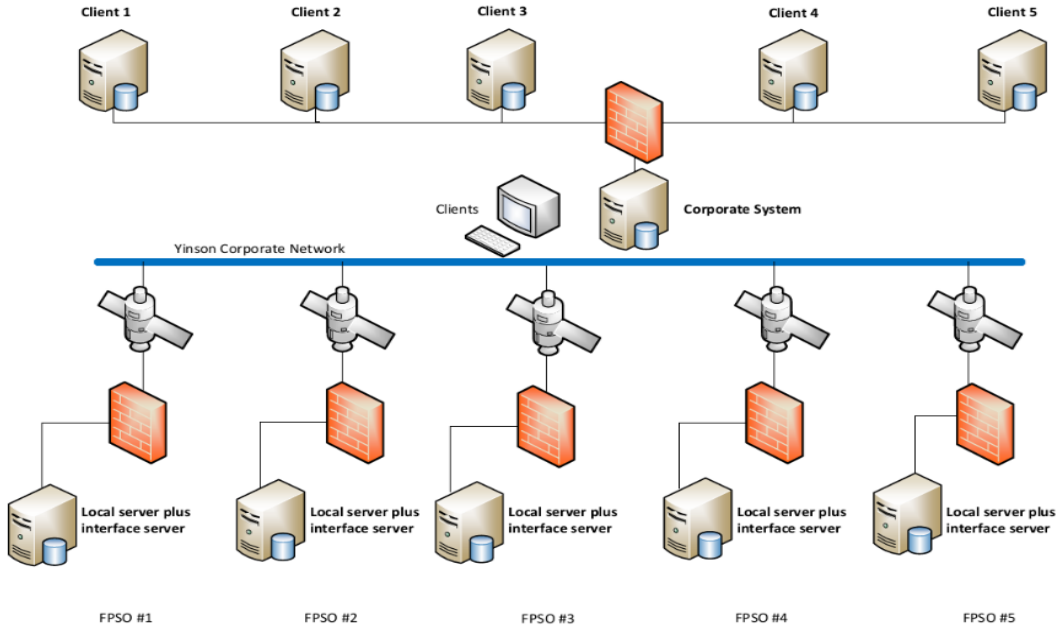
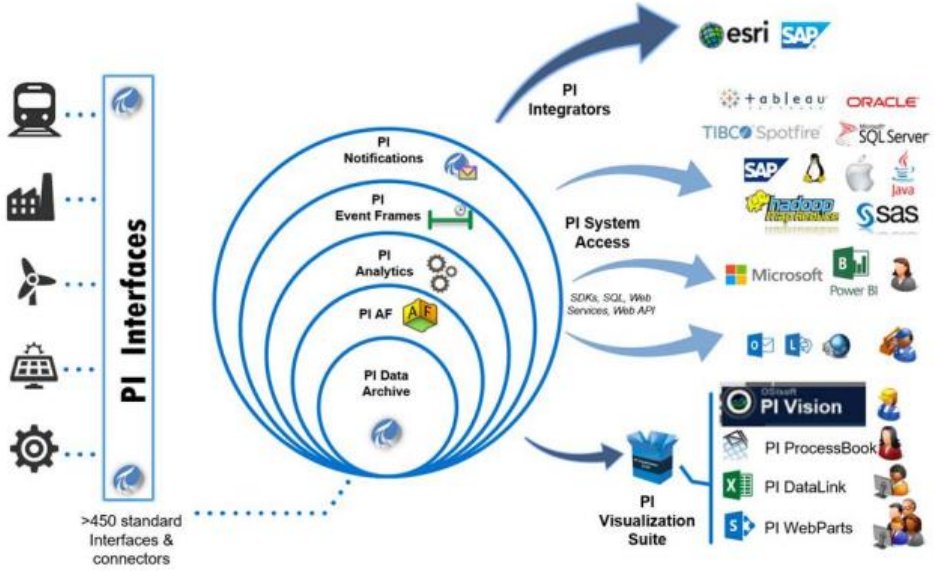
Asset Information Management

Collecting and structuring real-time data





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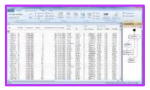
Asset Information Management

Integration of operational reporting through AVEVA™ PI System™

Data acquisition

Real-time data (AVEVA PI)
Maintenance data
Inspections data
HSEQ data
Engineering data (AVEVA IE&D)


Databases


DMS

Query to different source systems

Tools for visualization

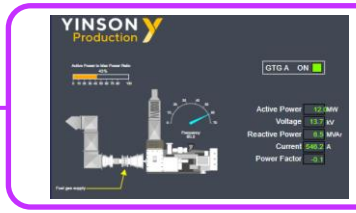
AVEVA™ PI Vision™

Power BI

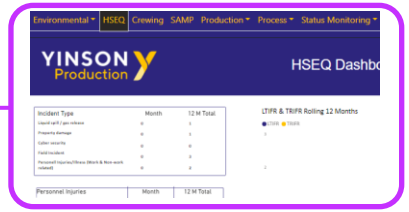
AVEVA™ Unified Operations Center

Platforms for visualization

AIM Dashboard



AIM Dashboard



Unified Operating Centre

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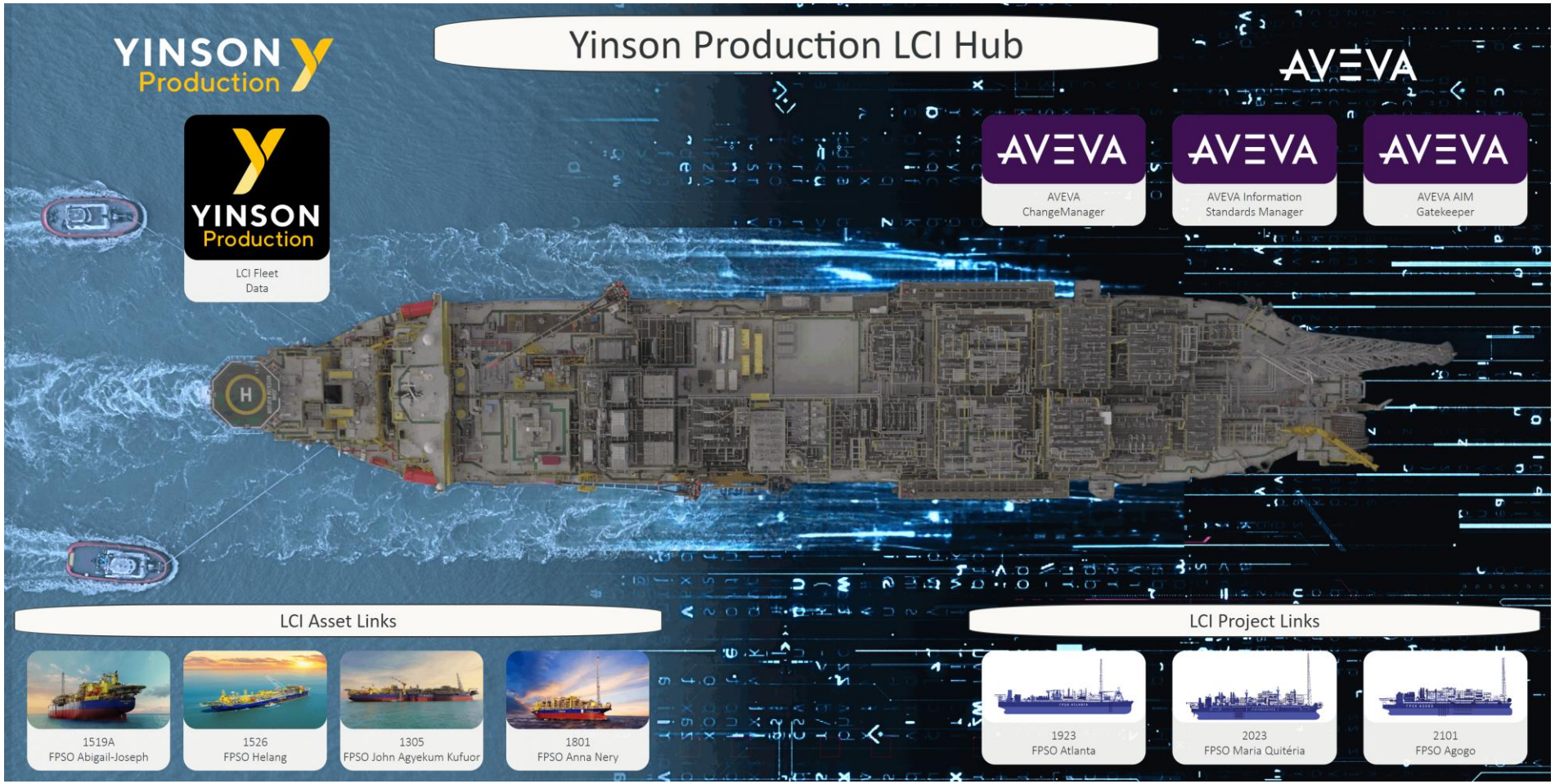
Asset Information Management

All assets' data structured and integrated with real-time data through Yinson Production LCI Hub



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Real-time data acquisition through AVEVA™ PI System™

Drive ESG initiatives towards reducing Group carbon intensity by 30% by 2030

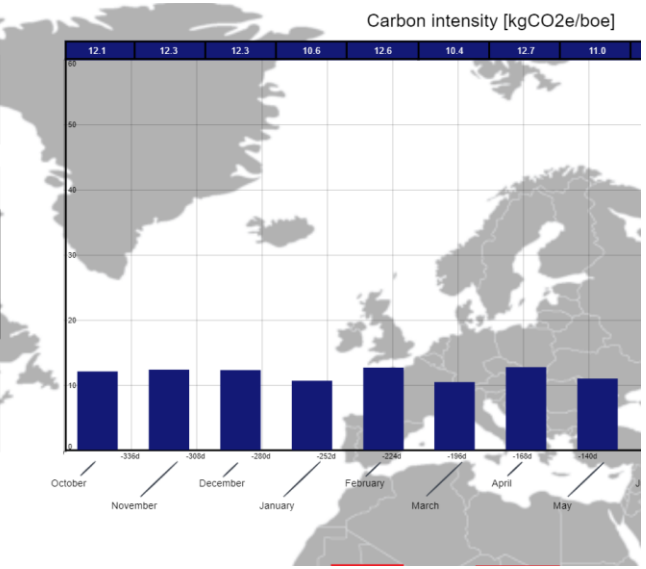
- Create baseline for operational performance on ESG metrics based on real-time data acquisition
- Through data extraction and analysis, create strategies to achieve ESG goals for assets in operation
- Use data to improve and optimize design in concept stage for new conversion projects

Environmental KPIs	Daily	Month	12 M Avg.	UoM
Carbon intensity	5.87	31.10	17.30	kg CO2e/boe
Carbon intensity per MWh	287.6	660.8	369.5	kg CO2e/MWh

Factors	Daily	Month	12 M Avg.	UoM
Fuel gas to power gen	11.4	262.1	258.7	mmscf
MGO to power gen	0	13.00	7.56	m3
CO2e emissions from power gen	0.26	7.91	7.64	tonnes

Energy use	Daily	Month	12 M Avg.	UoM
Energy use	3,587	102,562	102,616	MWh

Emissions	Daily	Month	12 M Avg.	UoM
CO2 - Carbon Dioxide	4,012	27,395	38,754	tonnes



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Asset Information Management

Integration of AVEVA™ PI System™ in AVEVA™ 3DVS

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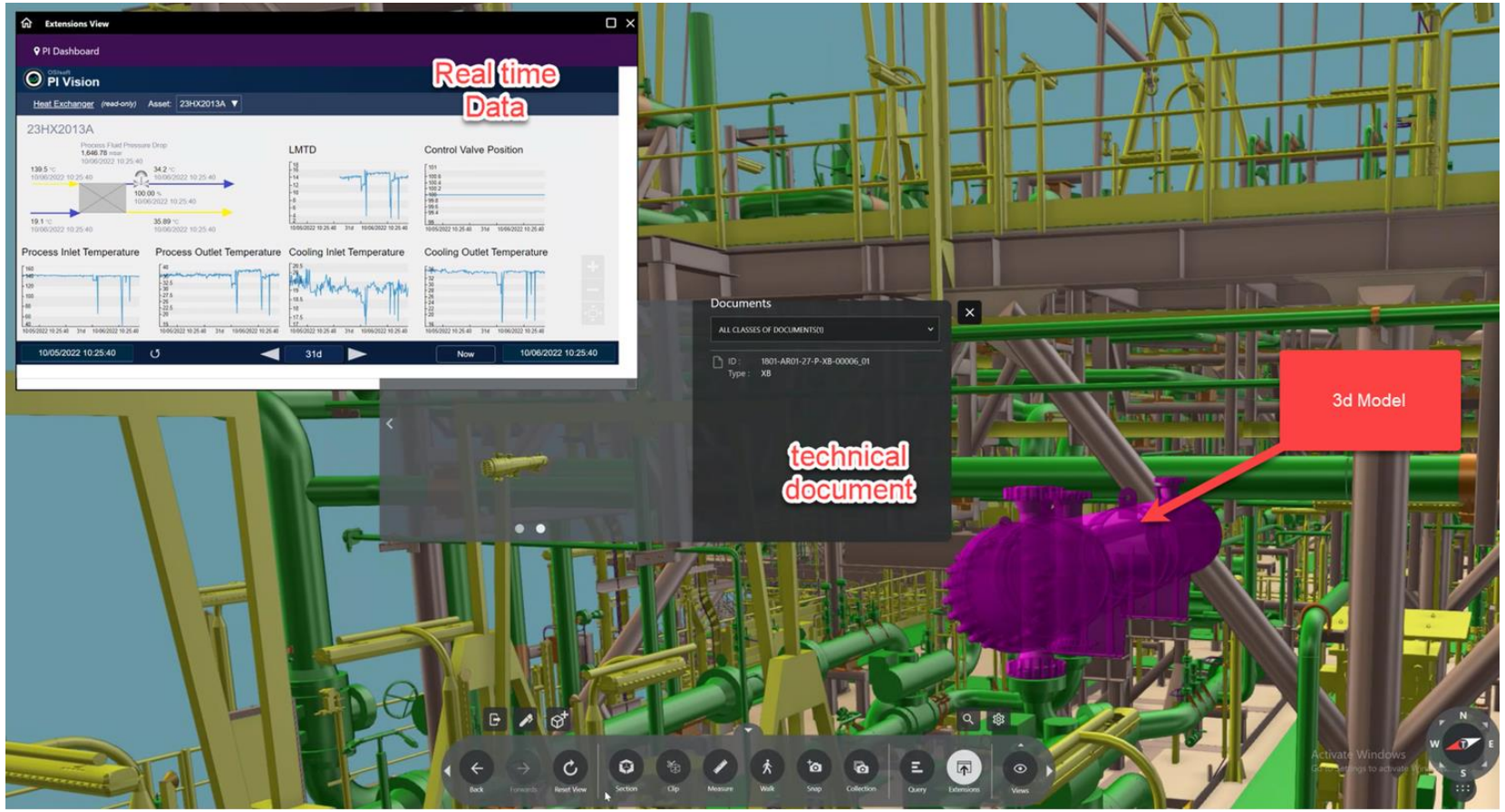
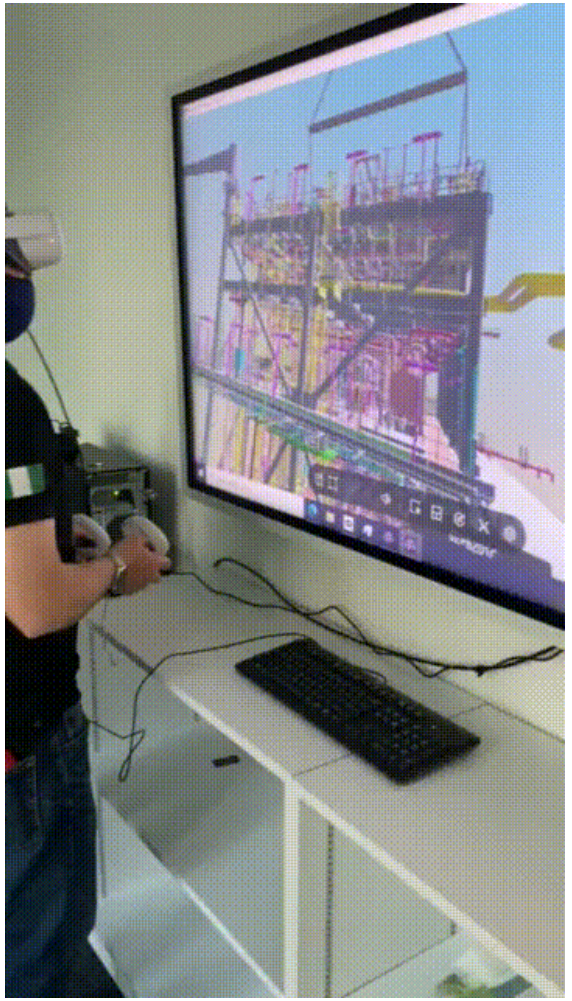
AVEVA

Asset Information Management

Integration of AVEVA™ PI System™ in 3D environment





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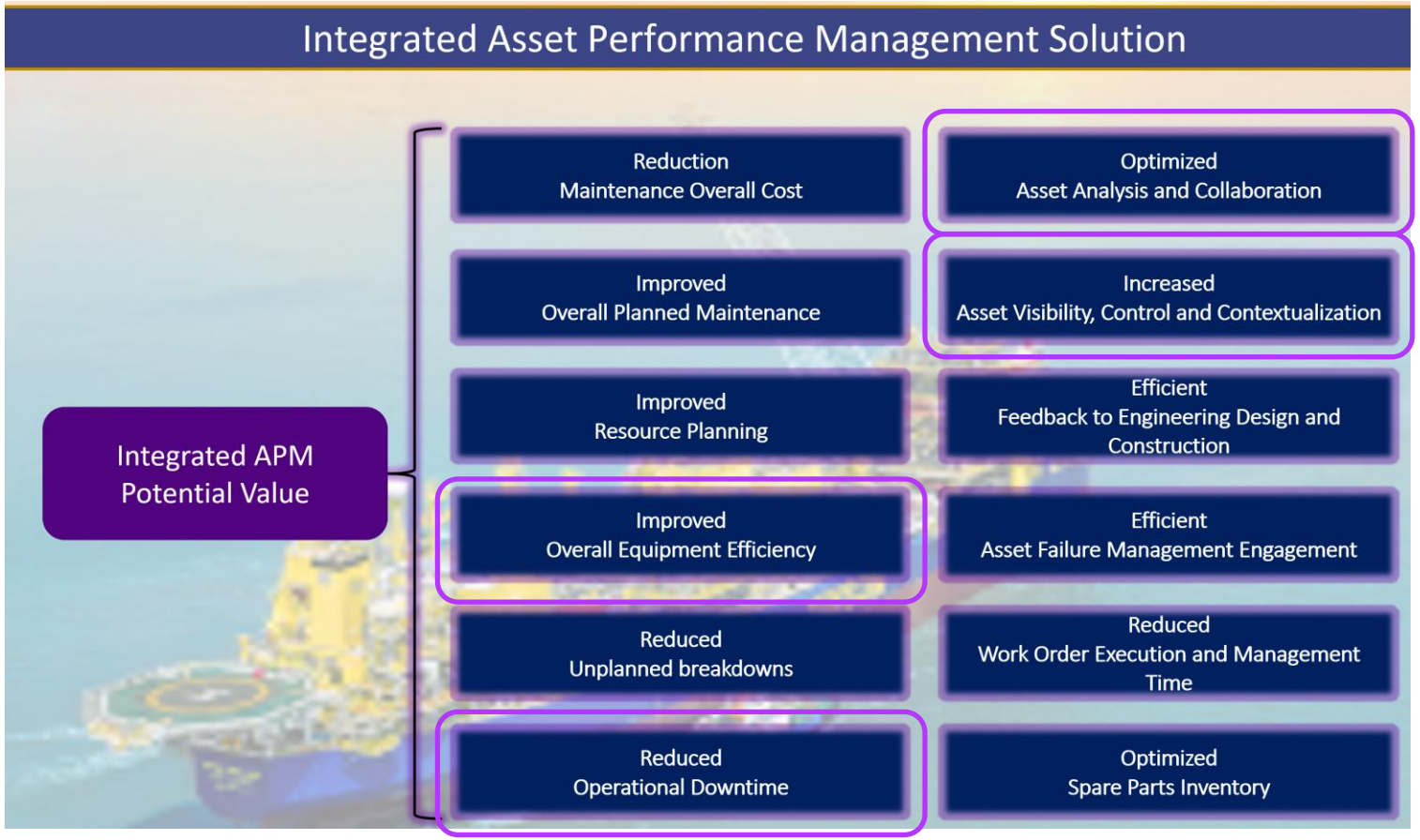
Integrated Asset Performance Management Solution

Using real-time data connected with transactional data to increase efficiency and sustainability

Connecting real-time performance with maintenance system for:

- Condition Based Monitoring through AVEVA™ PI System™ Asset Framework
- Advanced analytics through AVEVA™ Predictive Analytics
- Machine learning through a combination of models



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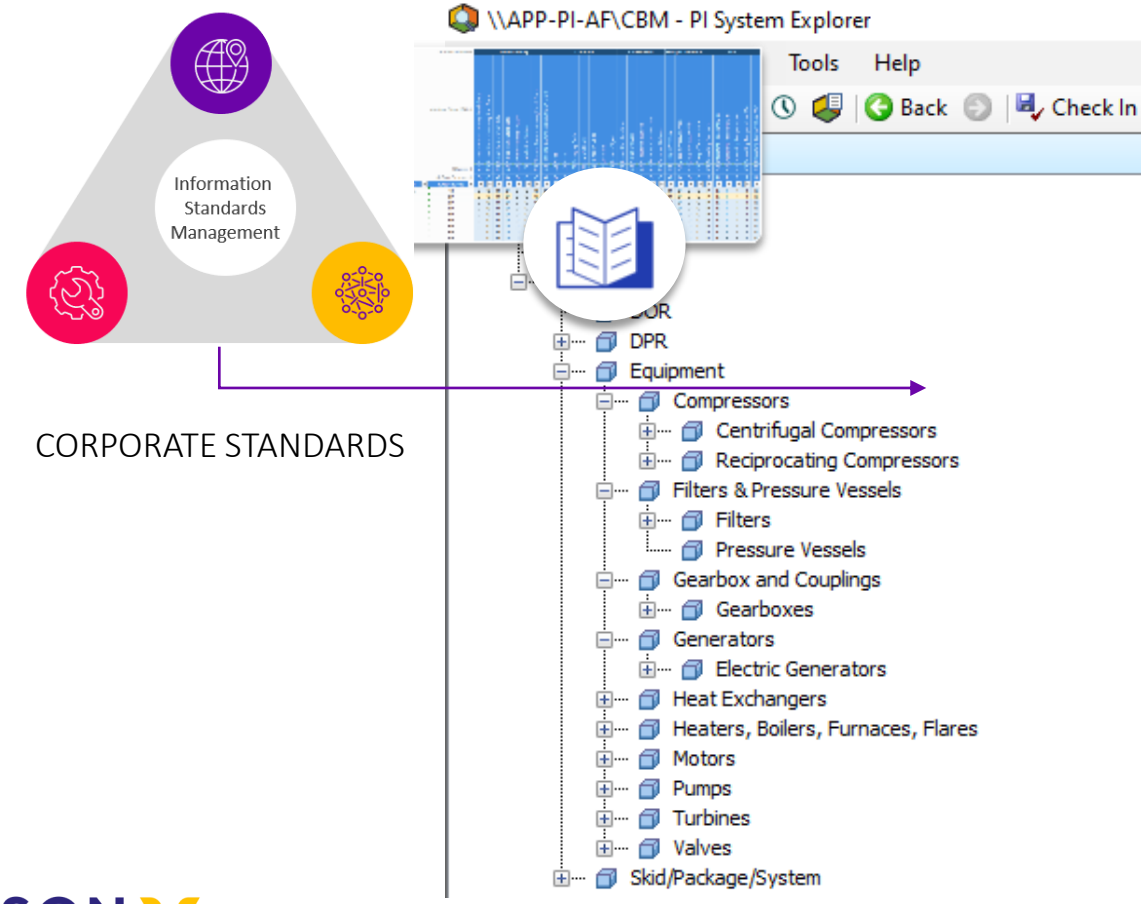
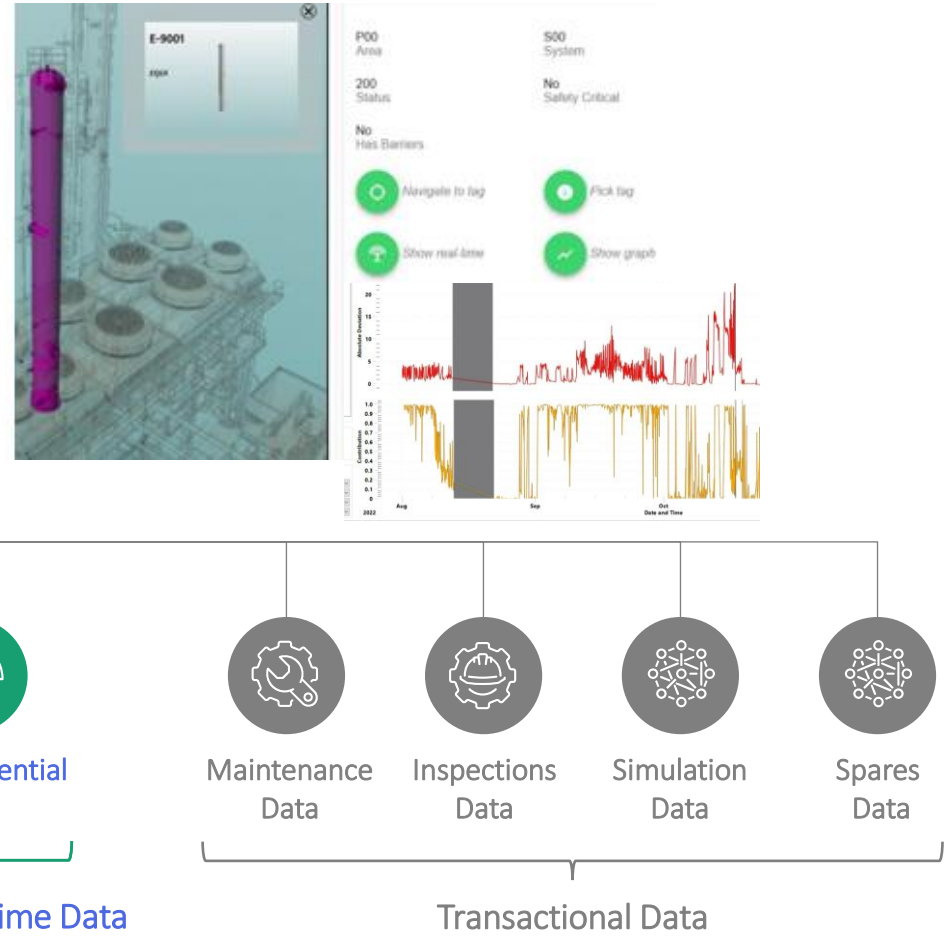
Integrated Asset Performance Management Solution

Templatizing assets in PI Asset Framework for Condition Monitoring



CORPORATE STANDARDS



ALM Purpose & Vision:

"To **safeguard** the integrity of the company **assets** throughout their entire **lifecycle**, by **optimizing** processes and providing **data-driven** recommendations for **continuous** learning, improvement and development"

YINSON Production

AVEVA

Kari Berte Bye

Manager Lifecycle Operations

- Yinson Production
- kari.berte.bye@yinson.com

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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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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