

OCTOBER 25, 2023

PETRONAS accelerates digital transformation with decision ready data

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AVEVA

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PETRONAS at-a-Glance



Our Statement of Purpose

A progressive energy and solutions partner enriching lives for a sustainable future.

- **Upstream:** extends across more than 20 countries globally, with 247 producing fields, 432 offshore platforms and 30 floating facilities
- **Downstream:** full spectrum of activities include refining (>800kbpd), manufacturing & marketing of petrochemical products
- **Gas Business:** Comprises LNG (6.69MTPA) & Gas and Power (2,623km pipelines processing 2,060mmscfd gas)
- **Clean Energy Solutions:** Renewables Energy (i.e. solar, wind, hydrogen, green mobility)

A Dynamic Global Energy Group

We are a dynamic global energy group with presence in over 100 countries. We produce and deliver energy and solutions that power society's progress in a responsible and sustainable manner.

The “WHY” For Digital Transformation... Moving Forward Together 50.30.0

Financial Resiliency

50% improvement in cash flow from Operations by 2025



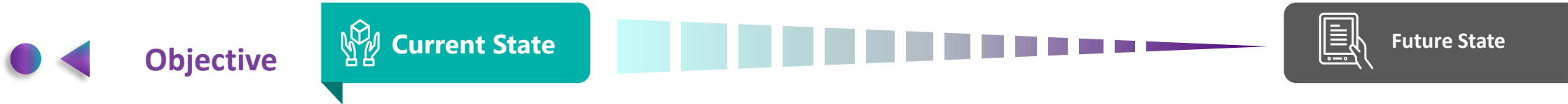
Growth

30% revenue by 2030 from new non-traditional business to complement growth in existing core

Sustainability

Net zero carbon emissions by 2050 with positive social impact and adherence to business ethics corporate governance

The “How”...Enterprise Architecture (EA) Implementation to accelerate digital transformation



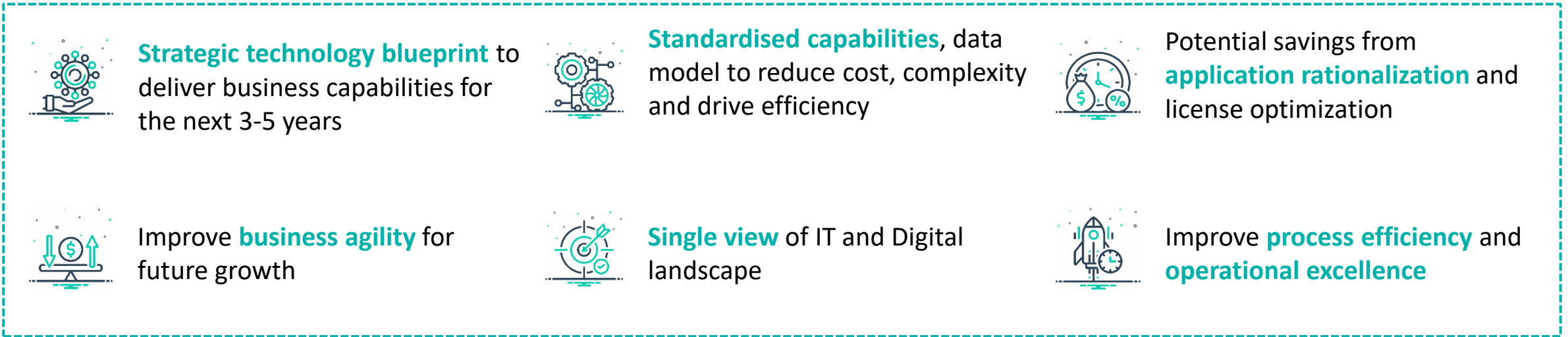
EA aims to drive PETRONAS towards a more structured and streamlined digital organisation while supporting strategic priorities

Target Goals

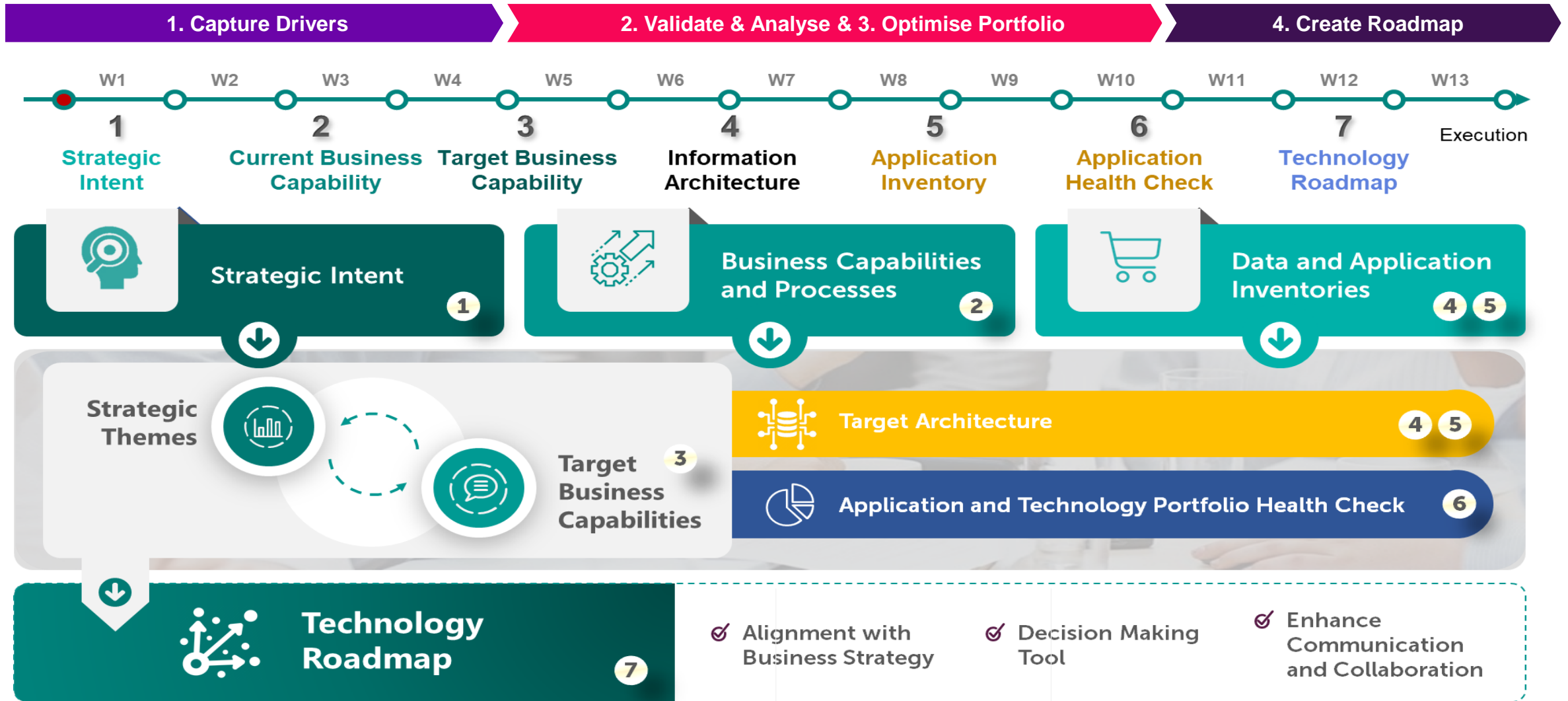
Value
50% improvement in cash flow from operations by 2025

Growth
30% revenue by 2030 from new non-traditional business to complement growth in existing core

Sustainability
Net Zero carbon emissions by 2050 with positive social impact and adherence to business ethics and corporate governance



Enterprise Architecture Implementation Approach



Business Strategic Intent and Opportunities – Downstream Manufacturing



How do we prove the change?

>25%

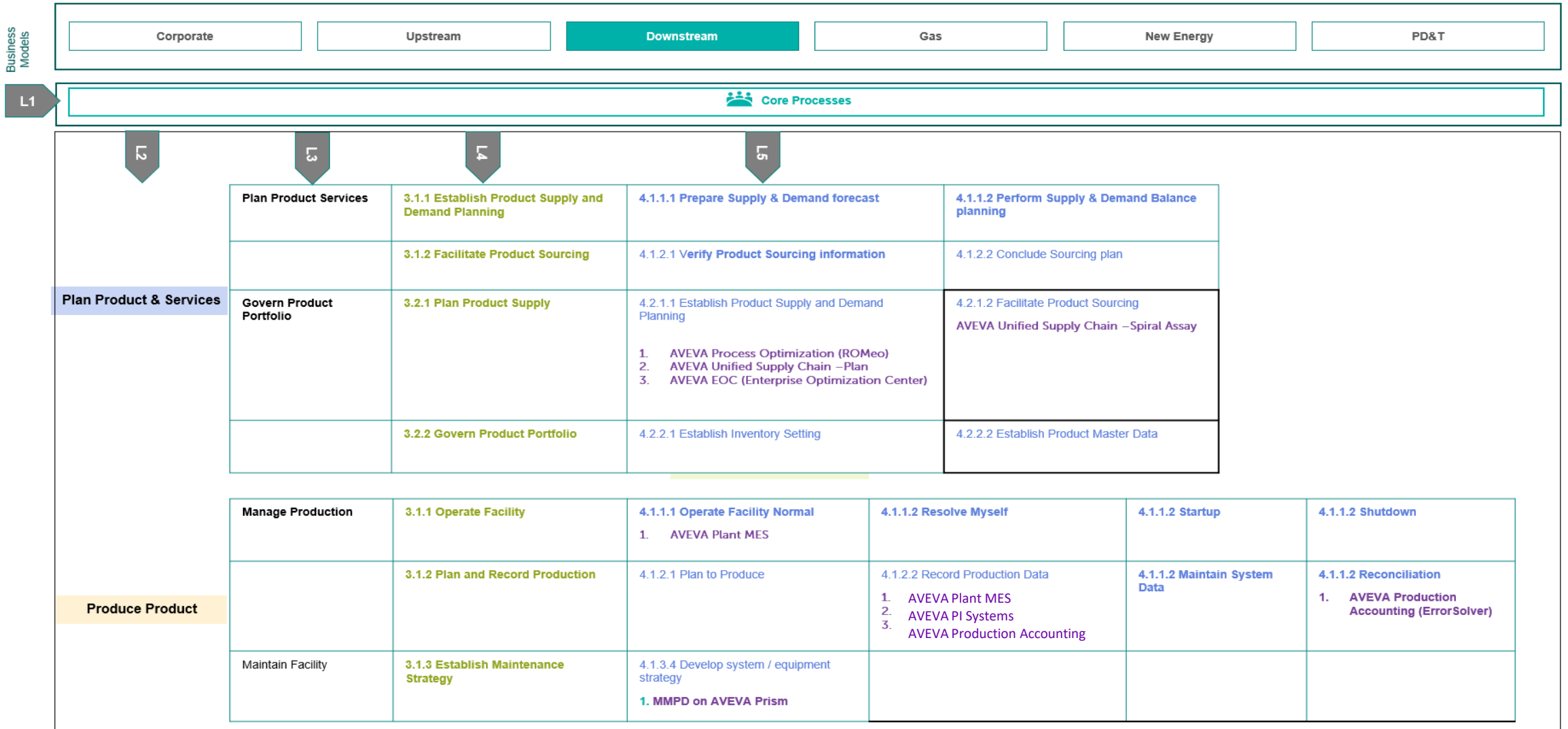
Improvement in process and organization efficiency

How much are we willing to pay for it?

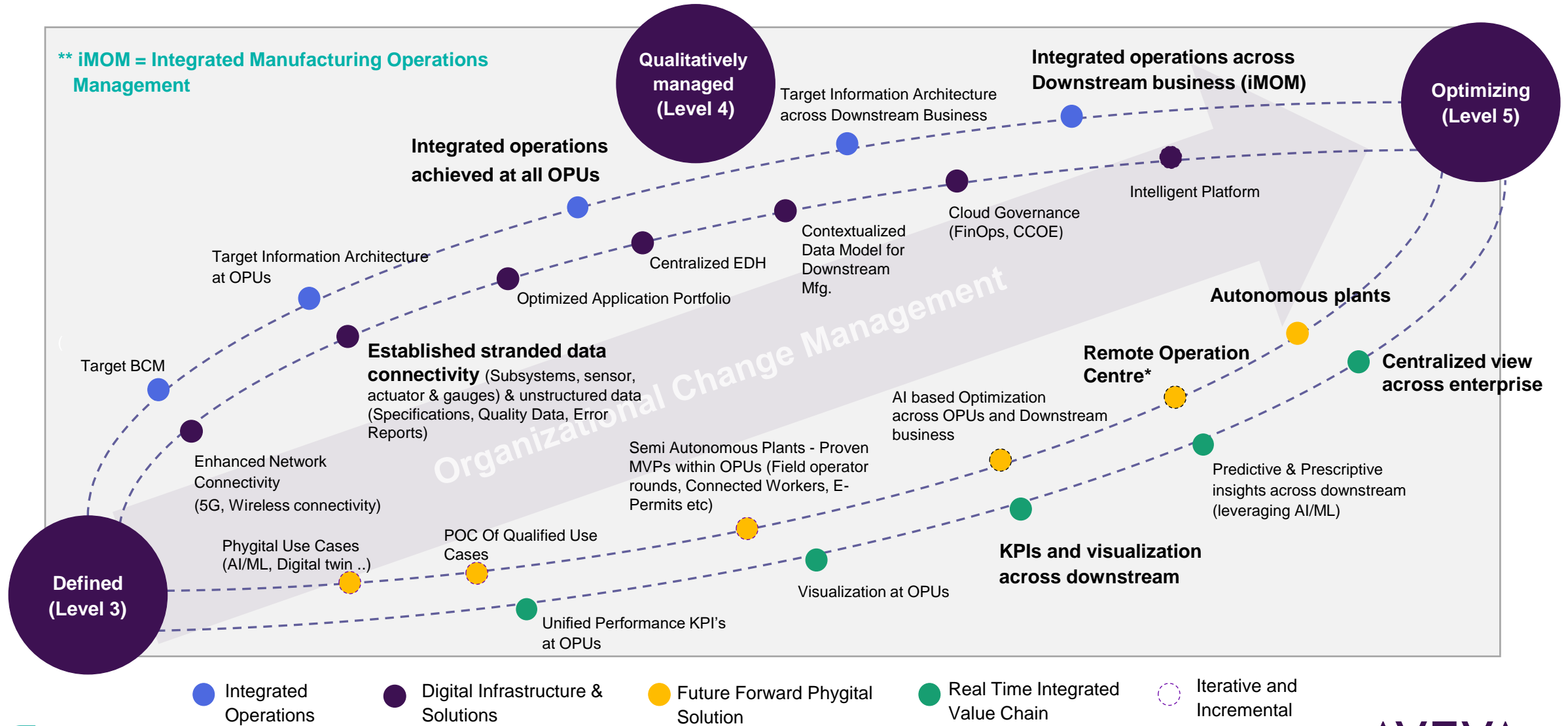
~10-15%

Reduction in digital and technology operating cost

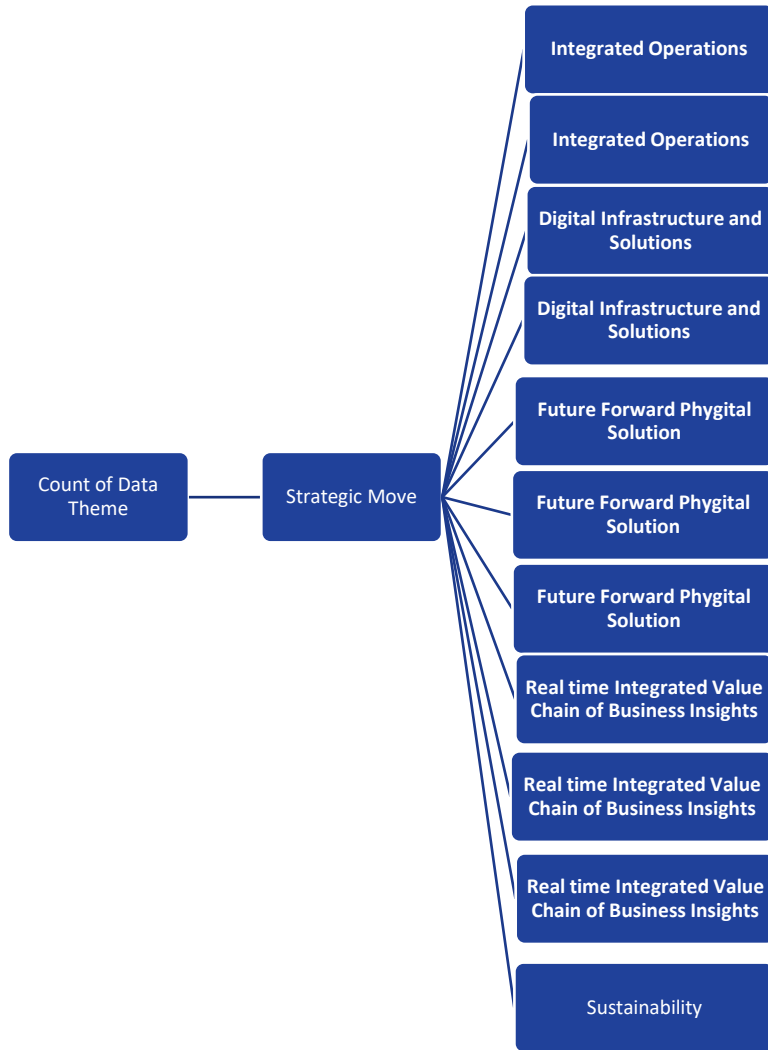
Overview of AVEVA Products Placement (Downstream Manufacturing)



High-Level Strategic Digital Roadmap for Downstream Manufacturing



Downstream Manufacturing – Data Theme Opportunities



Definition	
Integrated Operations	Integrated operations across downstream business
Integrated Operations	Single version of truth, improved collaboration
Digital Infrastructure and Solutions	Enhance standardization, storage, optimize data extraction.
Digital Infrastructure and Solutions	To be accessed centrally, anytime anywhere
Future Forward Phygital Solution	Autonomous Plants - data analytics, AI, and first-principle models
Future Forward Phygital Solution	Advances Analytics to improve planning model accuracy
Future Forward Phygital Solution	To make better informed decisions for future campaigns
Real time Integrated Value Chain of Business Insights	Improved turnaround time and making critical data available for reporting & analytics
Real time Integrated Value Chain of Business Insights	Enables decision support at central level with higher business visibility across all OPU's
Real time Integrated Value Chain of Business Insights	Unify performance KPI's and visualization
Sustainability	Central monitoring of carbon footprints from different sources like energy, utilities, water and material losses



- Integrated Operations collaboration
- Collaboration, Single-source
- Standardization, Implement Downstream data Model
- Single source, anytime, anywhere
- Analytics, predictive ML,
- Analytics, Single Data Model
- Single source, collaboration
- Single source, Reporting, Analytics
- Collaboration, Data governance,
- Unified user experience

Emission management integration

Addressing Data Challenge - PETRONAS Data Liberation

KEY ISSUES

Lacks reliable real-time data capability to operate and sustain the development and adoption of advanced analytics e.g. AI & ML.

Limited data accessibility to provide proactive Operations & Maintenance Solutions effectively across PETRONAS assets and plants.

DATA ADJACENCY PROGRAM

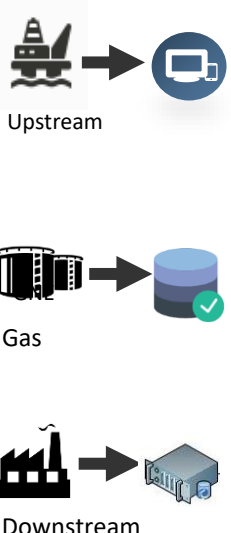
The Data Adjacency Program looks at liberating all the data across assets and plants and eventually ingesting them into PETRONAS Enterprise Data Hub (EDH) to ensure data integrity at source and consistent across organization, and to ensure availability and sustainability of data integrity (example PI Data, SAP data, etc.)

RESULTS

Asset and plant data in PETRONAS Enterprise Data Hub (EDH)

DATA PAIN POINTS

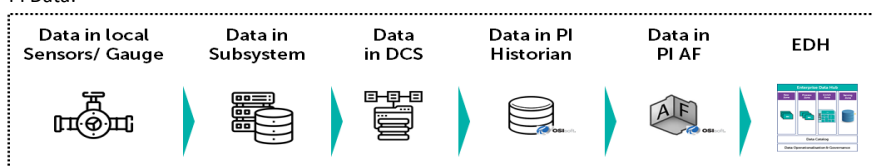
- Existing data ecosystem designed for operating the facilities with some data are still stranded
- Repository without ability to differentiate between final and working file
- Unstructured Data being generated and utilized on daily basis
- Manual retrieval and acquisition of data



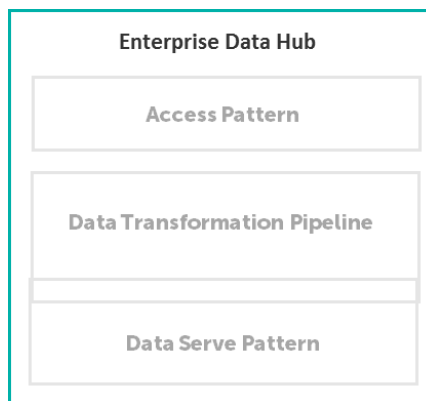
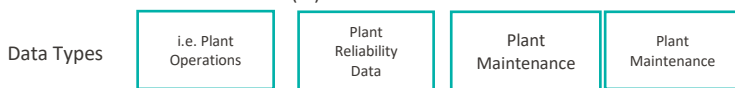
DATA INGESTION

Approach

PI Data:



Data Sources: Plant Information (PI) & SAP

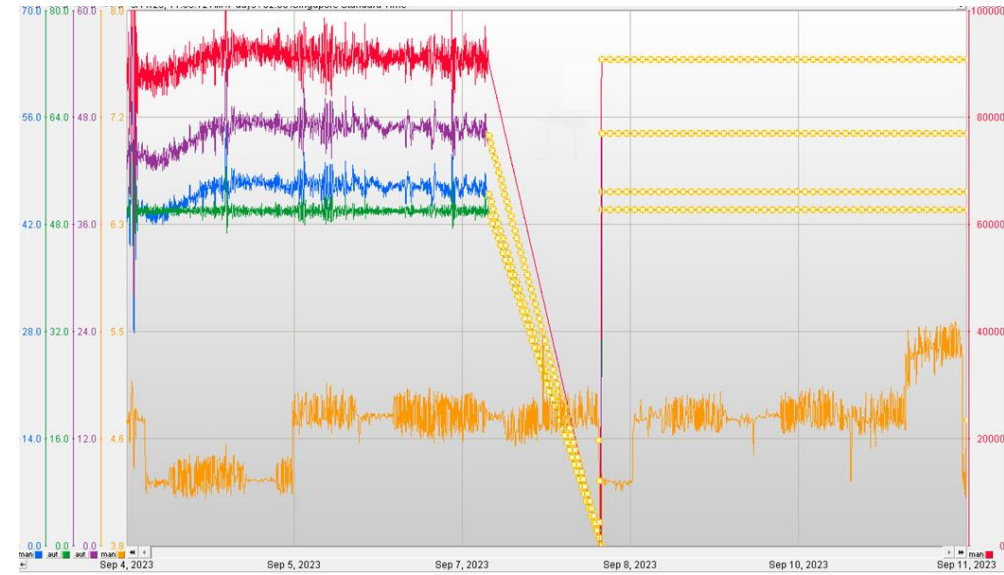
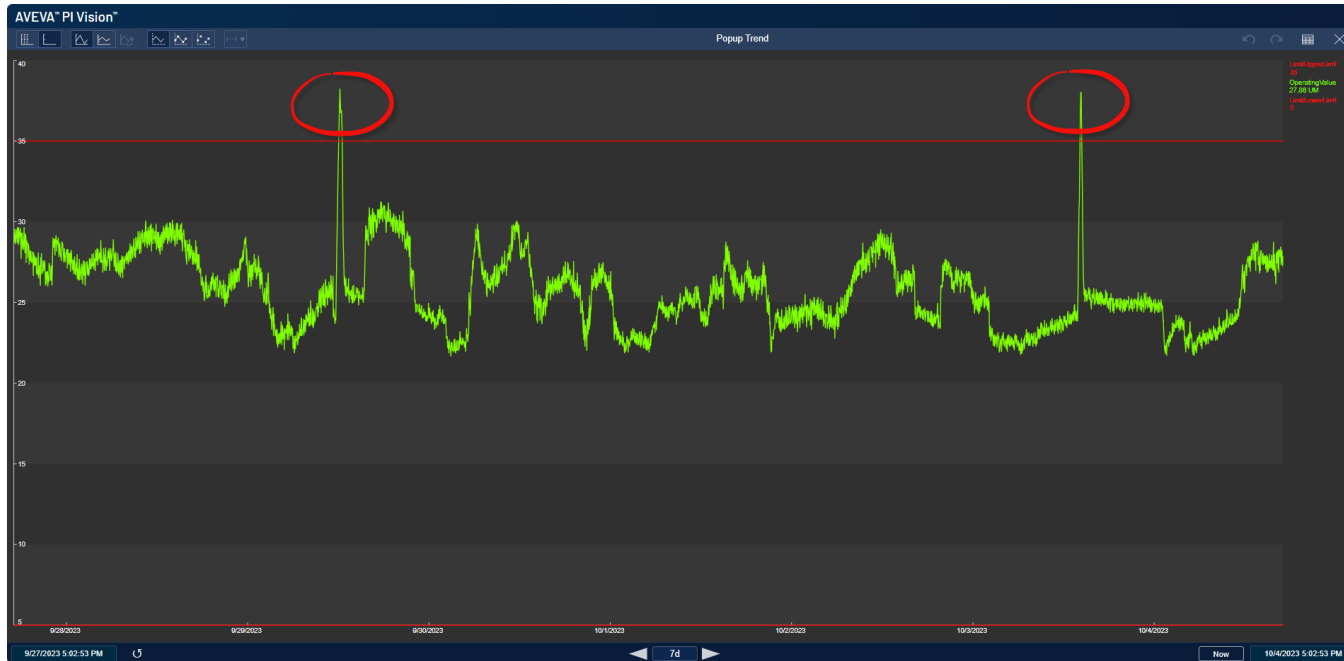


DATA ENRICHMENT

- Data Integrity & standardization at source**
 - Data cleaned and goes thru data standardization process.
- Data quality & full data visibility**
 - Consistent quality data
 - Improve data quality to ensure trusted data is being consumed from repository
- Liberated data is ingested into Enterprise Data Hub (EDH)**
 - Single Source of Truth (Curate Once, Use Everywhere)
- Integrated data ecosystem & stewardship**
 - Structured data being generated and utilized on daily basis

Problem Faced by Digital Product Owner

- Analytic result untrustworthy. Unable to make decision and action.
- Troubleshooting time-consuming because lack of visibility.
- Loss of trust and low user adoption.

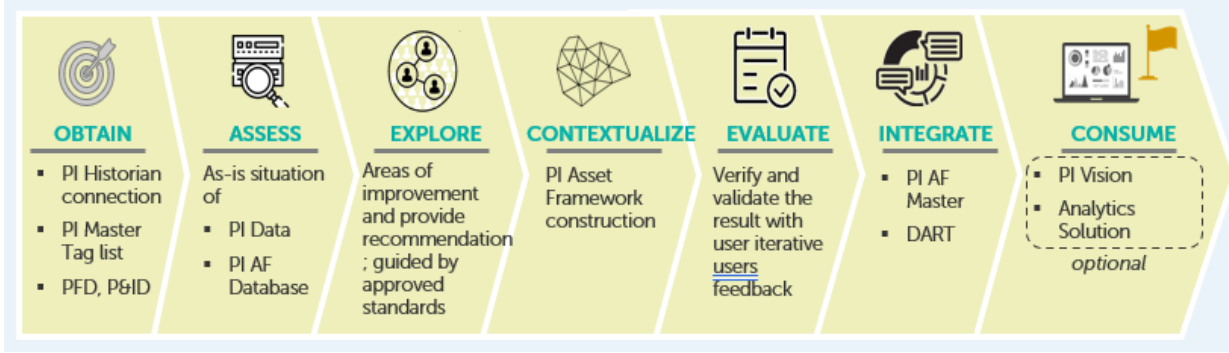
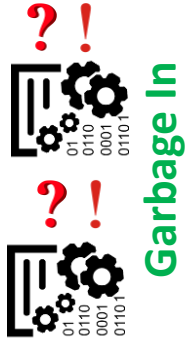


Factors Contribute on Data Reliability Issue



Hard to Track with Thousands of Plant Data !!!

Decision Ready Data (DRD) Provides Data Reliability Visibility

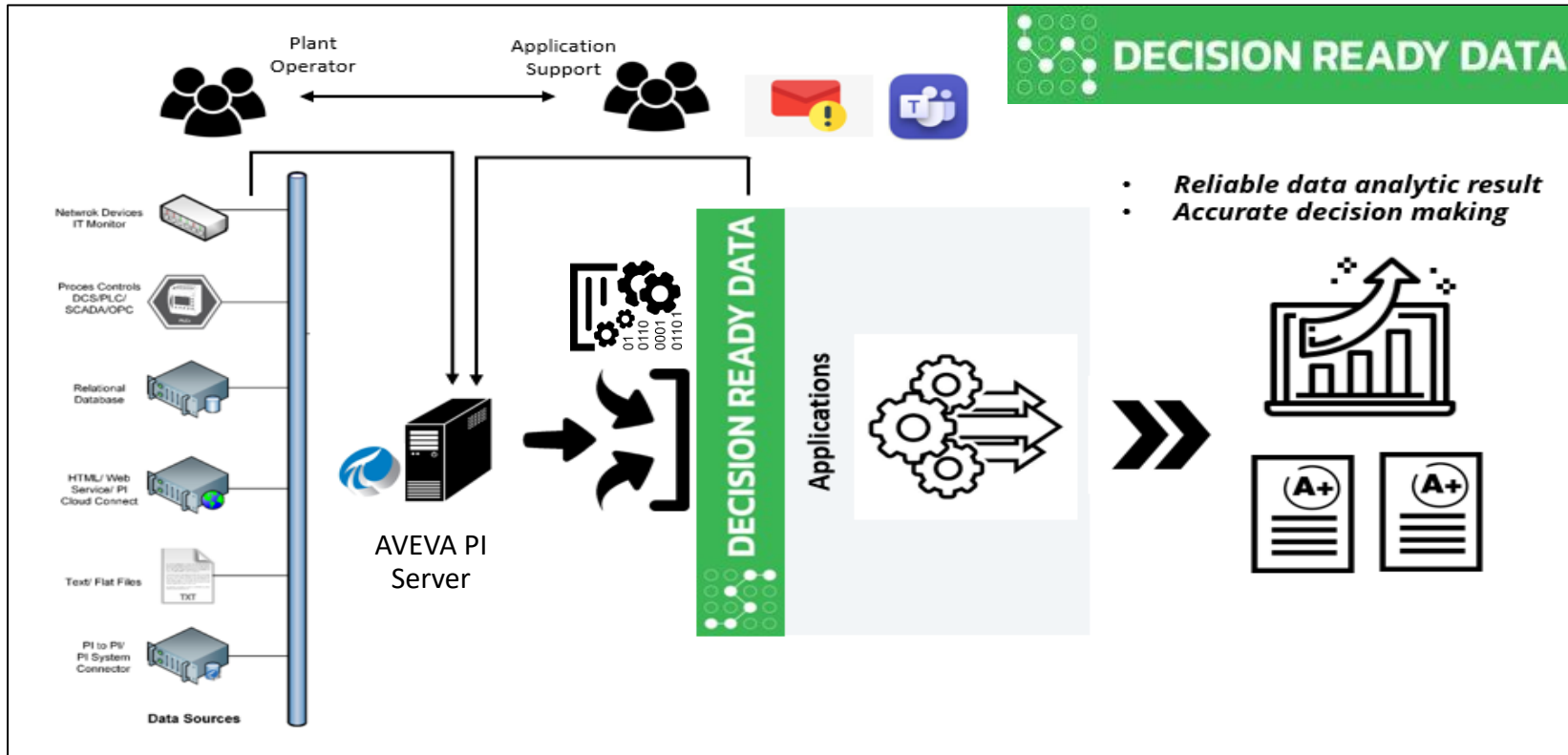


Unreliable data impacting analytics

If the data reliability from a specific asset is consistently poor over a prolonged period, it will jeopardize the investment and success of the analytic tools that uses the data.

Finding unreliable data takes time

More data means more time spent for you to find the bad unreliable data and less time to act.



Decision Ready Data (DRD) Provides Data Reliability Visibility



Analyze Plant Data Healthiness in Real-Time



Visibility on Data Reliability for Proactive Action



Use case specific monitoring



High level status and individual tag health status.



Decision Ready Data (DRD) Provides Infrastructure Health Visibility



System Uptime,
Server Hardware
Health & Network
Status



PI Server, PI
Interfaces & Data
Source Systems
Monitoring



Trigger Alert
Notification



PI-BA Jobs
Monitoring



Decision Ready Data (DRD) Provides API for 3rd Party Integration



3rd Party
Application
Integration



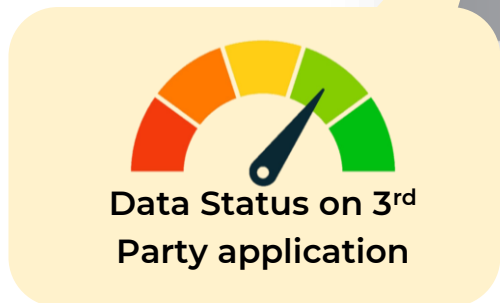
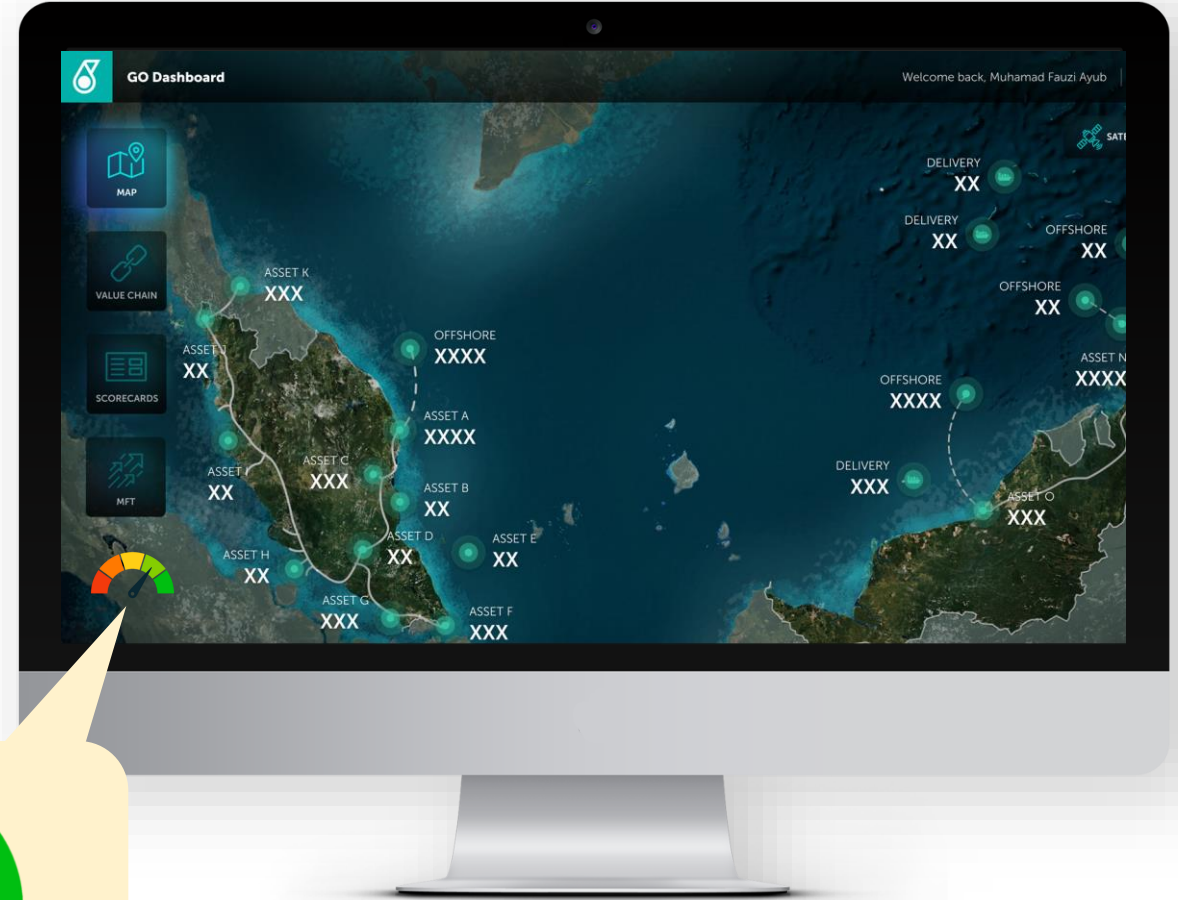
Data Status
Based On Use
Case



End User
Have Better
Visibility On
Data Status



Increase Product
Adoption



Decision Ready Data (DRD) Outcome

- DRD has successfully safeguarded millions of value creation to Digital application by providing continuous reliable & good quality data.
- DRD provides data quality visibility, reduce data down-time and make time-series analytics trustworthy
- DRD provide your organization the capability to act proactively on data quality issues.
- DRD provide more accurate analytic result for better decision making.

Within 1 month,
data reliability
improves from **40%**
to **70%** with DRD

Testimony

"It's a challenge to ensure uptime in our Advance Analytics solution with a complex oil and gas digital architecture.

It's crucial to have a tool that can facilitate, providing us an overview of the solution, data, applications, and network insights. DRD eases our tasks in monitoring and tracking the overall health of application, enabling continuous value creation through high uptime."

Digital Product Owner



PETRONAS implements enterprise data architecture to achieve transformation goals

Challenge

- Support the digital transformation required to improve company's cash flow, increase revenue and achieve net zero emissions.
- Improve business agility and support new ways of working.
- Ensure integrity of operations data for decision making.

Solution

- Implemented an enterprise-wide data architecture (NervCentre) based on AVEVA™ PI System™ and AVEVA™ PI Vision™

Results

- **Increased visibility to data quality and reduced data downtime.**
- **Able to proactively resolve data quality issues that arise.**
- **End-to-end visibility of the health of critical infrastructure.**
- **More accurate analytic results for better decision making.**





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Accelerating Digital Transformation at PETRONAS Downstream
with focus on Operational Excellence and Efficiency

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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 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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