



International Petroleum Technology Conference (IPTC 2025)

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AI-infused Solutions



Go beyond searches, embrace prompts

Document.AI, leveraging GenAI enabled intelligent document and information search

An Intelligent Search Retrieval based on metadata or natural language to retrieve technical documents from vast document repository systems across the enterprise in optimum time

- Discover right document with minimum inputs at optimum time
- Having interactive options to enhance search performance
- Generating related catalogue for a particular search criteria with associated metadata and hyperlink of the documents



Expected PoC Outcomes

Accelerated Decision Making
Experience up to 20% faster decision-making processes

Enhanced Transparency
Every stakeholder has access to the information they need, fostering a culture of trust and collaboration across the organization

Efficiency at Scale
Dealing with millions or trillions of records in an efficient manner



4IR technologies driving remote asset inspection

Inspect.AI, leveraging AI and 4IR technologies to enable remote inspection of assets in real time

Solution

Improving Asset Integrity and reducing downtime with drone-based/ remote inspection and leveraging AI based Predictive analytics

Enablement of Image Analytics backed by AI to build on live feed from Drone based remote inspections with easy access to unsafe areas

- **Proven use cases developed for**
 - Cross country pipeline inspection
 - Tank, Vessel, Tower inspection
 - Flare inspection
 - Piping external corrosion inspection
 - Safety monitoring during Projects/Turnarounds
- **Aimed to provide Successful track records of :**
 - Improving Asset Integrity
 - Reducing Asset downtime & inspection cost
 - Improving Plant & Equipment safety



Expected PoC Outcomes





- Improving Asset Integrity up to 10%
- Reducing Asset downtime by 5%
- Reduced unsafe incidents by 15%
- Improving Plant and Equipment safety



Transform a "normal frontline worker" to a "super-worker"

NSeal, a GenAI based Augmented Worker Platform

NSeal is a real-time execution platform with GenAI agents to support Operation and Maintenance frontline workers to complete activities with 'limited' to 'no' supervision

-  **Interactive, Contextual Advice on a Multi-Lingual Platform**
Empower global teams with a platform that supports multiple languages for enhanced collaboration, to search and retrieve relevant information from IT, and ET data to provide contextual advice
-  **On-Premise Solution**
Enjoy the flexibility of deploying NSeal within your secure IT infrastructure
-  **Image Recognition and On Job Training Videos**
Recognizing defects/anomalous states through image analysis and enhancing workforce readiness with engaging training resources accessible anytime, anywhere
-  **HSE Incident Reporting**
Streamline health, safety, and environmental reporting to prioritize workforce well-being

Expected PoC Outcomes

- Efficient Operations, maintenance, and Inspection of remote assets with emphasis on worker safety and ZERO major incidents
- Enhanced Operational Efficiency achieved by streamlining operations, offering precise commands, indications, and trainings through our solution, thus reducing downtime and increasing productivity
- Enhancing the safety protocols by ensuring that workers have access to up-to-date, contextually relevant information and recommendations provided by NSeal



Implementation of Small Language Models (SLMs) in the Oil and Gas Industry

Enabling more tailored, secure innovations through industry-focused GenAI offerings

Background: The oil and gas industry is characterized by its need for precision, efficiency, and adherence to environmental regulations. The sector deals with complex operations that require specialized knowledge and rapid decision-making to optimize performance and reduce downtime

Problems and Challenges:

- **Complex Terminology and Technical Nuances:** The industry uses specialized terminology and processes that are difficult for general AI models to grasp
- **High Stakes and Risk of Errors:** Inaccuracies in data processing can lead to severe consequences, including operational failures and environmental hazards
- **Data Security Concerns:** Handling sensitive data securely is paramount due to the confidential nature of the data involved in oil and gas operations
- **Environmental Regulations:** Strict compliance with ecological regulations is essential to avoid legal repercussions and maintain operational legitimacy
- **Cost and Resource Constraints:** The industry requires cost-effective solutions due to the extensive scale and scope of operations



Solution Proposed

- The adoption of Small Language Models (SLMs) trained specifically on industry-relevant datasets. These models are designed to understand the intricate details and technicalities of the oil and gas sector
- The training includes a mix of public data, subscription data, and proprietary data to ensure comprehensive coverage and accuracy

Benefits Realized of SLMs in O&G

Benefits Realized of SLMs in O&G:

Enhanced Accuracy and Reduced Errors:

SLMs, by virtue of being trained on domain-specific data, significantly reduce the risk of errors ('hallucinations') that could lead to operational mishaps

Data Security:

Being deployable on-premises or in controlled environments, SLMs ensure that sensitive data does not leave the secure perimeter of the company

Cost Efficiency:

SLMs require fewer resources for operation and maintenance, making them a cost-effective solution for the industry

Improved Operational Efficiency:

SLMs can automate and optimize tasks such as work order creation, predictive maintenance, and drilling optimization, thereby reducing downtime and operational costs

Environmental Compliance:

SLMs can be trained to generate precise reports, monitor emissions, and manage waste according to specific ecological regulations, helping companies stay compliant

Scalability and Long-Term Potential:

SLMs offer flexibility and can be fine-tuned for a broader range of operations as the industry evolves, ensuring long-term utility and ROI



Energy language model with AI agents

Why SLMs Over LLMs for the Oil and Gas Industry

Industry-Specific Training
Compliance and Reporting
Reduced Environmental Impact

Operational Efficiency
Data Security
Cost Efficiency

Why Now?

- **Technological Maturity:** AI technologies, including SLMs, have matured sufficiently to handle complex, industry-specific tasks reliably
- **Data Accessibility:** Increased data availability allows for more robust training of SLMs, enhancing their effectiveness and applicability
- **Platform Evolution:** Advances in platforms and standards facilitate easier integration of SLMs into existing systems, promoting innovation
- **Competitive and Regulatory Pressures:** Current market and regulatory environments necessitate efficient, compliant operations, which SLMs are well-equipped to support



Asset Resilience and Operational Excellence



Asset Transformations

for a UK based Global Energy Major

Accelerating delivery of breakthrough business value by incubating scalable digital solutions that fuse digital and physical technology across assets in refineries, petrochemical plants, and upstream E&P sites

Year 1	Year 2	Year 3	Year 4	Today	Future
Modernize infrastructure , Cloud transformation and data foundation					
Manufacturing Data Platform- Data Enablement					
Intelligent Operations and Maintenance Solutions-Data Insights & Solutions					
IO - Predictive, Prescriptive Analytics					



Aim



\$1 Bn cost reduction through reducing fixed & variable operating costs



Building sustainable capabilities to accelerate intelligent operations journey



\$1 Bn revenue increase through Production & Asset optimization & extending customer success



Data Modelling & Contextualization:

Enterprise-wide Unified data foundation platform to deliver business centric Use cases across sites, disciplines & boundaries

Manufacturing Equipment model:

Governed integrated data model of equipment relationships w/ sensors / instruments, P&IDs

Manufacturing Optimization Model:

Governed integrated data model of material relationships w/ properties, UOM, vessels, ports and test methods



Refining Management of Information:

Management of Information program is an enterprise-wide role-based performance monitoring and decision support system aimed at improving Asset operations using Advanced data analytics across business functions & personas

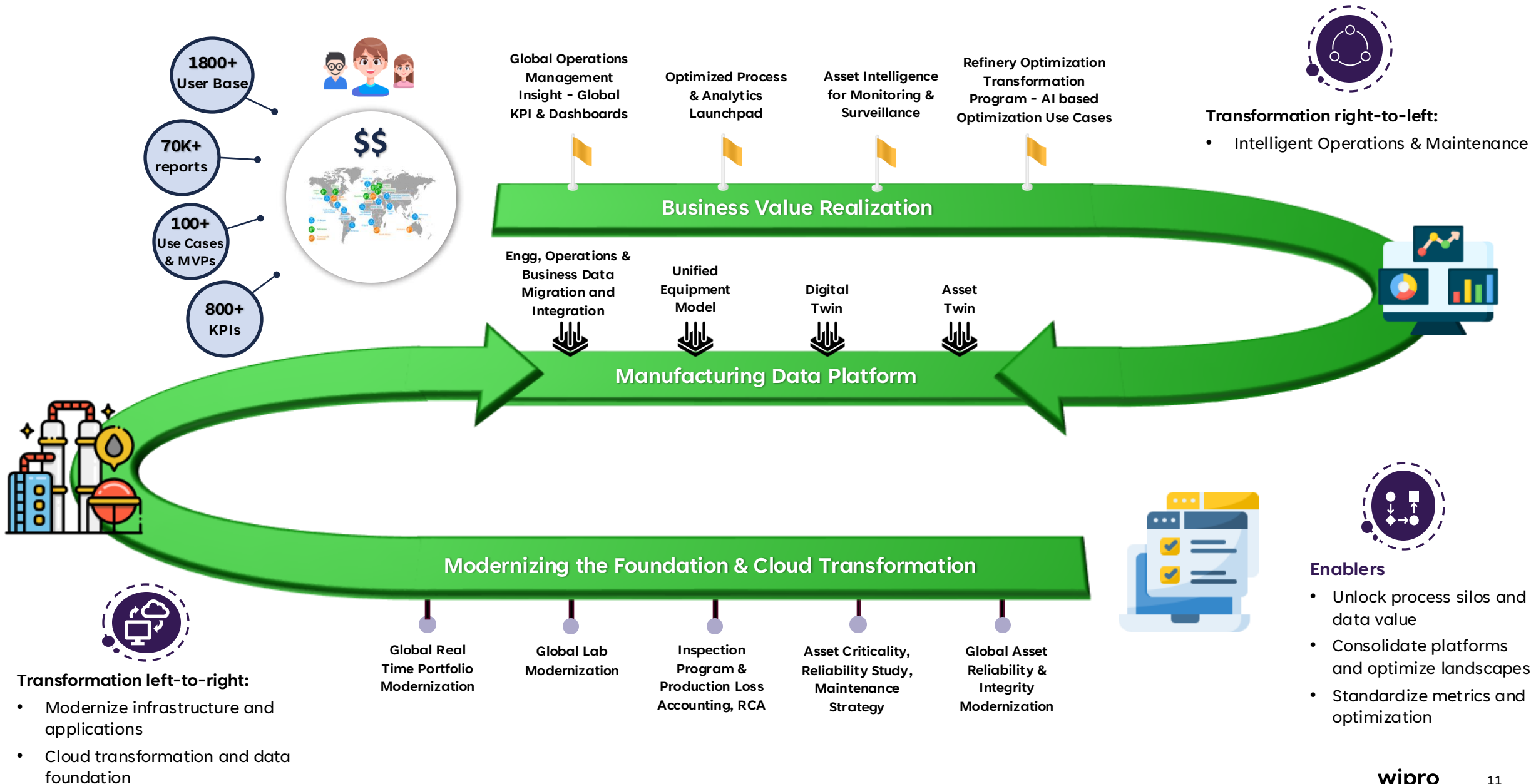
Ex. Refinery Performance Dashboard, Refining Mechanical Integrity Dashboard, Operations Team Scorecard



Refining optimization transformation program:

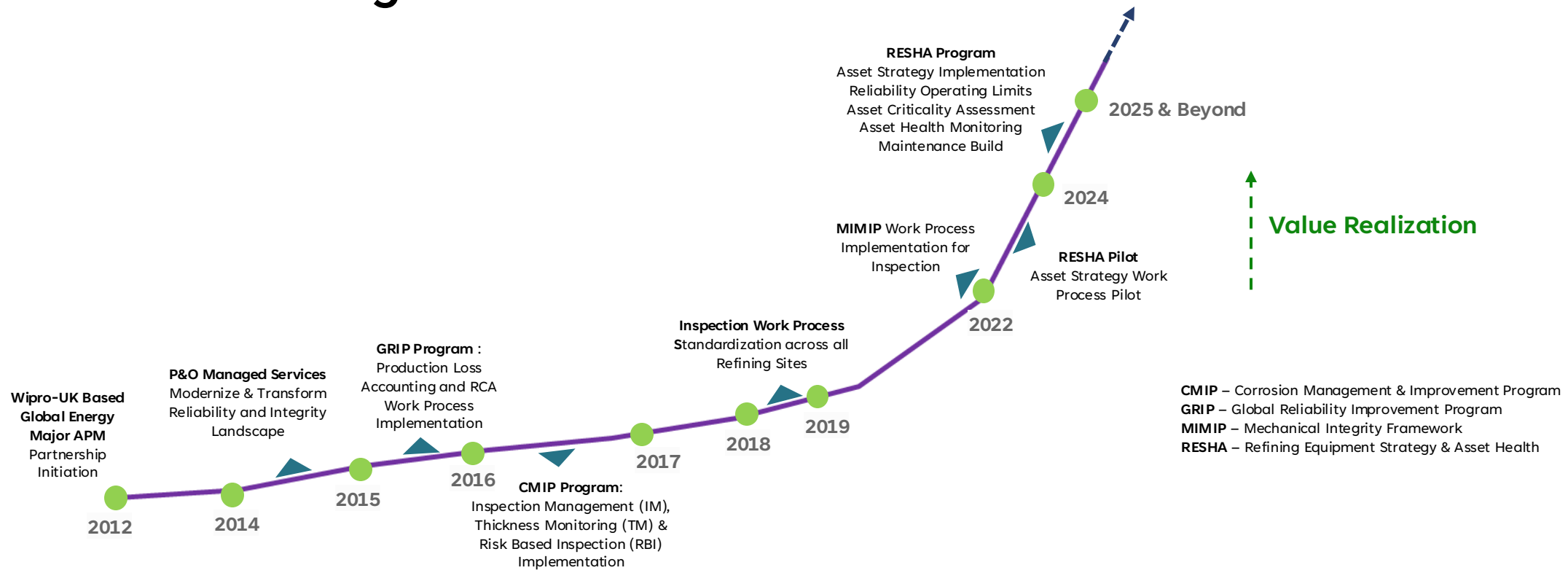
AI-ML based use cases and solutions to transform asset operations and maintenance driving optimization and transformation

Assets Transformation for a UK based Global Energy Major

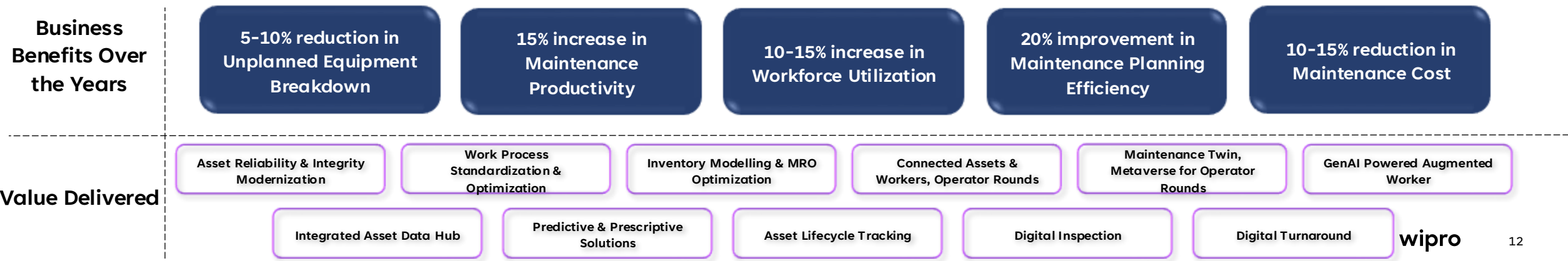


Asset Performance Management - Value Realized

Asset Resilience



Leveraging Asset Performance Management Knowledge Capital





Data Modelling & Contextualization

Manufacturing Data Platform for a UK based Global Energy Major

Solution Description

- Unified Data foundation that spans diverse data sources across regional, business & functional boundaries
- Incorporate MDM methodologies to form and govern 'golden' data models/relationships
- Leverage leading edge graph database technology to create a multidimensional view

Outcome

Models delivered including Data Modelling, Curation, Contextualization, Enterprise Knowledge Graph, Data Governance for the below 2 models :

- ✓ **Equipment Model:** Models "Physical equipment & instrumentation assets" with lineage between disparate data sources across the equipment life-cycle
- ✓ **Optimization Model:** Model with comprehensive master data set including information like materials, properties, shipping, locations etc.

Models enabled unified foundation to build multiple use cases, visualization, workflows

Technology journey included :- Data Extraction – Informatica, Azure Data factory; Data Lake – Azure Data lake, Cloudera, Palantir ; Data Curation – Databricks etc ; Data contextualization and MDM – Semarchy, Neo4j Graph DB ; Data Visualization – Azure Synapses, Power-BI, Tableau



Benefits



Reduction in OPEX
by ~5-10% per year



Improved Data
Quality by ~50%



Improved Productivity
by 30%



Refining Management of Information

Intelligent Operations for a UK based Global Energy Major

Solution Description

- Enable business leaders at refineries, petrochemical plants, production sites with data analytics-based actionable insights on finger-tips
- Developed Cloud based automated data feed from disparate application source systems into the Azure data lake so that business partners need not manually update and/or continuously refresh
- Democratized data - curate data, build information models & connect the dots between disparate application source systems viz. APM, SAP, Maximo, IRIS, OSI PI, Legacy systems, Excel sources, unstructured data

Outcome

- 255 KPIs delivered across 16 analytical Dashboards across business operations in areas of HSSE, Reliability, Process Safety, Integrity etc
- Visualizations using Power BI for example;
 - ✓ Operations Scorecard
 - ✓ Reliability Dashboard
 - ✓ Mechanical Integrity dashboard
 - ✓ Refining throughput dashboard
 - ✓ Damage Mechanism Review Recommendations Dashboard
 - ✓ Site dashboards
- Citizen Development Datasets: ~ 250 data views
- Data ingestion using ADF and Data curation using Data bricks



Benefits

\$10 M/yr

Savings in Gross Margin



255+

AI Based KPIs and 250+ Enhanced Top Management Reviews





Refining Optimization Transformation

Intelligent Operations for a UK based Global Energy Major

Solution Description:

- Digital tools to support Crude & Feedstocks Selection, Limits Saturation, Reduced Product Giveaway, Productivity and Bio feedstocks processing
- Easily integrates with existing work processes, minimizing the need for user training and rework
- Simplified and standardized work processes underpinned by integrated digital tools
- Single source of truth data to underpin workflows
- Standardized workflows, where appropriate, eliminating low value work

Use case themes delivered so far

One Lab

OneLab provides a single repository for all curated, readily accessible, secure, and quality-assured crude oil, feedstock, intermediates, production chemistry and finished product analytical chemistry data, critical for enhanced assay management and crude selection decisions, supporting safe, reliable, and optimized refinery operations

Pipeline Prophet

Making the best crude purchasing and optimization decisions by predicting the contamination level of the crudes

Bio-Feedstock Dashboard

Incorporate bio feedstock knowledge and data management into existing best practices and work processes, to a low carbon future

Optimization Feeder

The Optimization Feeder allows users to access data from multiple sources to perform complex calculations and analysis, for direct visualization or ingestion to another tool.



Benefits



Reduction in OPEX
by ~5-10% per year



Improved Data
Quality by ~50%



Improved Productivity
by 30%



Asset Healthcare – Driving Zero Unplanned Shutdown

for 40+ Petrochemical Plant operations Globally

A ME based Energy client was facing the following challenges-

- ⦿ Rising Maintenance OPEX but decreasing Asset availability and frequent unplanned breakdowns of critical equipment
- ⦿ Inconsistent reliability of processes across sites and no visibility at enterprise level on real time performance across plants

Solution

- ✓ We developed 6500 AI based Anomaly and Failure Prediction Models for ~2500 complex equipment (Extruder, Compressor, Boiler, etc) for 40+ Petrochemical plants
- ✓ Achieved 85% accuracy for all the models developed
- ✓ **"One" dashboard** was launched for near real time predictive and prescriptive Decision Support System (DSS) across Enterprise for alerts monitoring, tracking, reporting. Dynamic Prescriptive Recommendations feature was enabled with auto-enrichment of failure modes



Benefits

\$10-15 M/yr

Savings through 0.5% Production Loss Savings



\$5 M/yr

Reduction in Spare Parts and Manpower



What we solved –



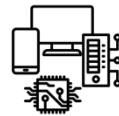
Unplanned Downtime of critical assets



Increased OPEX



Low inventory turnover ratio & high warehouse hold cost



Disparate and multiple siloed systems across the value chain



Lack of enterprise level real-time visibility



1 Data Ingestion and Data engineering



2 Data pre-processing



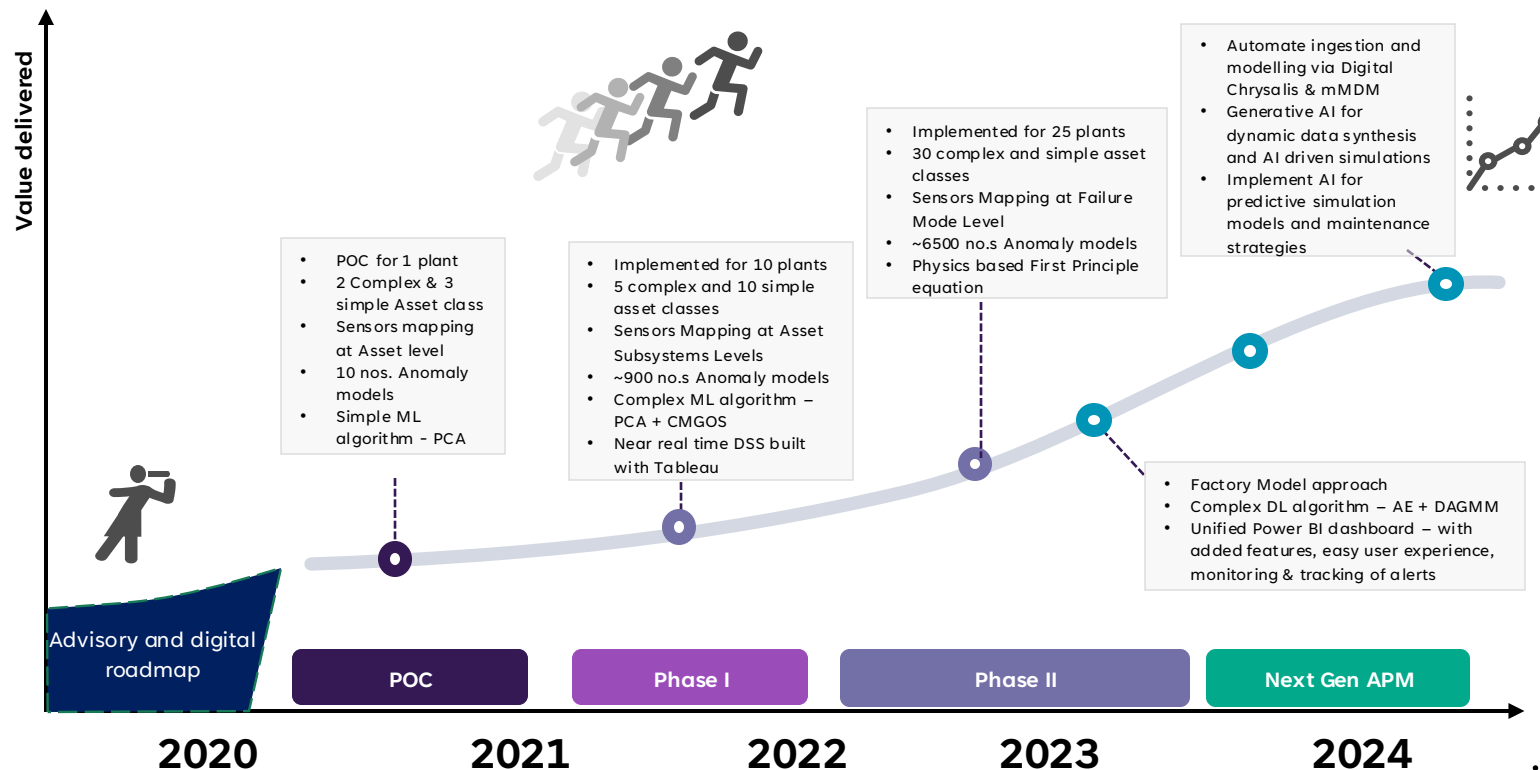
3 Feature Engineering



4 Modelling



5 Prediction on live data



How the replicable solution components can be re-used and leveraged across similar industries – ease of deployment & scalable



Through the AHC journey we have built multiple replicable solution components for easing deployment across Asset intensive industries (templates, library, framework and automated data science pipeline etc.)

01

Data Gathering

02

AI/ML Cockpit

03

Deploy

Easily deployable leveraging existing templates, standards, model pipeline, process and frameworks



MARA (Maintenance and Reliability Assessment) Framework



FMEA Library



Asset Class Specific Mapping Templates



First Principle Equation directory



SME Playbook



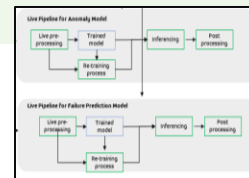
Standard EDA process & sensor based feature engineering



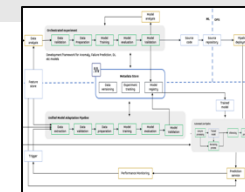
Ready to use ML/DL operators



Asset class specific configurable model



Automated model validation framework



Automated feedback mechanism process

Energy - Oil & Gas

Petrochemical, Chemical and Linear Assets

Utilities, Manufacturing



Shutdown, Turnaround and Outage Management

Wipro's Cloud Native STO Application, Co-Developed with SAP and being deployed



- **STO Importance:** STO events are critical to energy industries to ensure assets perform to their intended design capability efficiently and safely.
- **Cost Overrun:** Most organizations today experience schedule & cost overruns impacting their planned production & profitability
- **Drivers:** Competitive pressure, regulatory compliance, and technological innovation, driving significant spending on strategy design, business process re-engineering, and IT development
- **Integration & Optimization:** Historically grown STO process & systems, lack integration among existing systems impeding optimization and real-time visibility

An in-depth analysis of STO processes & IT landscape in some of the largest O&G energy companies identified the following issues:



Lack of process standardization



Lack of a platform for collaboration leads to communication break-down and operational inefficiencies



Processes spread across several siloed applications leading to information loss and the inability to track STO tasks



Recalibration and adjustments of STO plans are complicated and inflexible



Lack of real-time integration across the various applications



Applications are complex and not intuitive leading to limited adoption



Lack of real-time visibility into the state of STO operations leading into inefficient and ineffective decision making, high risk and overruns

- **Wipro STO360 Overview:** Comprehensive end-to-end solution for managing STO events of any complexity
- **Cloud-Native Architecture:** Ensures high availability, scalability, and performance
- **User Experience:** Intuitive multi-channel interface with responsive and adaptive design

- **SaaS Offering:** Rapid deployment and go-live with a subscription-based model
- **Seamless Integration:** Compatible with SAP, S/4HANA, Oracle Primavera P6, Microsoft Project, and other third-party platforms
- **Real-Time Data Exchange:** Supports bi-directional integration for enhanced operational efficiency

Companies that implement Wipro STO360 Cloud application will achieve the following benefits

- 01 Optimized STO processes and practices
- 02 Enablement of paperless operations – mobile handheld devices
- 03 Reduced STO durations and extended time between successive STOs
- 04 Improved plant mechanical integrity
- 05 Reduced maintenance and inspection costs
- 06 Reduced risk exposure & increased safety in work practices
- 07 Realtime visibility of field work progress centrally
- 08 Stronger environmental and regulatory compliance
- 09 Improved employee morale and community perceptions
- 10 Integrated STO planning, work clearance management

Benefits Realization of Wipro's Cloud native STO application

With successful implementation of STO360 solution, it has been estimated that **the shutdown duration can be shortened by 5~10% equivalent to ~\$15M savings potential** (measured against 40 days planned TAR program for any refinery with capacity 350K barrel/day) which is direct tangible benefits apart from other indirect value levers like optimized process, seamless integration, real-time visibility etc.



AI based Spare Parts Optimization

for 40+ Petrochemical Plant operations Globally



- Delivered an “AI driven decision support system for MRO spares” for real-time tracking, alerts and recommendations based on dynamic demands
- Developed this integrated solution (Informatica + Cloudera + IBM Watson + Tableau) from scratch in client environment and built an AI driven mathematical optimization model following the below approach -
 - Gather the lead time, demand, and cost of all spare parts
 - Analyse demand criticality using ABC-XYZ analysis
 - Set up mathematical optimization EOQ model to find the optimal order quantity
 - Calculate minimum levels of safety stock
 - Calculate indicative optimal level
 - Post alerts and recommendations based on present stock and upcoming planned consumption
 - Enable scenario-based planning through change in main three inputs - cost, demand, and lead time

Benefits



2~4% reduction in overall Inventory cost



Single source of truth –from visibility to Interchangeability



To Identify dormant, obsolete, or excess inventory



AI enabled Smart Isolation

For a KSA based Integrated Global Energy Major

- A Smart digital solution to manage the blind isolations during turnaround and eliminate the age-old manual procedure of marking the blinds on P&ID and tracking the isolations of process lines through manual site visits
- Laser scanning of assets to create point cloud models followed up with 3D model creation. These 3D models are then superimposed with isolation procedures and marking of suitable platforms and planning of scaffoldings to execute isolation activities
- Introducing 4IR technology to validate the isolations through multiple options such as IIoT, RFID, Barcodes, Computer Vision technology coupled with Photometry for detecting anomalies and reporting it over dashboard
- Introduction of MoC into the 3D models for carrying out activities during Turnaround

Benefits



Reduced Turnaround Time: Achieved 1-2% reduction in turnaround duration translating to \$2~\$4 Million



Streamlined Turnaround Processes: resulting in error-free operations




Enhanced Safety and Compliance and Optimized Resource Utilization



Niche Asset Integrity Solutions

Offered by Cenosco




HYDROCOR

Corrosion Prediction Software enabling prediction of Internal Corrosion and best material selection for pipelines and equipment

Features:

- Cloud-Based Corrosion Prediction
- Material Selection and Maintenance Optimization
- Cost-Effective Safety



EVA (Extreme Value Analysis)

Statistical Method to Calculate Heat Exchanger Tube Wall Thickness and predict remaining useful life of heat exchangers and track their performance

Features:

- Efficient Sampling and Prediction
- Statistical Accuracy
- Lifecycle Management of Exchangers



Benefits



Minimize CAPEX for new projects and Optimize OPEX for existing facilities



Optimized Inspection Scheduling leading to significant time and cost savings



Enhanced Reliability and Risk Assessment



Cycle Time Reduction



Subsurface and Wells

Subsurface process automation and AI-ML to reduce the E&P lifecycle timeline

- Wipro has Subsurface and Wells discipline experts for Geology and Geomodelling, Geophysics, Geomechanics, Petrophysics, Petroleum and Reservoir Engineering
- This expertise is applicable for Basin Analysis, Seismic Delivery, Well Planning, Subsurface Modelling and Field Development Planning
- Our Subsurface and Wells capabilities enable us to deliver core geoscience workflows together with applying digital innovation through data integration, AI-ML and plugin development to streamline and make workflows more efficient



Benefits

- Delivers standardized and streamlined geoscience workflows
- Optimized field development planning and well placement
- Reduced non-productive time (NPT)
- Increased modelling accuracy for better production forecasting
- CAPEX and OPEX optimization



Collaborative Work Environments





Know Sooner, Decide Faster, Perform Better

- Over 20 years, Wipro has delivered 100 CWE engagements, specializing in IO, Smart Fields, and future asset planning, offering comprehensive transformation services
- CWE design leverages existing tools for quick value; enhancing collaboration and performance with expert monitoring and advanced analytics.
- Applied to Integrated Operations, the CWE approach incorporates business-driven design to support business processes and value drivers, guided workflows, engineering centralization, support function integration, performance dashboards and reduced HSSE exposure as more activities can be performed onshore.



Cycle Time Reduction

Benefits

-  Deferment Gains, Increased Production and an average 500% ROI on project cost
-  Optimized resources and decision-making yield business benefits: fewer cancellations, more surveillance, reduced SIMOPS/HSSE issues, better scheduling, increased equipment availability
-  \$75M annual business benefits from Wipro's CWE implementations for one customer alone through Production and Availability gains of 1% to 5% and value creation of \$5M to \$10M per asset
-  An implementation of onshore surveillance and analysis for an offshore business unit fleet of compressors led to tens of millions of dollars of savings over a 3-year period



OSDU



Optimizing geoscience workflows to drive faster, better business decisions

- Wipro, an active OSDU® Forum member, supports energy companies with OSDU® Data Platform deployment, use case execution and development of OSDU® accelerators
- Our optimized OSDU® transformation approach enhances geoscience workflows, addresses pain points, and fills gaps, boosting data confidence and reducing subsurface risk

- Wipro's OSDU® services and solutions encompass:**
- OSDU® Workflow and Transformation Consultancy
 - OSDU® Data Management Solutions
 - OSDU® AI/ML accelerators

Benefits

- Business focused workflows fostering operational interoperability
- Data Centric Approach promoting increased data accessibility, innovation, data confidence to drive critical business decisions



Digital Twins



Plant Engineering Delivery Center

Wipro partnered with Princess Nourah University and ME based Global Energy Major to establish the Women's Business Park

25+ Oil field locations






Utilities substation in multiple locations

Bulk Plant sites

- Dedicated team of engineering discipline and domain engineers
- Dedicated near shore engineering center in Riyadh and Khobar
- Certified field engineers for Site job
- As built update of 08 lakh engineering drawings & P&ID
- Dedicated access to clients-plant system
- Detailed Engineering
- Asset Digitalization
- Engineering Information Management
- Equipment Cataloging
- Conversion to Smart drawings & design enabling to digital twin



Benefits

-  Automation technologies for significant cost reduction & data processing
-  Multi-discipline plant engineers pool
-  Well-versed with client's engineering & quality standards
-  Operational efficiency with the automation, customization of engineering tools
-  Leveraging with Wipro accelerators like CADFIX, CADIQ, Smart PID conversion tool



Industry DOT: Design to Operations Twin empowered with NVIDIA Omniverse

AI Enabled Model Based Industry Platforms for Digital Transformation

Objective:

Enhance asset optimization, workforce productivity, and safety; improve quality, reduce costs, and accelerate time to market

Industry DoT Solution:

- **Core Approach:** Multi-Discipline Plant Engineering with Model-Based Design
- **Central Components:** Utilizes Digital Twin and Digital Threads
- **Integration:** Consolidates design, engineering, and manufacturing into a unified system

Key Technologies:

- ✓ Cloud Computing
- ✓ Digital Twin
- ✓ Big Data Analytics
- ✓ Augmented Reality (AR)/Virtual Reality (VR)
- ✓ Artificial Intelligence (AI)/Machine Learning (ML)
- ✓ Automation and Robotics



Benefits

- Digitalized Engineering and Product Design
- Intelligent assets and factories
- Software-defined operations
- Integration with Design Systems and Operations such as PLM and MES to define, monitor and improve manufacturing for Productivity and Quality Improvement
- Validation of Manufacturing Processes with Simulation driven by the Digital Twin models
- Infuse insights and automation throughout the value chain to enhance collaboration, control, and efficiency
- Interfaces to develop any kind of Manufacturing Application for Productivity, Operations, Quality, Safety and Surveillance, Sustainability
- Streamlined operations and enhanced efficiency
- Improved decision-making through integrated insights



Multi-Discipline Plant Engineering

End To End Engineering Partner for Basic Engineering, Detail Engineering and As-Built Engineering

Engineering: Wipro as an E2E Manufacturing Technology Service Provider For enabling “Factory of the Future”

Multi-Discipline Plant Engineering
in various stages like FEL1, FEL2, FEL3, EPCC by enabling companies bring NextGen smarter and sustainable Plants, Products to market faster and drive business success

Wipro's IP + Products
Automation Tools to bring speed in core engineering work. 40-50% reduction in manual effort in legacy to smart data conversion

Total cost of ownership by Wipro Engineering Services
Nearshore/Offshore based core flex program option enabling fixed operating cost reduction 25 - 30%

Quality, data cleansing and data management
Bring best practices in data handover and management of specifications by industry standards (ex: JIP, CFIHOS)



Benefits



Multi skilled competency



Multi year large engagement with global energy customer in EIM and AMS with strong partner ecosystem with EIM vendors



Experience in site survey & field services with experienced industry consultants



Plant Engineering and Digital Engineering CoE



Leveraging with Wipro accelerators like CADFIX, CADIQ, PROFICIENCY



Digital Platforms



Information Management Capability Transformation

Document Control and Automation for a North American Client's Capital Project

- Wipro provided IM Managed Services over a ~8-year timeframe to transform the control and process management capabilities for capital project documentation
- Established a service model to drive standardization, process controls, procedures / guidelines, MDM alignment, performance reports, continuous improvement and knowledge sharing / reuse. Scalable across capital project portfolio
- Applied to all document and data processes in the end-to-end capital project lifecycle
- **Engineering Data Digitization (EDD)** through Wipro's Digital Chrysalis Service. Artificial Intelligence (AI)-based solution that automates the digitization process of engineering documents (e.g. PFD – Process Flow Diagram)
- Purpose-built information, creating integration between assets, processes, systems
- Significantly lower processing costs, higher quality assurance, and increased scalability across different types of processes and documents

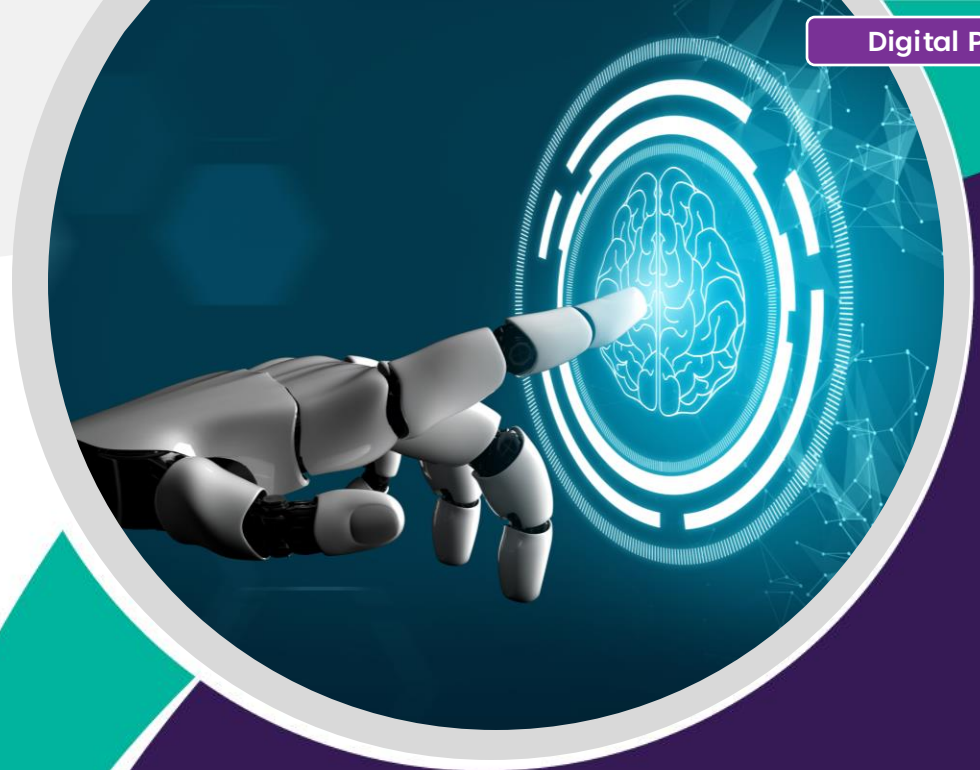


Benefits

- ✓ Automation of activities reduced manual effort in document processing by over 70%
- ✓ Reduction in turnover of staff and knowledge leakage
- ✓ Reduction in cost of processing documents by over 85%
- ✓ Increased productivity to 100,000 documents per quarter, reducing team size from 20 to 3
- ✓ Increased reliance on quality check and decreased duplicate elimination efforts
- ✓ Establishes the foundation for Operation and Maintenance optimization programs (e.g. Digital Twin)
- ✓ Monitoring KPIs allowed for focused improvement initiatives to reduce errors, rejections and rework by 75%



Enterprise-wide IT Consulting to drive Digital Transformation – Application Rationalization



Accelerate digital transformation to improve efficiency, reduce cost and remove complexity

Background:

The organization was facing significant challenges in aligning its business capabilities with its strategic goals, primarily due to suboptimal business processes and technology infrastructure

The business capabilities were not clearly defined, leading to inefficiencies and a lack of strategic focus. The application inventory was outdated, which hindered the effective utilization of technology in business operations

Solution Delivered:

Transformation Assessment:

- **Initial Step:** Detailed evaluation of the current business state
- **Activities:** Data discovery and mapping to comprehend existing business capabilities and application landscape

Implementation Scope:

- **Delivery:** 15 distinct tracks covering various business aspects
- **Approach:** Broad and multifaceted to ensure comprehensive transformation across the organization

- i. The initiative was structured into seven stages, each focusing on a critical component of the transformation
- ii. **Strategic Intent:** Establishing the business unit strategy, incorporating an outside-in view, and defining vision, goals, KPIs, initiatives, industry reference models, and best practices
- iii. **Current Business Capability Mapping (up to Level 4):** Detailed mapping of current business capabilities to understand the existing state and identify gaps
- iv. **Target Business Capability Model (up to Level 4):** Defining the desired future state of business capabilities to align with strategic goals
- v. **Information Architecture (Level 1/Subject Area):** Establishing a structured framework to manage information effectively
- vi. **Application Inventory:** Cataloging current applications to assess their alignment with business needs
- vii. **Application Portfolio Health Assessment:** Evaluating the health and performance of the existing application stack
- viii. **Technology Roadmap:** Planning future technology initiatives to support desired business state

The transformation aimed to address areas identified as "Significantly Problematic," which included suboptimal processes or systems that hindered business efficiency and effectiveness



AR Key Drivers

What are the Organizational or Enterprise strategic drivers for Application Rationalization:

1. Digital Transformation
2. Cost Rationalization
3. Business Agility
4. Portfolio Modernization
5. Cloud adoption
6. Risk reduction



AR Methodology

Application's value to the organization (based on the following four dimensions)

1. Business Value
2. Technical Value
3. Value due to Risk avoidance
4. Cost saving

Rationalization based on TIME quadrants

1. Tolerate
2. Invest
3. Migrate
4. Eliminate



AR Approach

Discover

1. Gather application inventory
2. Conduct 360-degree surveys
3. Build analysis criteria

Analyze

1. Deep dive opportunities
2. Plot analysis criteria on TIME quadrant

Review

1. Provide recommendations
2. Review the findings
3. Look for high business value quick wins

Action

1. Actionize quick wins



Benefits

01

Standardization of Application across enterprise for effective support by shared service

02

10%-20% Potential savings from application rationalization and license optimization

03

Standardized capabilities, business processes and data model to reduce cost, complexity and drive efficiency - Reduction in Unit Production Cost through Lean Operations

04

Single view of IT and Digital landscape with Improved process efficiency and operational excellence and business agility for future growth

05

Achieved a more aligned and coherent structure between business capabilities and the organization's strategic goals, which facilitated more informed decision-making and strategic planning

06

Enhanced operational efficiency and productivity through a clearer understanding of the current state and identification of critical areas for technology and process enhancement

07

Accelerated Digital Transformation- Reducing Cycle Time for prospect selection for exploration

08

Propagation and Sustenance of best practices in B,D,A,T Frameworks which are always aligned to changes in strategic imperatives



Process, Workflow-Orchestration and Optimization

Wipro's POV on sandbox for subsurface workflow innovation

- Sandbox to create and play with workflow ideas and best practices in a safe environment before production
- Orchestration of business and technical workflows within apps and platforms


Ex 1: AFE for exploratory well following PM approval gates. Approval needs PDDP (pre-drilling data package), economic analysis, risks and remedies, civil infra, HSSE, environmental impact, etc.


Ex 2: Orchestration of building subsurface models – Need geophysical, petrophysical, well data, lab data, etc. Build best practice workflow using a guide app like Petrel

- **Process automation – technical workflows at app or platform level**
Ex 1: Static modelling– Use RPA to reduce the number of clicks needed for a geo-modeler to complete the activity. Only crucial steps will have manual intervention and validation




Solution Capabilities

 **Automated seismic interpretation**- Automated Horizons, Automated Fault Detection, Automated salt top, unconformity, and Geo-bodies

 **Automated static modeling**- Digital Cuttings with AI/ML, Digital Thin sections with AI/ML, Workflow automation Plug-ins

 **Automated dynamic modeling**- Assisted Model Builder, Assisted History Matching, Workflow automation Plug-ins

 **Optimized field development scenarios**- Plug-in tool for PETREL-Eclipse, Multi-objective optimization, Reactive Simulation Monitoring



Energy Transition



Reference Architecture for CCS

Designing the Future: Reference Architecture for Carbon Capture and Storage (CCS) Value Chains

Background:

- CCS Reference Architecture for CCS plays a critical role for driving sustainable energy practices and achieving Net Zero targets within the oil and gas industry
- Reference architecture provides reusable designs, and industry best practices that enables you to make choices of optimal combination of B,D,A,T

Reference Architecture for CCS:

- The proposed reference architecture starts by defining the highest abstract layer of the CCS business value chain, which adapts the traditional Oil & Gas value chain segments (Upstream-Midstream-Downstream) and introduces a new segment called “Low Carbon Solutions.”
- The architecture is detailed through six distinct levels: business capabilities, functions, platform, services, data, and sources/sensors. Each level is meticulously designed to cater specifically to the needs of the CCS sector and these layers interact and integrate to foster efficiency and create value within the CCS domain.



Benefits



Future ready architecture accommodating advanced analytics and machine learning



Scalable and flexible architecture for easy incorporation of emerging IT,OT, IoT applications and sensors for reliable MMV



CCS-specific digital platform integrated with multiple internal and external stakeholders to ensure trust and transparency



Enabling physics-based simulations for optimal reservoir performance, high performance computing



Impact of a Robust Reference Architecture on CCS Projects: Standardizing Data Collection, Lean Operations, Automating Processes, Enhancing Collaboration and Decision Support



Building the Technology Foundation for Sustainable Aviation Fuel (SAF)

Supporting De-Carbonization Goals by SAF enablement across the aviation industry

- Establish a solid base of refined fundamentals via ensuring strong collaboration and consistent engagement with System Owners & SAF users; enabling SAF (as a new product offering) to be integrated into existing legacy applications while ensuring seamless aviation operations
- Examples of systems in scope include SAP/ERP, Contract Management, Pricing, Airfield Operations, Master Data, etc.
- Build enhancements for Certificate Management by establishing a robust system for tracking & verifying SAF production and usage, ensuring capability in managing all phases of the certificate lifecycle
- Build enhancements to the developing Book & Claim business model, facilitate the flexible trade of SAF



Benefits

- 1 Allowing business to have streamlined processes right to support SAF supply to customers
- 2 SAF integrated into multiple existing applications, streamlining of SAF ops, definition of standardized business processes
- 3 Proposed solution will help business to achieve an indicative IRR of ~33%, an NPV of ~4.4 million USD, and an opportunity cost of ~5%
- 4 Enabling business to have a robust process for book & claim in next 3 years.
- 5 Proposed 3-year plan around advocacy, business & system development for Book & Claim



e-Mobility Charge Points

Background / Challenges:

- Lack of structured incident, problem, and change management processes
- Need for improved discipline, transparency, accountability, and communication
- Requirement for functional and technical knowledge of the landscape
- Necessity to work effectively across various business, IT, and vendor groups

Solution:

- Anchor and structure the incident, problem, and change management processes to enhance reporting, transparency, and accountability
- Define metrics and principles to drive efficiency and continuous improvement
- Utilize experience from similar projects to improve service delivery
- Develop effective reporting principles to act as a feedback mechanism for ongoing improvement
- Implement effective risk and issue management strategies
- Structure the Level 1.5 and Level 2 support ecosystem in e-Mobility

Benefits

- 1 Improved discipline, rigor, communication, and quality of service at a cost-effective price point
- 2 Enhanced structure and accountability in handling incidents, leading to more efficient operations
- 3 Proactive monitoring and crisis management to handle critical incidents, such as global users being unable to charge vehicles
- 4 Continuous improvement through effective feedback and reporting mechanisms
- 5 Better collaboration and sensitivity towards the landscape, working effectively with various groups

Thank You.

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