



Topic

Industry 5.0 & Local Content: Engineering Technology, Asset Performance & Information Management

Presented by
Dr. Ibilola Amao

Designation:
Principal Consultant



1. Background & Track Record
2. Partnerships to Build “In-Country” Capacity, Capability & Competence
3. Industry 5.0: Asset & Information Management Systems
4. Digital Transformation, 4D, 5D & 6D Systems
5. Digital Transformation Outcomes
6. Industry 5.0: Digital Transformation & Data Optimization
7. High Value Delivery Solutions (Energy Transition & Digital Transformation)
8. Asset Performance & Information Management System
9. Asset & Information Management Systems
10. Industry 5.0: Digital Transformation & Data Optimization
11. ADNOC Digital Transformation – IoT, Big Data, AR, VR, MR, XR
12. The Changing Landscape: Energy Transition & Digital Transformation
13. Roadmap for Value Addition, Efficiency & Profitability

Background & Track Record

Creating Value, Enhancing Performance.



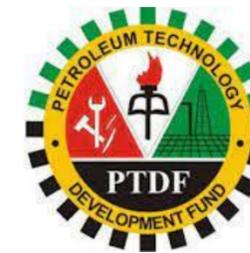
1. Energy Transition: Gas Utilization, Hydrogen, Renewables, Energy as a Service, Green Infrastructure
2. Digital Transformation: IT Integration, Cloud Technology, Big Data, Data Analytics, AI, IoT, AR, VR, MR, XR, Blockchain, Drone Technology, Robotics,
3. EPC Solution: Engineering (Conceptual, FEED, DED), Procurement, Construction, Fabrication, Hook-up & Commissioning
4. Asset Management: Operations, Maintenance, Business Intelligence (Predictive & Prescriptive Analytics)
5. Industry 5:0: Systems Integration, Democratization of knowledge, automated networks, innovation, IoT, Wireless Connectivity, Big Data, AI, Cobotics, Miniature Sensors, Controls, Instrumentation networks, Data & Systems Security.

Company Overview

Lonadek Global Services (www.lonadek.com) is a multi-award-winning, woman-owned, ISO:9001: 2015 Certified Engineering Technology and Innovations Solutions Company. Since 1991, Lonadek empowers STEM/TECH talent to deliver state-of-the-art technologies and OEM solutions.

With operations in Africa, Europe and the Middle East, Lonadek is committed to developing capacity, capability and competence for improved performance in STEM focused sectors of the economy. The goal of Lonadek is to identify, develop and engage talent while leveraging technology to increase efficiency, productivity & profitability.

Lonadek has an excellent service reputation in outsourcing, STEMpreneurs and TECHpreneurs in the Energy, Power, Infrastructure and Oil & Gas industries. We serve other sectors such as Manufacturing, FMCGs, Telecoms and Mining.



Skills Gap Audits: 2005/2006, 2009/2010 & 20017/2018

We have empowered over 5,000 Engineers. 100,000+ STEM Talent & Over 15,000 TECH Talent through Partnerships

AtGlobal Services we align People, Technology, Engineering Solutions and Services to Improve Society.



Our Network & Collaborations

Creating Value, Enhancing Performance.



AVEVA & Lonadek's 20 Years of Value Creation (2023)

Creating Value, Enhancing Performance.



Partnerships to Build “In-Country” Capacity, Capability & Competence

Creating Value, Enhancing Performance.

	Parties	Capacity Building	Dates
1.	Capacity Development & Training	NETCO (NLNG & Shell)	1999 - Date
2.	NCDMB/PTDF Skills Gap Analysis	Training of 350 Engineers on AVEVA PDMS	2004/2005
3.	NCDMB/PTDF Skills Gap Analysis	Training of 150 Engineers on AVEVA PDMS	2006/2007
4.	POC & Implementation of AVEVA Net	Chevron Agbami FPSO (POC & Solutions Implementation)	2007 - Date
5.	AVEVA 3 rd Party Service Delivery	Technip Angola	2008
6.	AVEVA 3 rd Party Service Delivery	TOTAL	2010 - Date
7.	AVEVA Support Services	Chevron (Annual Training of Staff)	2006 - 2021
7.	Capacity Development & Training	Engineering Design Companies (1000 + Users)	2003 - Date

31 years of service.
Training Engineers, deploying Engineering Technology & Supporting CADD Systems Implementation

Implementation of Local Content Agreements for Engineering Technology & Innovation Solutions

Skills Gap Analysis Upstream, Midstream & Downstream. In-house NCD Consultancy at an IOC

Skills Gap Analysis, Delivery of 300,000 Engineering Man-hours through establishing Oil & Gas Design Engineers of Nigeria (OGDEN)

Capacity, Capability, Competence and Skills Development Under the NCDMB Human Capital Development Initiatives.

PETAN, OGTAN & WIEN Member.



Energy Security Solutions:

1. Accelerated Seismic Acquisition & Processing
2. Safe Operations
3. Efficient Management of Costs
4. Prioritizing Asset Integrity Maintenance
5. Production Promise Optimization
6. Turn Around Maintenance (TAM) Solutions

Engineering Design Companies:

1. NETCO
2. DeltaAfrik
3. CresTECH
4. IESL Global
5. ILF
6. Dover Engineering,
7. Amazon Energy
8. Point Engineering,
9. Ariosh
10. AVEON Offshore
11. Baywood Engineering,
12. Homick
13. DormanLong
14. SAIPEM
15. NigerDock

Execution Excellence, Operational Excellence, Cost Excellence & Commercial Excellence

Industry 5.0: Asset & Information Management Systems

Creating Value, Enhancing Performance.

Energy Security, Energy Transition, Digital Transformation and Industry 5.0 are key drivers of Sustainable Development. Leveraging **Industry 5.0**, **STEM** & **TECH** talent working alongside robots and smart machines as cobots are poised to increase efficiency. The Future of Work will be hinged on Working From Home (WFH), Working From Anywhere (WFA) and INTRApreneurs offering Software-as-a-Service (SaaS) solutions remotely leveraging the Internet of Things (IoT) and big data.

Industry 5.0 is regarded as the next industrial evolution. Its objective is to leverage the creativity of human experts in **collaboration** with **efficient**, **intelligent** and **accurate machines**, in order to obtain resource-efficient and user-preferred solutions based on **historical**, **real-time** and **predictable data**. It involves optimizing Human Machine Interaction.

Industry 5.0 involves delivering Asset & Information Management Solutions through a Global 1D-6D Vision Approach that allows process, energy and marine industries to manage all their plant engineering data real-time and online:

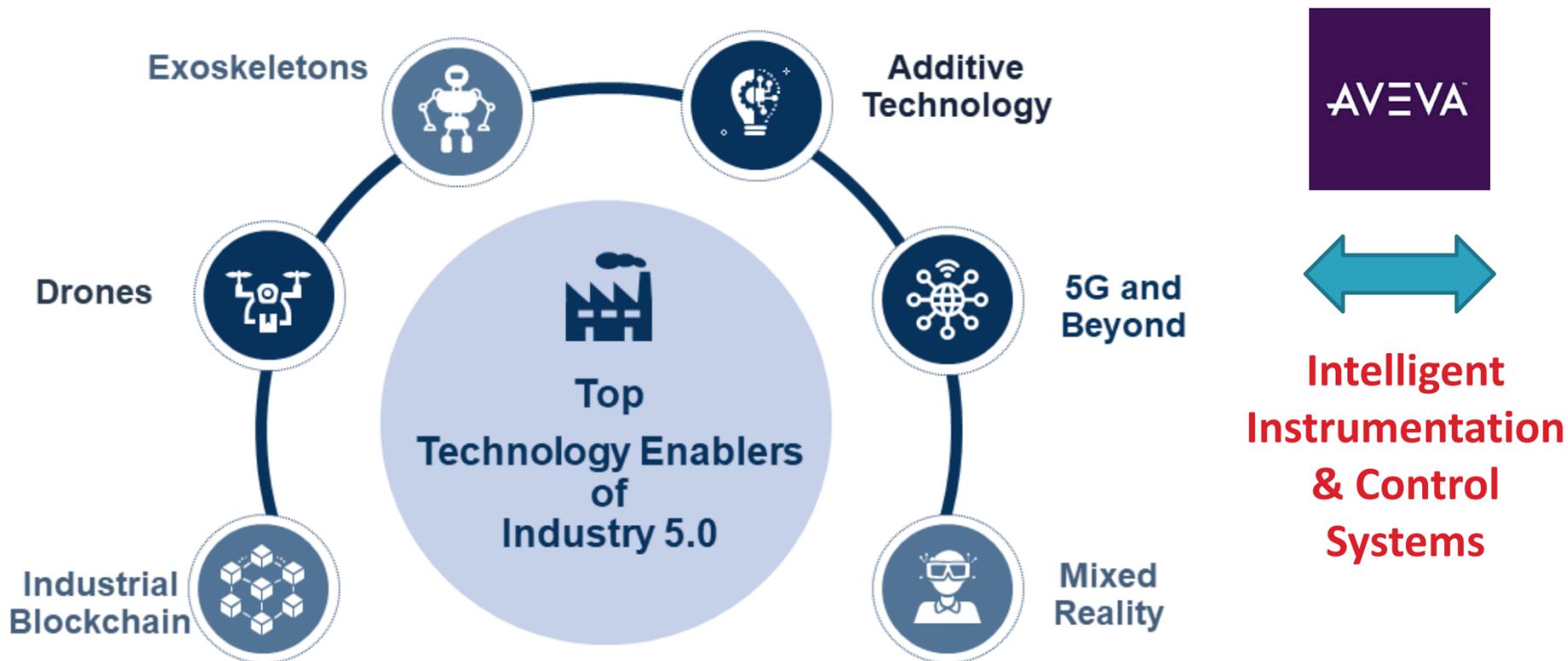
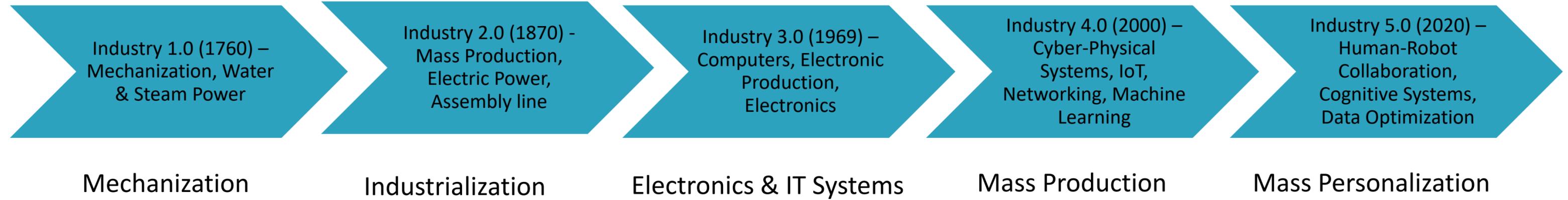
1. 1D: Lists & Datasheets, 2D: Drawing & Schematics, 3D: Models & Laser Scans, 4D: Times, 5D: Costs, 6D: Performance.
2. Data Optimization to Improve Business Intelligence & Reduce Operational Costs
3. Interconnecting Resources (Global & Local) to optimize world-class STEMpreneurs, TECHpreneurs & INTRApreneurs

1. Industry 5:0: Systems Integration, Democratization of knowledge, automated networks, innovation, IoT, Wireless Connectivity, Big Data, AI, Cobotics, Miniature Sensors, Controls, Instrumentation networks, Data & Systems Security.
2. Digital Transformation: IT Integration, Cloud Technology, Smart Mobility, Big Data, Data Analytics, AI, IoT, AR, VR, MR, XR, Blockchain, Electronic Document Controls & Management, Drone Technology, Robotics, 3D Printing, Digital Twins etc.
3. 4D & 5D Systems (Greenfield & Brownfield Energy Assets): Construction Planning, Project Management, Cost Optimization, Procurement etc.
 - Green Field: Conceptual, FEED, DED, Fabrication, Construction, Hook-up, Commissioning, Operations, Maintenance
 - Brown Field: DED, DED, Fabrication, Construction, Hook-up, Commissioning, Operations, Maintenance



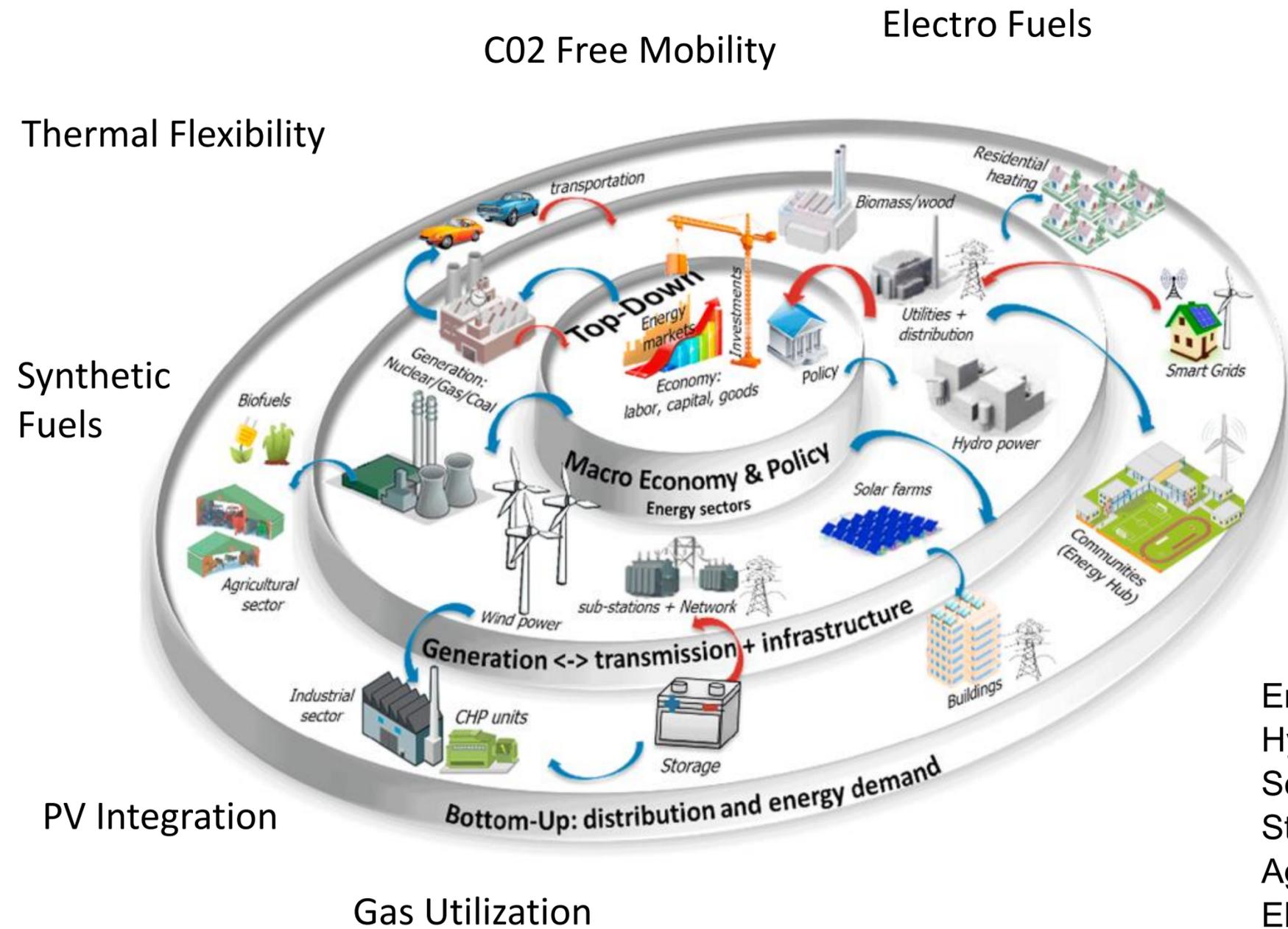
Industry 5.0: Digital Transformation & Data Optimization

Creating Value, Enhancing Performance.



High Value Delivery Solutions (Energy Transition & Digital Transformation)

Creating Value, Enhancing Performance.



1. AR/VR/XR/MR
2. Autonomous Systems
3. Brain Computer Interface (BCI)
4. Robotics
5. Efficient Technologies
6. Digital Twin
7. 3D Printing
8. Machine Learning
9. Image Recognition

Energy Transition: Gas Utilization, Hydrogen, Renewables, Energy as a Service, Transmission, Distribution, Storage, Digitalization, Data Aggregation, Green Infrastructure, Electric Vehicles etc.

History of industrial revolution	
1.0	◆ 1780 - Mechanisation Industrial production based on machines powered by water and steam
2.0	◆ 1870 - Electrification Mass-production using assembly lines
3.0	◆ 1970 - Automation Automation using electronics and computers
3.5	◆ 1980 - Globalisation Offshoring of production to low-cost economies
4.0	◆ Today - Digitalisation Introduction of connected devices, data analytics and artificial intelligence technologies to automate processes further
5.0	◆ Future - Personalisation The fifth industrial revolution, or Industry 5.0, will be focused on the co-operation between man and machine, as human intelligence works in harmony with cognitive computing. By putting humans back into industrial production with collaborative robots, workers will be upskilled to provide value-added tasks in production, leading to mass customisation and personalisation for customers

Pain Points: Remote Monitoring, Alternative Crude Evacuation, Flare Solutions, Aging Facilities, Power Optimization etc.

Digital Transformation in the Oil & Gas Industry

	Exploration & Production
	Refining
	Petrochemicals, Chemicals & Fertiliser
	Power
	Marine, Logistics, Deep Water & Subsea
	Pipelines, Flow lines and Umbilicals
	As Utilization (LNG, LPG, CNG etc)

Creating Value, Enhancing Performance.

SIEMENS **GE** **aws**
SAP **Microsoft**
HALLIBURTON
AUTODESK **Baker Hughes**
AVEVA **YOKOGAWA**
ICDL International Computer Driving Licence **IBM**
slb
Bentley
ptc **EMERSON**
Honeywell **ORACLE**
INTELEX **ULTIMO**
MathWorks

Human Capital Development Initiatives (HCDIs)

Creating Value, Enhancing Performance.

Greenfield

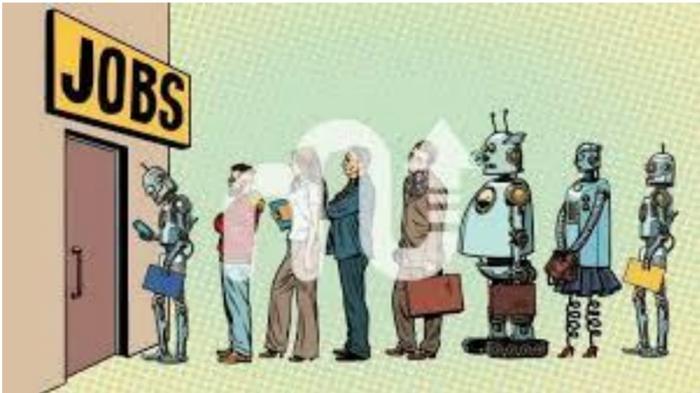
Exploration Phase

- Seismic activities
- Drilling services
- Marine support

Development Phase

- Engineering and project management
- Hook-up and commissioning
- Drilling rigs and services
- Construction and fabrication of structures
- Marine support
- FPSOs supply and operation
- ROVs supply and operation

6mths to 5 years



Brownfield

Production Phase

- Operations & maintenance services (Field review & optimization)
- Retrofit work
- Structural maintenance/upgrade
- Equipment maintenance and upgrade
- Marine support
- FPSOs supply and operation
- ROVs supply and operation

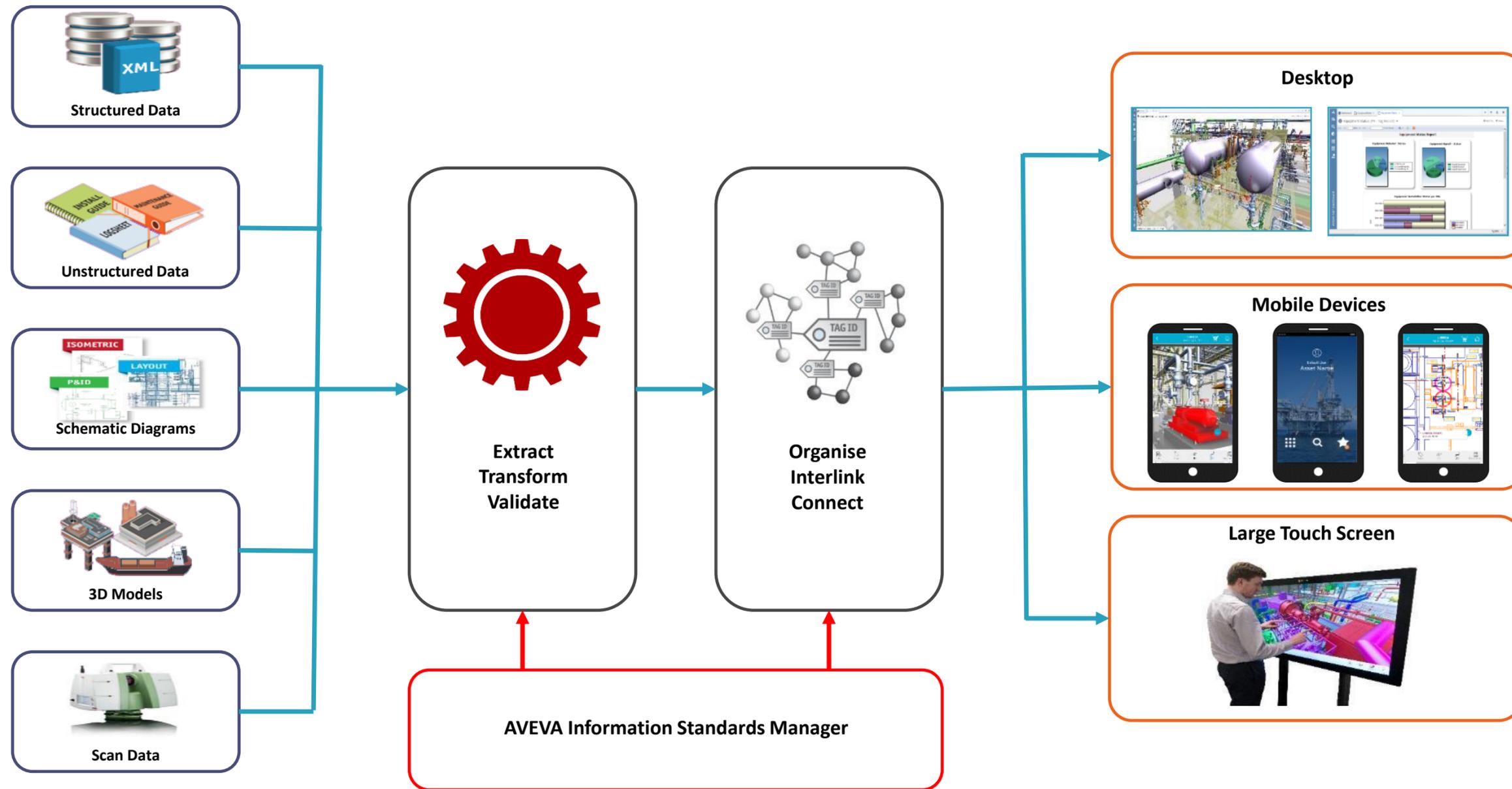
Abandonment Phase

- Well plugging
- Dismantling of structures
- Decommission machinery and equipment
- Marine support

25 – 100 years

Asset & Information Management Systems

Creating Value, Enhancing Performance.



AVEVA NET Gateways

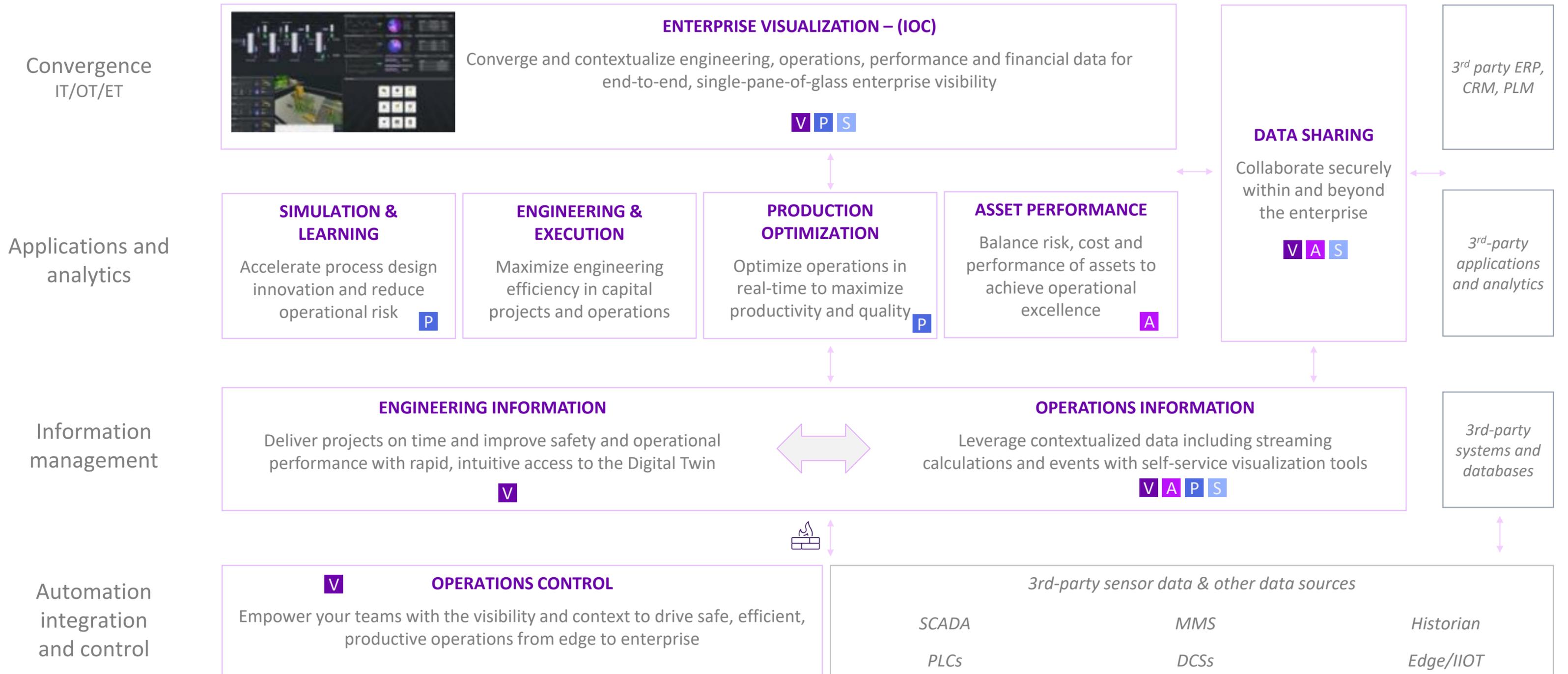
Digital Transformation Architecture

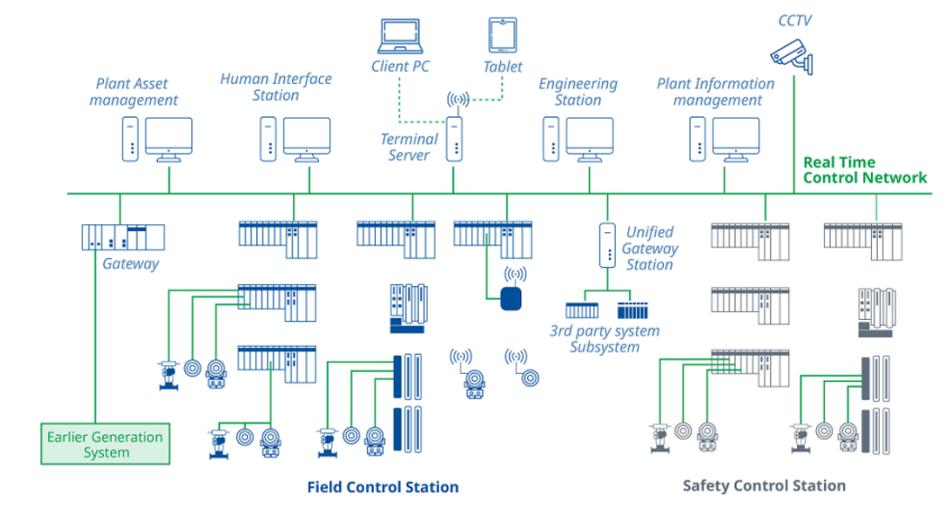
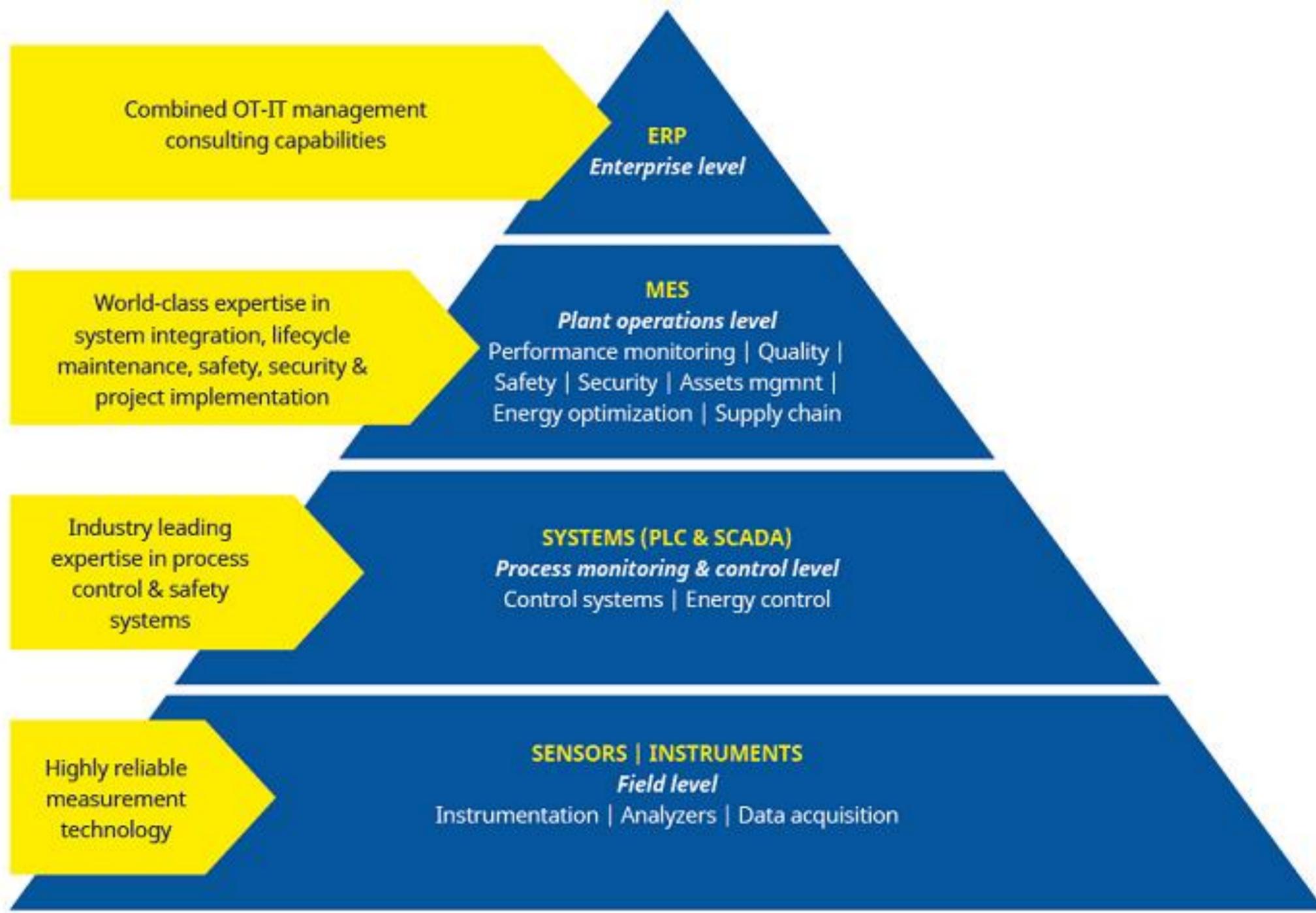
Connected industrial economy

A

Creating Value, Enhancing Performance.

V Visibility and awareness **P** Production optimization
 Asset performance **S** Sustainability

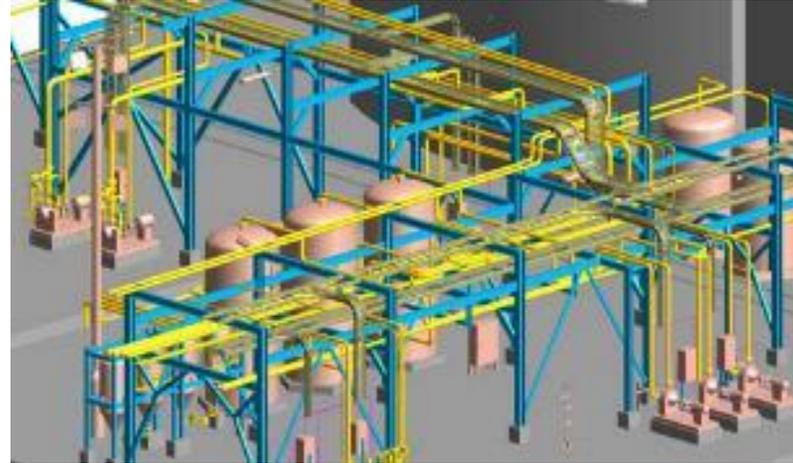




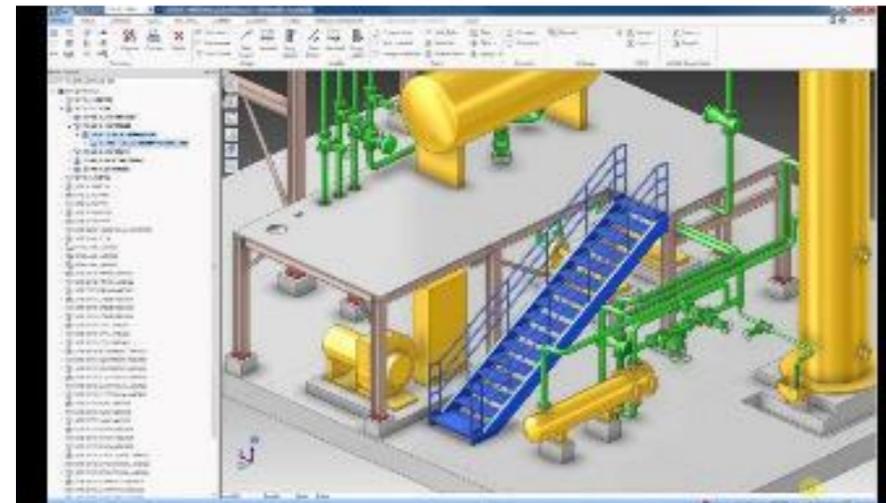
Optimizing Engineering & Technological Excellence

Creating Value, Enhancing Performance.

Engineering Excellence



Process, Piping, Mechanical, Rotating Equipment, Vessels, Mechatronics, Control Systems, Instrumentation, Pipelines, Civil/Structural, Geotechnics etc



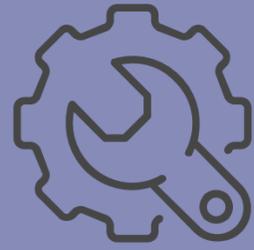
Technological Excellence



Digitization, Digital Twins, Data Analysis, Business Intelligence, Cloud Technology, Robotics, 6G, Blockchain, AI, Microchip/Semi Conductor Design etc.

The Changing Landscape: Energy Transition & Digital Transformation

Creating Value, Enhancing Performance.



- **50%**

50% of Oil & Gas professionals retire in the next few years - "The Great Crew Change."

Collaboration with PetroFund on a robust HCDDI, Talent Development, Succession Planning, Training & Development.

- **20/10%**

20% / 10% McKinsey: AI to boost productivity by 20% and help cut costs by 10% according to McKinsey

UOC, E3D etc. integrated Contractor, Client, Field worker, Experts etc. activities

- **2020**

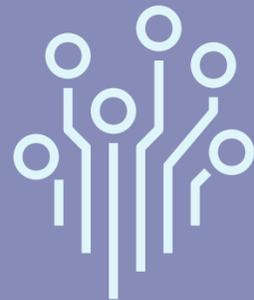
Margins are further squeezed by environmental regulations such as IMO 2020

Business Intelligence provides data for predictive & prescriptive operations. Improves environmental compliance.

- **2050**

2050 Sustainability: Oil majors (Total, ENI, BP, Shell) aim to be 'net zero' by 2050. Urgent needs to build a sustainable energy future

DT Solutions provides data that enables decisions which accelerate Energy Transition through Digital Transformation.



- **50%**

50% of orgs plan to invest in AI & Digital Twin in next 3 years

Digital Twins would become a Norm.

- **5B**

We will reach 5 billion connected things this year

Optimising Aging Assets through a Digital Transformation Road Map.

- **10x**

Technology 10x more powerful every 5 years

- **>90%**

Companies are using or planning to use cloud

"Digitalization is the use of technologies to change a business model and provide new revenue opportunities" (Gartner)

Industry 5.0: Roadmap for Business Efficiency & Profitability

Creating Value, Enhancing Performance.

1. Green Field and Brownfield Project Identification - Technology
2. Seamless Handover throughout EPC Contracting - Technology
3. Project Categorization, Resource Definition and Value Chain Analysis - Consulting
4. Digital Transformation Analysis & State-of-the-Art Technology Implementation - Technology
5. Industry 5.0: Data & Resource Optimization Strategy – Technology
6. Succession Planning: Personal, Professional and Career Development – HR & HCDI
7. Deployment of STEMpreneurs, TECHpreneurs & INTRAprenuers – HCDI & Outsourcing
 - **State of the Art Technologies**
 - **Document & Records Digitization**
 - **Laser Scanned Digital Twins for Asset Optimization**
 - **Use of AVEVA & PI Solutions with Remote Access (AR/VR/XR & MR)**
 - **Data Optimization – Predictive & Prescriptive Operation & Maintenance**
 - **Business Intelligence, Operational Excellence & Sustainability**



5Es of Socio-Economic Development

Creating Value, Enhancing Performance.



**Strategy is
your key to
success**

**Education
(Discovery)**
Potential,
Passion,
Talent

**Enlightenment
(Individualism)**
(Numerical,
Critical, Verbal
and Abstract)
Reasoning,
Analysis, and
Discovering
Self

**Empowerment
(Actualisation)**
Innovation and
Creativity.
Applying
discovered self,
Finding a Core
Competence,
Leadership,
attitudinal and
managerial
competencies
Required

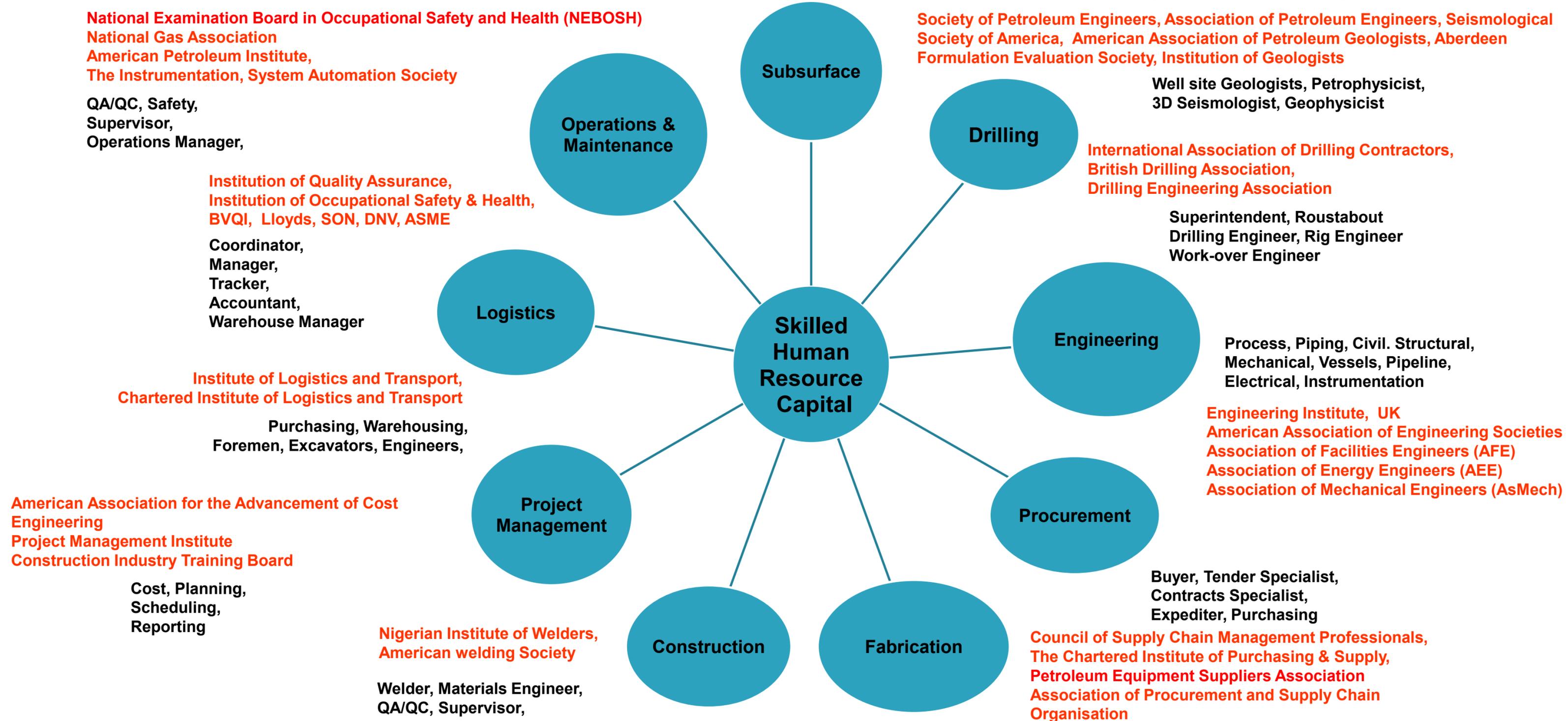
**Engagement
(Service Delivery)**
Unleashing ones
potential to create
value. Finding
Purpose &
Assignments that
lead to self
actualisation and
fulfilment

**Entrepreneurship
(Value Creation)**
Harnessing natural and
mineral resources for
value creation whilst
meeting specific
critical needs of society
and industry at both
local and international
levels



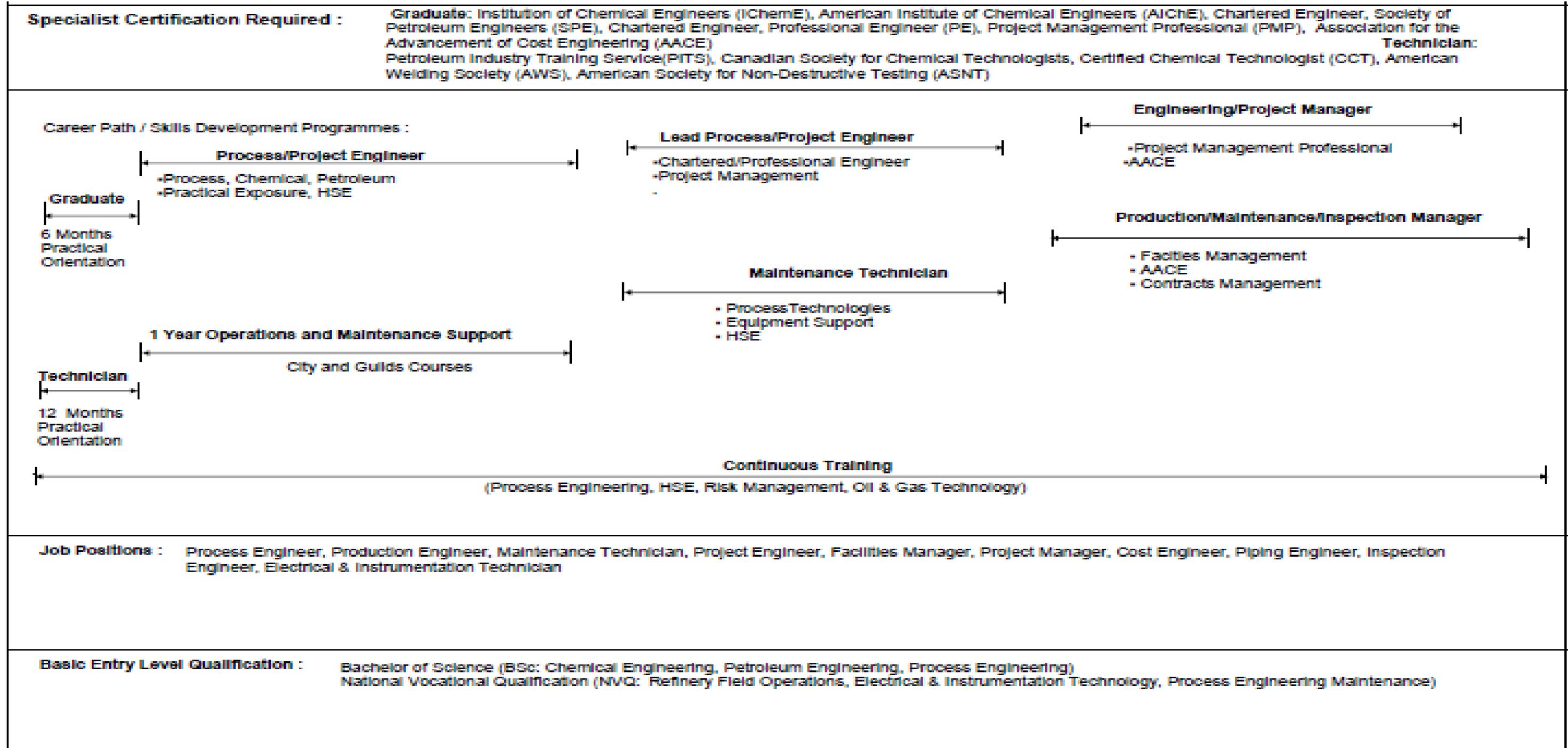
Continuing Professional Development (CPD)

Creating Value, Enhancing Performance.



Typical Persona Career Path & Professional Journey Map

Creating Value, Enhancing Performance.



Government and Regulatory Framework

1. **Ministry of Information and Communication Technology (MICT):** The central government arm coordinating policy and strategy. It leads legislative reforms (e.g., Access to Information Act), champions digital infrastructure, 5G rollout, data protection, and e governance frameworks.
2. **Communications Regulatory Authority of Namibia (CRAN):** The statutory regulator for telecom, postal, and broadcasting services, under MICT. It oversees critical ICT regulation and supports cybersecurity functions such as Nam CSIRT.
3. **Namibia Cybersecurity Incident Response Team (Nam CSIRT):** Established under CRAN, Nam CSIRT is designed to coordinate cybersecurity efforts across the public and private sectors, including threat detection and incident response.

Strategic Planning & National Roadmaps

1. **Sixth National Development Plan (NDP6):** Running from 2025/26 to 2029/30, NDP6 lays out the ambition to fully digitally transform Namibia—expanding internet access, establishing a National Data Centre, boosting cybersecurity, digitizing education, and enabling e government across all institutions by 2030.
2. **Digital Government Strategic Roadmap (2024–2026):** Crafted in collaboration with the Office of the Prime Minister and Digital Nation (with support from the Estonian Centre for International Development), the roadmap focuses on six pillars: governance, digital identity, interoperability, digital public services, cybersecurity/data protection, and infrastructure. Targets include e ID adoption for 25% of the population and transforming top public services.

Conclusion: The Digital Transformation Ecosystem (2/3)

Creating Value, Enhancing Performance.

Education, Innovation & Capacity Building

1. Digital Transformation Centre (DTC) Namibia (under GIZ's StartUp Namibia): Funded by the German Federal Ministry for Economic Cooperation and Development and implemented by GIZ, DTC Namibia supports digital innovation, skills development, and ecosystem strengthening—including incubation via Basecamp, acceleration programs, and grants via the Slingshot Fund.
2. StartUp Namibia / Basecamp: The physical innovation hub—co-working space, maker space, incubation resource center—serves startups with focus on inclusivity (e.g., female founders) and digital entrepreneurship.

Academia

1. University of Namibia (UNAM): As the leading public research university, with a Faculty of Engineering and Information, UNAM plays a central role in developing the tech-savvy workforce needed for digital transformation.
2. Namibia Qualifications Authority (NQA): Oversees development and accreditation of qualifications, training standards, and curricula—essential for fostering digital literacy and ICT capacity nationally.

Industry & Private Sector Enablers

1. Telecom Namibia: State-owned ICT operator offering nationwide digital infrastructure including internet, web hosting (iWay), and telecommunications—integral to connectivity and e service delivery.

Cybersecurity & Financial Sector Coordination

1. Financial Industry Cybersecurity Council (by the Bank of Namibia, since 2022): Serves as a sector-wide platform for dialogue and strategy on combating cyberfraud within banks and fintech providers—a key piece for trust in digital financial services.

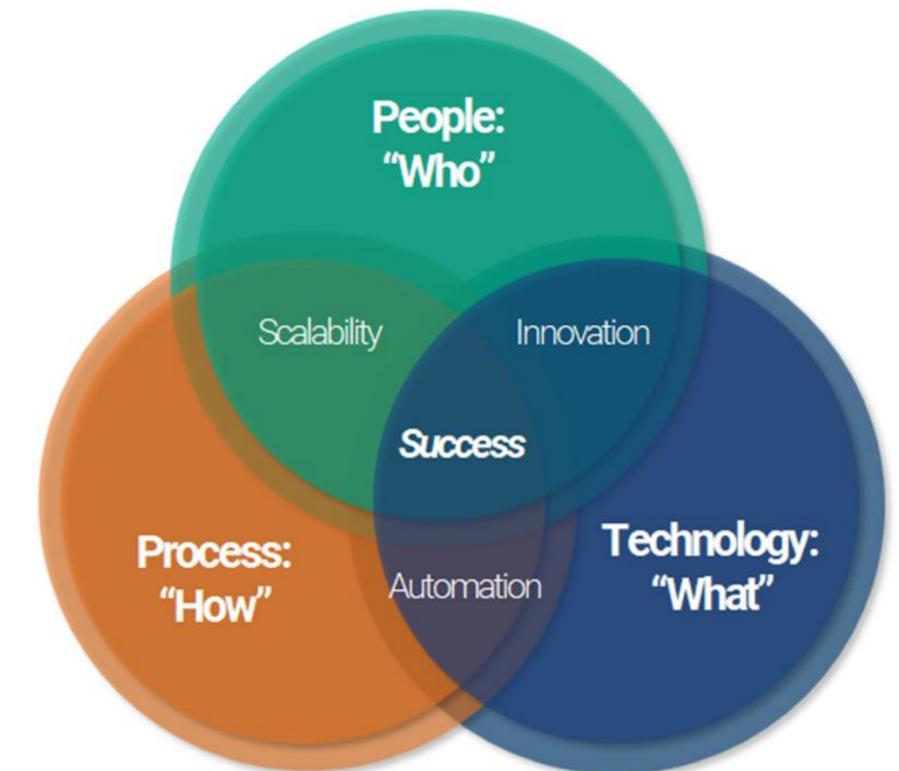
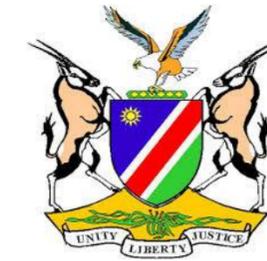
Digital Transformation in the Namibian Oil & Gas Sector

1. Ministry of Minerals & Petroleum Resources: Established to manage Namibia's mineral and energy resources and ensure their contribution to socio-economic development. Attract private investment in resource exploration and development, regulate the extractive industries, and ensure a secure and affordable energy supply.
2. NAMCOR: State-owned national oil company of Namibia, with the mission of creating value to all its stakeholders across the oil and gas value chain. Maintains exploration and production database, and oil license blocks form some of the major attractions to Namibia's hydrocarbon potential.
3. PetroFund: Established in 1993 in recognition of the scarcity of skilled personnel in the petroleum exploration and production industry in Namibia. Enhance capacity within the country's upstream petroleum sector through training, institutional development, scholarships and the promotion of science, engineering and technology.

Conclusion: People Are Key To Digital Transformation

Creating Value, Enhancing Performance.

s/No.	Sector	Key Body / Network	Role
1	Government & Regulation	MICT, CRAN, Nam-CSIRT	Policy, oversight, cybersecurity response
2	Strategic Planning	NDP6, Digital Gov Roadmap	National digital targets / frameworks
3	Education & Innovation	DTC Namibia, StartUp Namibia, UNAM, NQA	Skills, research, startup ecosystem, curricula
4	Cybersecurity & Finance	Financial Industry Cybersecurity Council	Sector cybersecurity coordination
5	Private Industry	Telecom Namibia	Core digital infrastructure and connectivity
6	Execution	Ministry of Minerals & Petroleum Resources, NAMCOR, PetroFund	Align Stakeholders





For your attention, Thank you.

LAGOS: 12, Jibowu Street, Yaba, Lagos.

LONDON: 120 Pall Mall, St James, London SW1Y 5EA.

TEL: +234 813 911 2519, +234 803 400 2957, +44 742 595 3476.

Email: contact@lonadek.com, training@lonadek.com

WEB: www.lonadek.com, www.thecedarcentre.com, www.vision2020-ng.org



Our Facility in Jibowu Yaba

Creating Value, Enhancing Performance.

