CONNECTED OILFIELD

SURVIVAL OF THE DIGITALIZED

By Muhammad Soliman

CHALLENGES IN THE OIL AND GAS INDUSTRY

INDUSTRY CHALLENGES

- Severe Fluctuations in Oil Prices
- Lowest Reservoir Recovery Rate
- Inefficient Operations
- Fast Growing Car/Transportations Electrification & Decarbonizations
- Declining Return on Capital Employed (ROCE)
- Declining in Workforce and Expertise

One hundred years of oily crude

Crude oil price, $ per barrel*

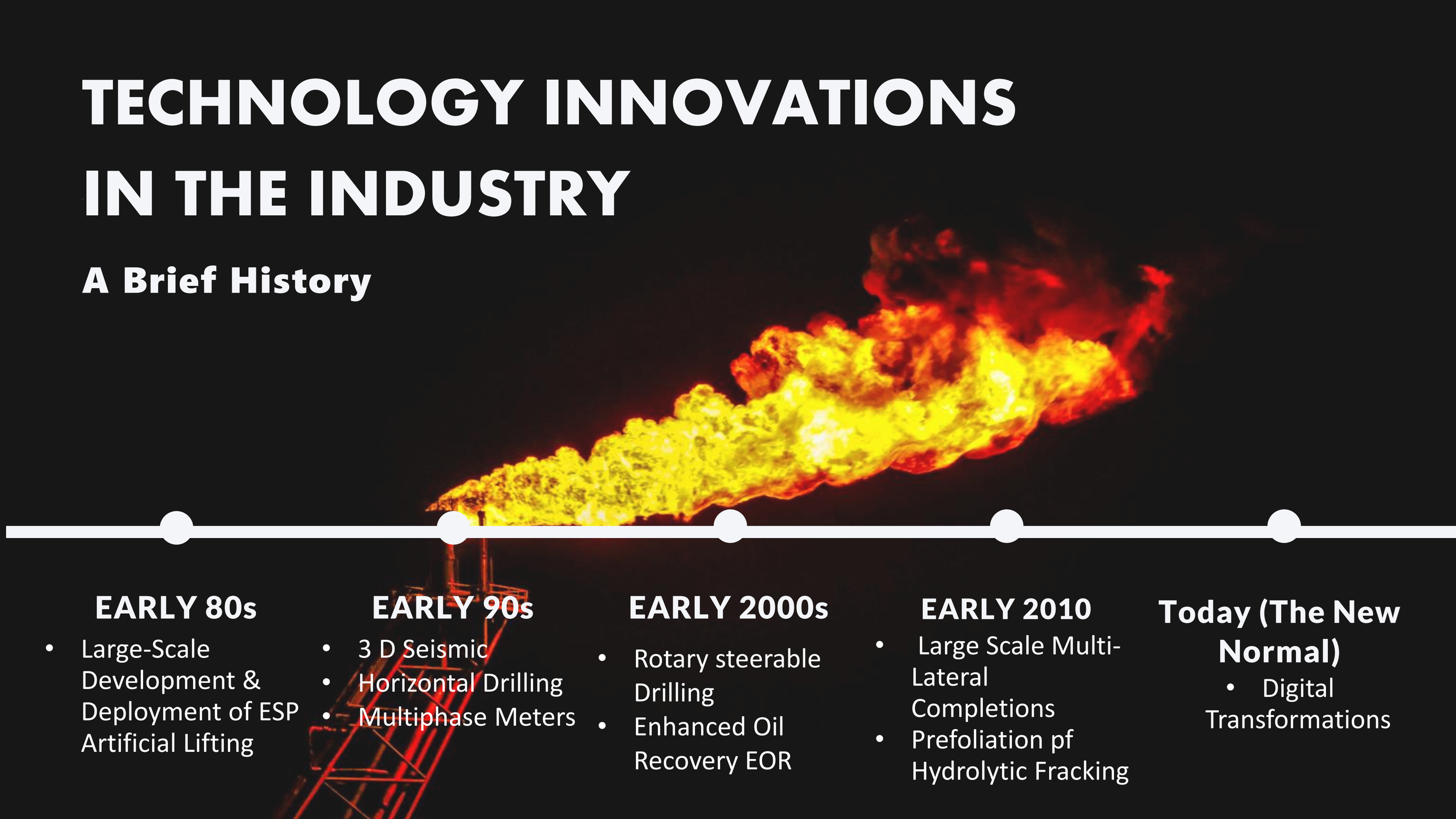
Sources: Goldman Sachs; Datastream from Refinitiv; US Bureau of Labour Statistics; Bloomberg

*Constant Feb 2020 $ †At March 31st

The Economist

TECHNOLOGY INNOVATIONS IN THE INDUSTRY

A Brief History



EARLY 80s

- Large-Scale Development & Deployment of ESP Artificial Lifting

EARLY 90s

- 3 D Seismic
- Horizontal Drilling
- Multiphase Meters

EARLY 2000s

- Rotary steerable Drilling
- Enhanced Oil Recovery EOR

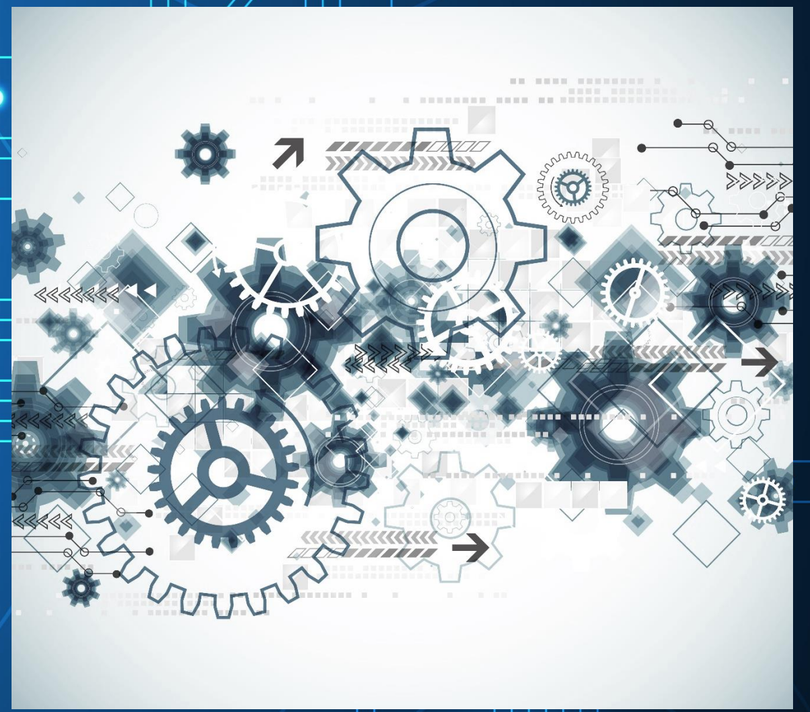
EARLY 2010

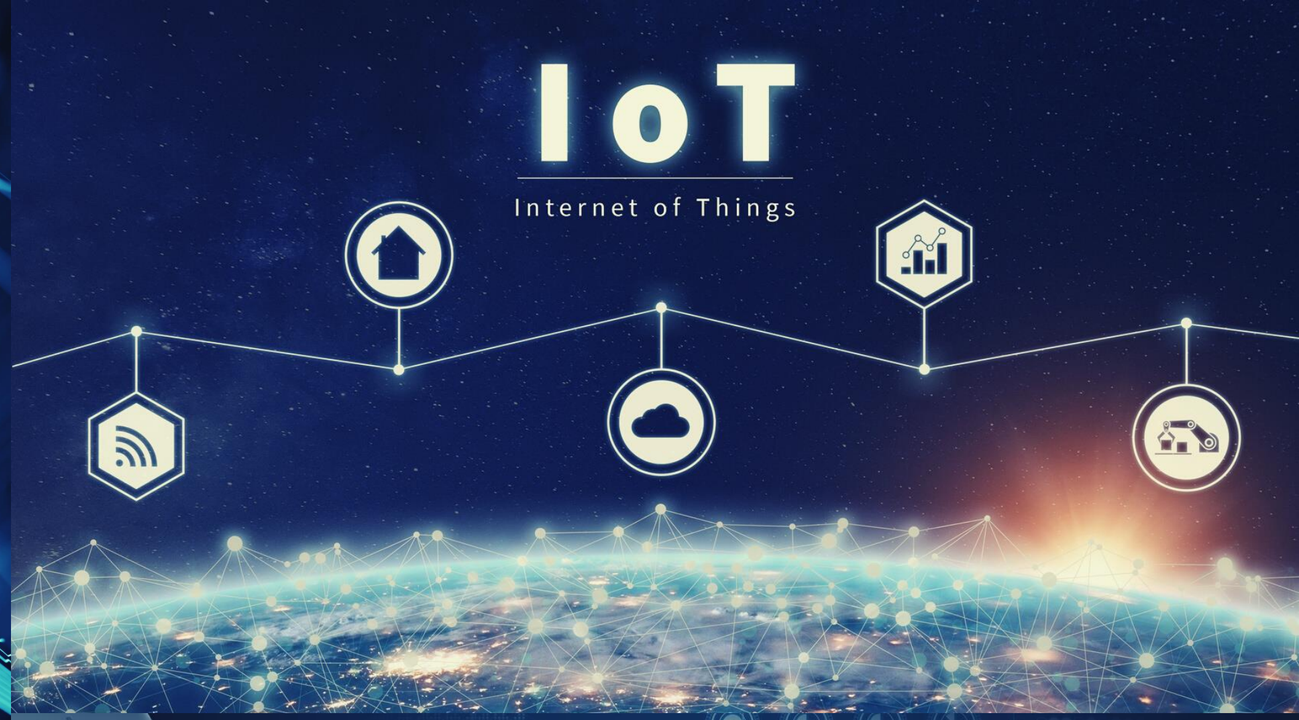
- Large Scale Multi-Lateral Completions
- Prefoliation pf Hydrolytic Fracking

Today (The New Normal)

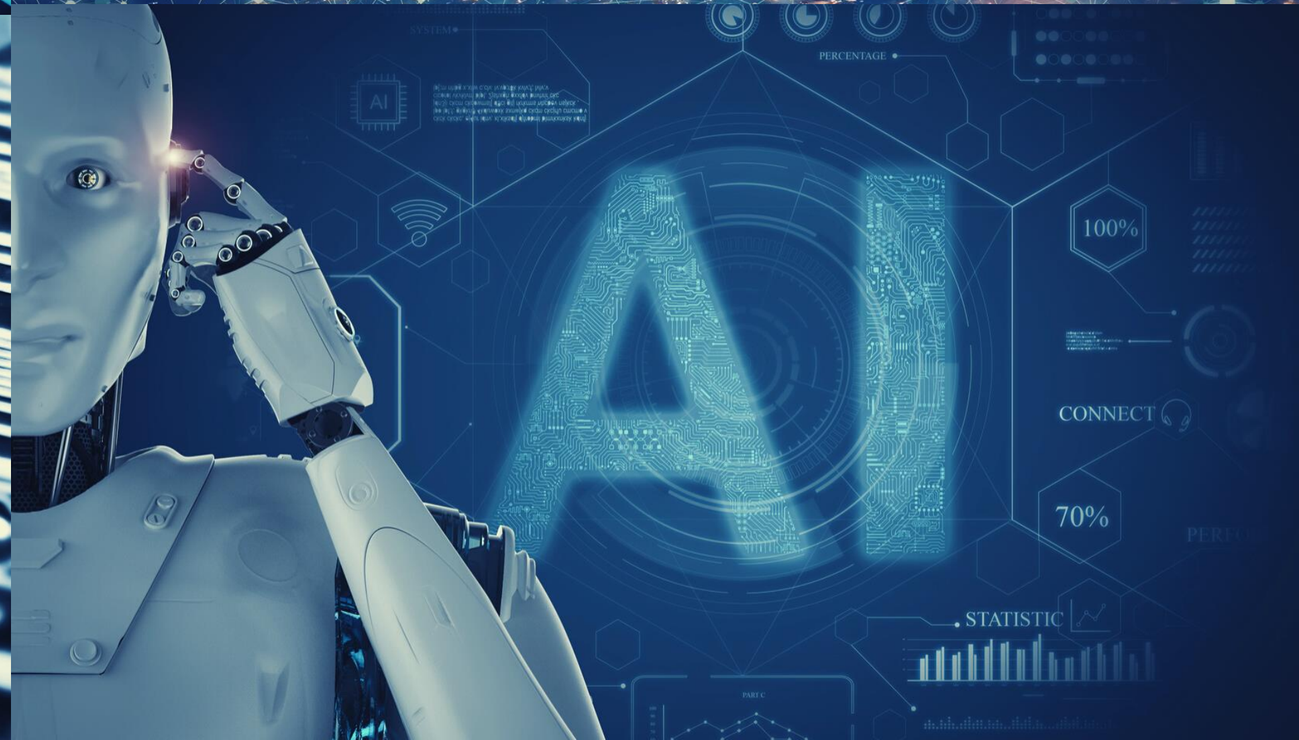
- Digital Transformations

DIGITAL TRANSFORMATION PILLARS




IoT
Internet of Things

BIG
DATA


AI
PERCENTAGE
100%
CONNECT
70%
STATISTIC

What IS THE DOF ?

- **Smart measurement** and control systems in the wells (subsurface and surface), pipeline network and facilities
- The capture and **integration** of real-time and non-real-time data from across the asset
- Building **predictive models** (physical and data driven)
- **Intelligent processing** of information using **smart engineering workflows and business workflows** for:
- integrated asset management, precision drilling, smart surveillance, adaptive control, diagnostics, optimization, planning and prediction
- Enabling **collaboration**

WHY IS THE DOF ?

- Lower OPEX
- Optimized Assets Productivity
- Lower CAPEX
- Improve Return on Investment
- Maximize the Recovery of Assets Value

- Worker Mobility
- Collaborations

DOF IMPACT

Operational Efficiency

Allow smart surveillance of the wells, pipeline and facilities to enable smart operations, maximize uptime and reduce failures **(DAYS)**

Production Optimizations

Provide deep understanding of the performance of the wells, pipeline network and facilities. Help in Maximizing production and be able to predict future conditions (**WEEKS**)

Reservoir Optimizations

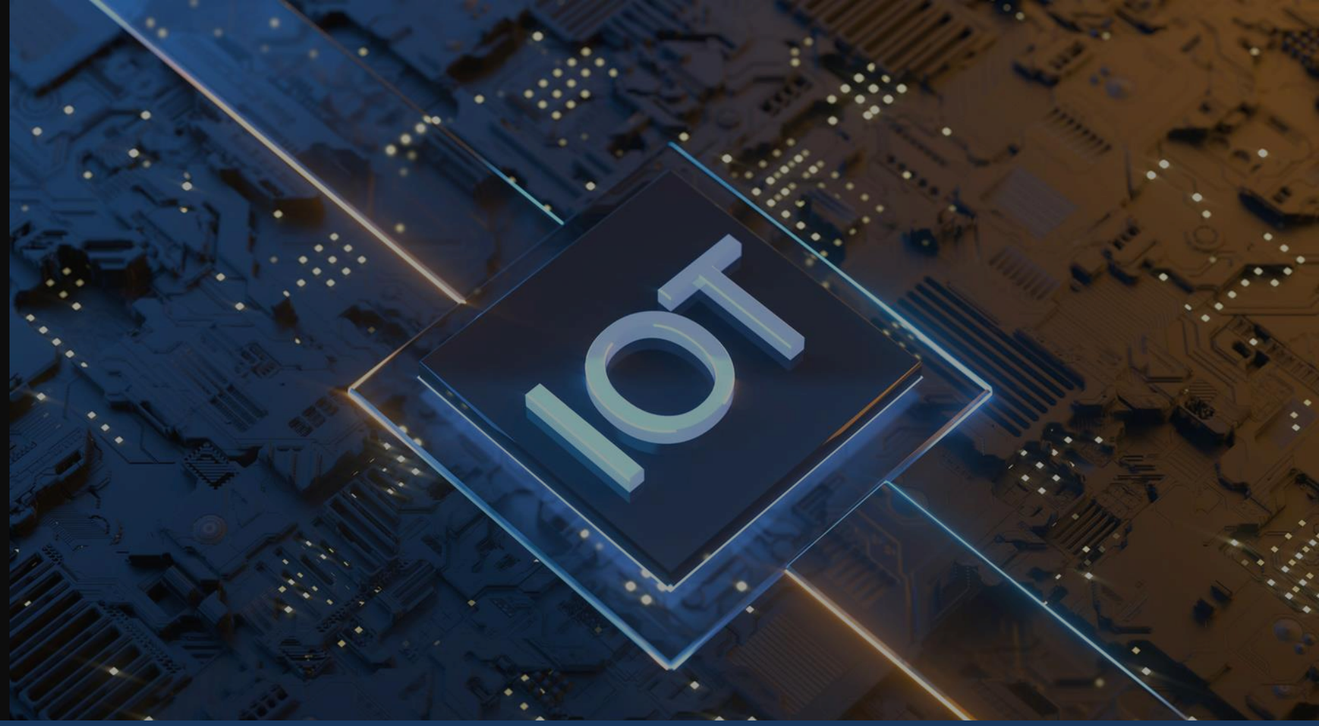
Ensure the Maximum Reservoir and Field Performance **(MONTHS)**

Asset Management

Ensure That the Asset are well managed and achieve the Bussniess goals **(YEARS).**

SHELL

- COVERS 500 K VALVE USING AI / Predictive Maintenances IN INSPECTIONS
- ESP IoT Monitoring



BP

- DIGITAL PIPE LEINE
- Reservoir Recovery

THANKS

Muhammad Soliman