How ready are your assets to perform in the digital world?

IIOT and the Future of Digital in Oil & Gas
Returns in Oil and Gas are low

Average Annual Return on Operational Assets by Industry 2010–2014

Source: public data and EY analysis
ROA calculated as: Net Income/Total Assets,
Asset Intensity calculated as: Operating Assets/Total Sales
Lack of digital penetration is one driver of low returns

Historically, digital in Oil & Gas focused on improved time to first oil and improved effectiveness of hydrocarbon extraction:

- Engineering visualization and collaboration centers
- Real-time drilling
- Intelligent wells
- Real-time operation centers

Source: EY Research and analysis
Now is the time to accelerate investment in the Industrial IoT

Era 1:
Efficiency Mattered, technology Cost to High

US cell phone adoption exceeds 50%
Myspace and LinkedIn launch

Era 2:
Focus on Output, technology costs decline

BYOD goes mainstream
IPv6 Major Adoption

Era 3:
Big data goes mainstream
Cloud and managed services goes mainstream

WTI Price Source: U.S. Energy Information Administration Independent Statistics & Analysis
Technology Cost Source: Publicly available data from leading technology researchers, the Federal Reserve Board, and U.S. Bureau of Labor Statistics
IIOT can integrate the O&G value chain
Quickly reducing the cost of operations

Digital in Oil and Gas

**7.5%**
Average Return on O&G Operating Assets

**$5 — $10**
Cost of Computing Power and Bandwidth
Today’s cost to make a mechanical and/or electrical device “smart.”

**45**
Average number of outside service providers it takes to run an O&G business

**Immediate Benefits**

**2–3%**
Improvement in production volumes
Driven through OEE improvements and overall productive capacity

**10–20%**
World’s Oil Fields that are Digitally Enabled

**5–10%**
Variable cost reductions
Parking-up over-capitalised fleet and improving labour productivity

**$5 — $10**
Cost of Computing Power and Bandwidth
Today’s cost to make a mechanical and/or electrical device “smart.”

**45**
Average number of outside service providers it takes to run an O&G business

**60%**
% of oil consumed outside the country of origin

**15–25%**
Reduction in primary preventative maintenance costs by driving from calendar to condition-based maintenance

How ready are your assets to perform in the digital world?
Harnessing the value from the IIoT requires more than adding sensors to machines and assets

By 2020

50 Billion assets will connect and Send data through the Internet¹

Today

<3% Of data is tagged or used in meaningful way²

Optimized Processes

Smart Assets

Coordinated Resources

Process orchestration & process choreography for faster, integrated decisions.

Internet of Things to make devices & assets smart and connected.

Mobility to synchronize internal and external resources through a single business process.

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The cloud integration layer can coordinate all these entities through a **single business process** to optimize the end-to-end value chain to drive a specific financial result.
35,000 engines monitored via Predix

100MM flight records per year

Fidelity  ➤ 30%
Detection ➤ 25%
Accuracy ➤ 12 pts
Amazon’s latest digital transformation
Integrated Value Chain

Amazon Integrated Value Chain
Global delivery network that controls the flow of goods from factories in China and India to customer doorsteps in Atlanta, New York and London.

Logistics is a material expense and continues to escalate
Vertical integration can transform the customer experience
Turn cost center into a profit center

“Enable Delivery to a customers doorstep in 60 minutes or less”

Supplier
Production
Distribution
Customer

Amazon Web Services (AWS)
31% Market Share
63% Year-on-Year Growth

High Growth
Revenue
22% CAGR

Tesla Motors – Art of the Possible
Synchronized supply chain through digital

Tesla Motor’s Inc.

Best Selling US Luxury Sedan, 2015
+50% Increase in Year-on-Year Sales to Date
Achieved Highest NHTSA Safety Rating Recorded

Tesla’s successful entry into a highly competitive car market has been enabled by a technology driven flexible platform.

Connected Car
50% reduction in 1st year repair costs by integrating sensors to reduce maintenance and downtime.

Scalable Orders and Purchasing
Capacity to handle 500k/year through online ordering process connecting to a real-time supply chain.

Vertical Integration of Strategic Assets
+30% cost reduction in first full year of production by building scalable “Gigabit” battery factory.
Digital Oil & Gas Company Of the Future
Roadmap to a Digitally Enabled Integrated Value Chain & Higher ROCE

% of Integrated Value Chain that is Digital

Today | 20% O&G is Digitized

Connected Assets
Connected Operations
Connected Value Chain
Connected Resources
Connected Enterprise

Industrial Internet of Things
- Set up the operating platform for IIoT
- Connect critical assets and add cyber security coverage
- Expand IIoT enablement across assets in an operational platform
- Enable Process Automation | Orchestration & Field Mobility
- Extend IIoT to transportation, terminal | depots, warehouse assets
- Add External Market Data & external resource networks
- Connect assets across an portfolio | enterprise

Portfolio Performance
ROA | ROCE

Today
7.5% Average Return on Operating Assets

How ready are your assets to perform in the digital world?
Organizations can take the first step on the IIoT journey by organizing around three activities

Get connected
Start by connecting critical assets and machines. Connecting operational data to each other and the people who need it are crucial to begin your journey.

Get insights
Use intuitive methods to analyze data to determine true root cause and opportunities to improve or resolve. You have enhanced ability to quickly evaluate anomalies and take the correct action.

Get optimized
Leverage digital to optimize the total lifetime performance of your assets to increase availability, minimize costs, and reduce operational risks.
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