Digital Industrial Transformation with Predix

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SUT
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O&G digital solutions

**O&G Applications**
- Field Vantage*
- Smart Facilities
- BOP
- Sealytics Advisor
- Intelligent Pipelines*
- Production Max
- Response Max
- Unified Operations
- Reliability Max*

**APM**
- Machine & Equipment Health
- Smart Signal
- System 1*
- Reliability Management
- Smart Signal
- Proficy Historian
- CSense
- Maintenance Optimization
- Meridium

**Cyber Security**
- Predix
- Wurldtech
- Brilliant Factory
- Engagement Services

**GE Digital**
Predix and Industrial Analytics

Advanced Data Science

Physics-based

Applied Engineering

+ Data
Continuous, accessible

+ Statistics
Identify trends and anomalies

+ Physics
Apply asset and domain expertise

Industrial Outcomes

One platform for OT and IT teams to collaborate and innovate
Big Data value drivers

Get to information quickly:
- Rank wells performance by KPIs
- Prioritize the actions that make the most impact

Optimization analytics:
- Look across all your wells - all the time
- Provide continuous optimization opportunities
- Provide automated operational recommendation

Predictive analytics provide:
- 24/7 radar on your data
- Proactive warnings to improve planning & reduce unwanted downtime

Case management:
- A tool to enable cross functional collaboration.
- Field level data transparency to break operational data siloes.

Configurable KPIs empower you to optimize the balance of:
- Production
- Power,
- Equipment run life
- People and resources.

FIELD VISIBILITY + PRIORITIZATION
ANALYTICS
PREDICTION
COLLABORATION
FIELD-WIDE OPTIMIZATION

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Subsea applications

- **Visibility into the status and health of Subsea Production Systems**
  - Status of “the oil” as it transitions to surface
    - Advanced Flow & fluid modelling to optimise production
    - Flow Assurance (blockages)
  - Health of the Infrastructure
    - Erosion/Wear prognostics
    - Calibration/Adaptive configuration
  - Optimised operations
    - Guided & audited operating procedures
Diagnostics

TECHNOLOGY – SUBSEA SENSING

- One monitoring system for:
  - Subsea Leak Detection
  - Vibration Monitoring
  - Machinery and process monitoring
- Stand-alone & non-intrusive

LEAK DETECTION
- Early detection
- Wide area coverage
- Directional
- High sensitivity

VIBRATION DETECTION
- Early detection
- Structural, Flow lines, Riser

MACHINE & PROCESS MONITORING
(Compressor, Pump, Transformer, …)
- Acoustic & Electric monitoring
- Continuous & synchronous
- Early detection of changes/faults
Flow Monitoring ..... VFM

Modelling the **flow of production** as it transitions to the facility

Provides intricate visibility of the **whole production network** (not just key points where flowmeters are installed)

Calculating a **live view** of the **composition** (oil:gas:water) and **flow**
Predictive and Prognostics

Predicting and avoiding asset degradation (erosion, fatigue, stress)

- Accurate degradation models:
- tune down (avoid damage), or tune up (increase production)
- Sensor health
- Actuator health
- Chemical injection management
Summary and Recap

Data science + equipment knowledge result in most impactful big data strategies.

Subsea equipment lacks standardisation (fleet scale) and rich instrumentation infrastructure further complicating big data applications in subsea

Deep understanding of component level failure modes is critical to develop predictive algorithms

Recent advancements in sensor technologies have enabled accurate flow modelling and asset assurance strategies
Thank you