Step Change in Production Excellence Workflows through Digital Transformation

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Agenda

- Overview
- Problem Definition
- Digital Solution
- Created Value
- Conclusion
Digital Transformation ... ... how?
Digital Journey: How to Start?

**Build the Vision** \( f(KPO1,KPO2,KPn) \)

**Vision**
- **Achieve a Step Change in Performance**
  A new way of operating using digital solutions to integrate engineering and operation processes to enhance production, people efficiency and reduce environmental footprint.

**How**
- **Implement Digital Solutions**
  Facilitate exploitation work flows to improve Key KPI's

**Pillars**
- **Process Automation Collaboration**
- **Data Analytics Remote Operations**

**Create the Strategy**

1. Identify Key Workflows Impacting Target KPI's
2. Detailed Analysis: Selected Workflows / Solution Identification
3. Scenario Evaluation
4. Prioritized Workflows
   - Operational
   - Engineering
5. Agile Implementation
6. Kick Off

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SPE-207968-MS: Assess Digital Maturity to Set Digital Transformation Strategy in Oil and Gas
Problem Definition

Mature Field with secondary recovery
17 fields scattered over +100 Km (NS)
More than 240 active wells
Several extensive workflows by manual job
Time-consuming

Multiple Data sources

Production optimization and losses reduction

Excellence in Execution
What to improve?

Macro-Workflows
Operations Excellence

- Prod/Inj Optimization
- Artificial Lift Solutions
- Surveillance “Smart Production”
- Surface Facilities
- IPF
- CIW
- DIR

Sub-Workflows
From Reservoir up to production delivery

Flow Station
Gathering Station

Well
1
2
9

Oil Production Well

Wellpad
3
4
5
6

Oil Production Well

Economics

Monitoring

Excellence in Execution
Digital Solution: Cloud Platform

Data Source
- Database
- Historians
- Mobile Solutions
- Corporative Solutions

Data Ingestion

Process Automation

Native Solutions

Customized Solutions
ProdOps Native Solution

Act **more effectively at speed and achieve production potential**

Enhance **field-wide production management decisions**

Achieve continuous understanding for targets and planning

Spend time **working on opportunities, not looking for them**

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**Well Performance Advisor**
Optimization through continuous monitoring and automated ID of operational issues

**Network Performance Advisor**
Guided well-network optimization, flow assurance risk and ID of enhancement opportunities

**Production Forecasting**
An automated, evergreen pipeline of forecasts

**Intervention Opportunity Manager**
Rapid automated screening of candidates for intervention / workovers
Created Value

ProdOps Native

Solution 1: WPA (Well Performance Advisor)
- 240+ Online Well Models deployed
- Artificial Lift Surveillance
- ESP Performance Analysis and Diagnostics
- The latest well model automatically
- All models in the cloud

Solution 2: IOM (Intervention Opportunity Manager)
- Offline PoV
- 40 wells
- 100 Completions analyzed
- 9 WO identified

3 Months → 1 Week
(post data ingestion)

90% Time Savings

Native solutions
Digital Solution: Cloud Platform

**Data Source**
- Database
- Historians
- Mobile Solutions
- Corporative Solutions

**Data Ingestion**

**Native Solutions**

**Customized Solutions**

- ProdOps
- Native Solutions
- Customized Solutions

Excellence in Execution
A foundation for value addition & innovation

Data analytics & AI democratized to enable your IP and customized workflows

User friendly environment allowing multi-disciplinary collaboration

Different capabilities to customize the needs for every team

Streamlined AI / ML projects.
- No code, low code, high code
- Easy to use visual modeling interface
- One-click deployment
Created Value: Customized Solutions

Solution 3: Well Status
Updated every 15 min.
Losses related to downtime
Production to recover by zone
Key for Shutdowns
# of wells by status

Solution 4: VFM - HPS
4 HPS
Confidence >80%
Reducing time travel
ML implemented
First version built in 1 day

95% Time Savings

*Monitored wells

CO2 reduction due to remote operations and surveillance
Created Value: Other Customized Solutions

Planned to view on Prodops

Solution 5: Choke Model
- Model from Delfi already updated
- Automation of the process
- Helpful for Candidate recognition

Solution 6: Data Gap Analysis Tool
- Availability of information
- Different sources
- Easy identification of variables needed and status

80% Time Savings
Way Forward: Digital Pipeline

Short Term
- WellStatus
- Online VFM solutions
- Wellpad Dashboard

Lifting Optimization
- ALS Surveillance
- ESP Control & Optimization
- Flow Assurance

Development Opportunities
- Well candidate recognition
- Automated Res. Eng. Models update

Big Data
- Prod. Eng. Optimization report
- Root cause analysis
- Reservoir Pressure & BUP Analysis

Daily Operations
- Chemical Injection Automation
- Network Performance Advisor
- Electrical Infrastructure
- Digital Rig route

AI/ML Powered Workflows
- Equipment failure prediction
- Automated events detection
- NLP enriched workflows
Conclusion

- After the implementation of the workflows, an 80% reduction in identification time and management of the specific task has been observed compared to how it was done before.

- The process of continuous improvement is part of a system of optimal management and development of the implemented workflows.

- In the operation, we must adapt to the benefits that by default offer native solutions in the corporate platform, however, the customization of engineering processes is essential to develop and increase the advantages of the online platform.

- The path of digital transformation is not overnight, it is required to have a clear and defined strategy from the beginning which must be shared with all team members.
Contributors - Teamwork

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Thank you