Digital Transformation
Making Digital Work for Us

Chandra Yeleshwarapu
Senior Director
Halliburton Landmark
Digital Agenda: E&P Business Outcomes

What the business is

How the business invests

The way the business operates

The way the business interacts

…and the way every employee works

Basin Analysis & Leads Management

Discovery & Appraisal Mgmt

Dev Concept & Design

Development Execution

Field Management

Surveillance

Optimization

Digital Leverage

Better fact-based decisions

Manage costs

Enable efficiency

Shrink time

Multiply productivity

Predictable results

Continuous learning

Provide full-lifecycle economics visibility

Eliminate waste between technical and business organizations

Improve certainty of outcomes

Jump the learning curve

Harnessing the NEW requires:

- Focus on business transformation, not technology
- Asset & process intimacy
- New relationships, partnerships, ecosystem
DIGITAL Value SHIFT

The transition to new business paradigms that leverage digital technology to challenge previously held assumptions about the industry.
Information as *Wasted* Time, Energy, Material Trade-off

\[ C(t,e,m) \leq \sum_{0}^{N} C(I) < \sum_{0}^{N} C_W(t, e, m) \]

Source: Dr. Michael Grieves, LIFE 2017
Digital Dividend & Penalty
Digital Twin

The Physical Asset

- Types of Reservoirs, Wells & Equipment
- Telemetry, Smart Wells, Real Time Data
- Actuators
- Feedback Controls

The Digital Twin

- Prototypes modeling physical assets
- Twin that simulates, models real data and creates advisory plan
- “EVERGREEN” digital representation + SAP + Backoffice, updated in near real time on a single platform
Factors for Oil & Gas

Technical
- Downhole Automation
- Rig Controllers, Production, Chemicals, Refining

Business
- Vertical Integration, M&A, Buy/Build, Tech Partnerships, Asset Sales

X-Value Chain Adoption at scale

Open, Collaborative Digital Platform
Connect from downhole to back office

Co-Innovation
Co-Design
Co-Engineer
Co-Develop

DOMAINS
Geoscientists
Directional Engineers
Reservoir Engineers
Production and Chemical engineers

DISCIPLINES
E&P Computer Scientists
E&P Data Scientists
Robotics Engineers
How?

- Efficiency and Transformation Focus – MVP, Agile, Fail fast
- Digital Platform – Define, build, enhance
- Digital Skills – Commercialization, Hardware, Software, Data science, DevOps
- Standards – Data exchange, Architecture patterns, Technology components
Ripe for disruption with standards leading the way

- Block chain and Supplier Management

- Well Construction and Drilling automation with AI/ML

- IoT and Production

- Sub surface & reservoir insights with infinite details
Example: Drilling Automation

Multiplicative Effects ... hardware, equipment, chemicals, fluids, sensors

- Hole Cleaning
- Lost Circulation
- Stuck Pipe
- Pack Off
- MPD Setpoints

Managed Pressure Drilling (MPD)

Digital Platform

Hardware Automation
Alliances, Partnerships, Ecosystems...

Lower Planning & Drilling Time
Increase Wellbore Quality
Increase AFE Predictability

Digital Well Program™
Analysis & Metrics
Integrated Business Process
Real Time
Optimize
Unify
Connect

Geoscience
Drilling
Cementing
Bits
Subsea

Finance
Reporting
SAP
Production

Service Providers
Vendors
Partners

Well Placement
Wellbore Pressure Mgmt.
Wellbore Integrity
Vibration mitigation

Remote Advisory

PLAN
Field & Wells
DESIGN
Wells
EXECUTE
Operations
E&P and OFS Solving Challenges, Together.

Interpret & Model

Plan & Design

Execute & Operate

Automation

RTO

Big Data Analytics

Cloud

Adapt
THANK YOU