



Digital Transformation

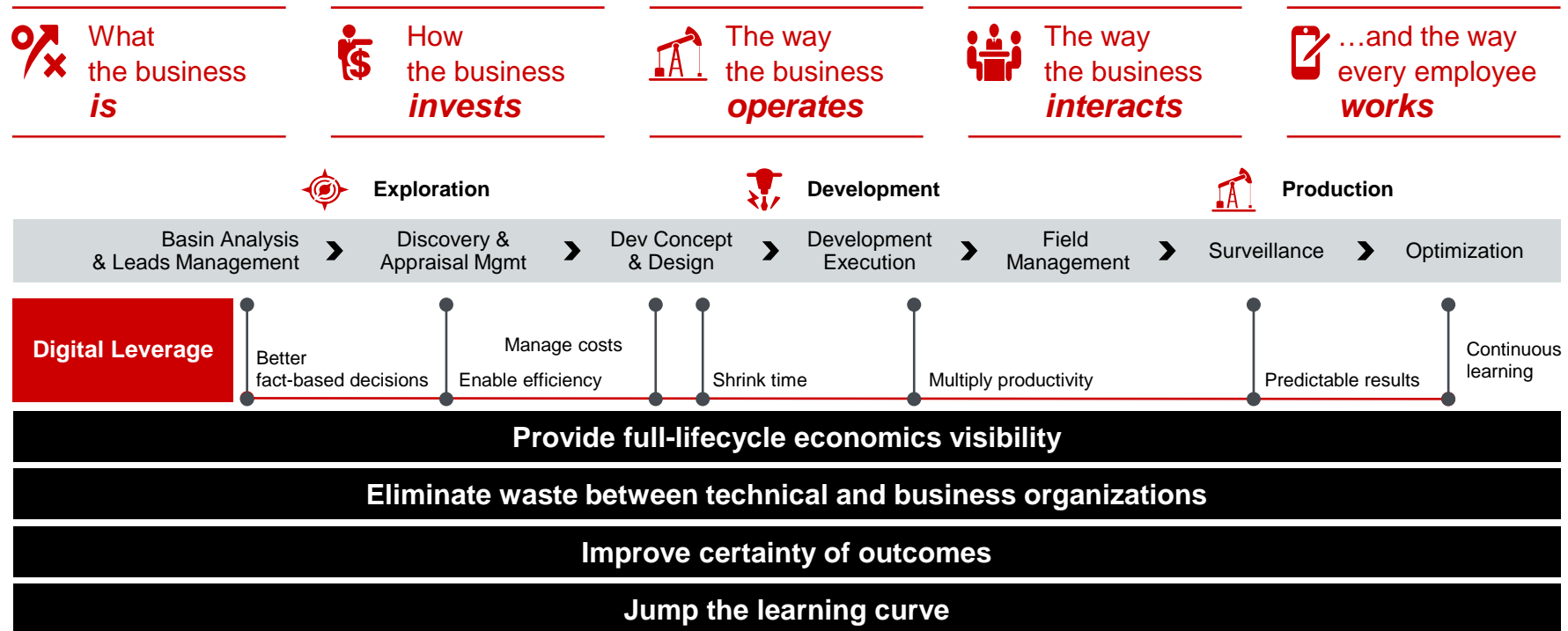
Making Digital Work for Us

Chandra Yeleshwarapu

Senior Director

Halliburton Landmark

Digital Agenda: E&P Business Outcomes



Harnessing the NEW requires:

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

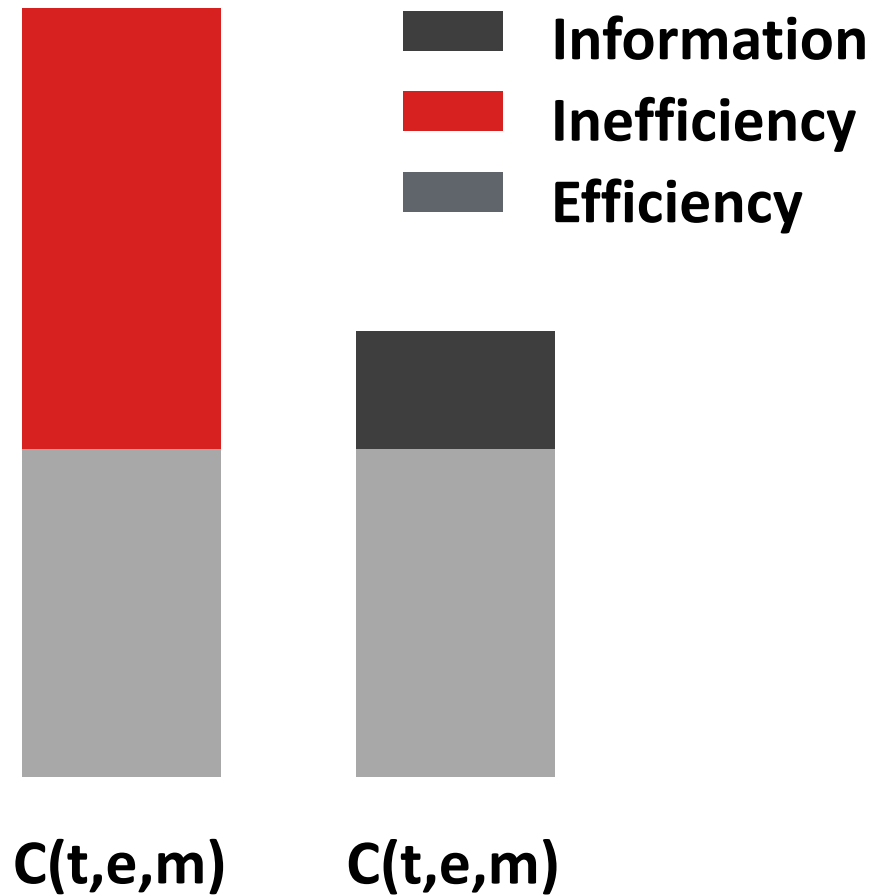


DIGITAL Value SHIFT

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



$$\sum_0^N C(I) < \sum_0^N C_W(t, e, m)$$

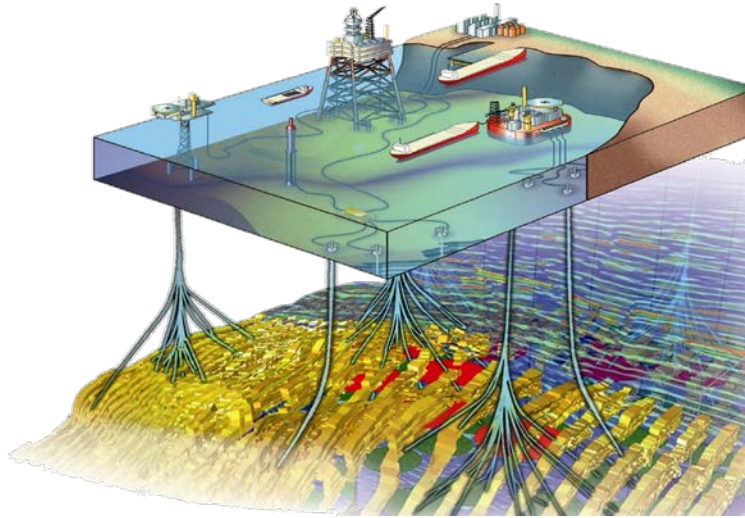
Source: Dr. Michael Grieves, LIFE 2017

Digital Dividend & Penalty



Digital Twin

The Physical Asset

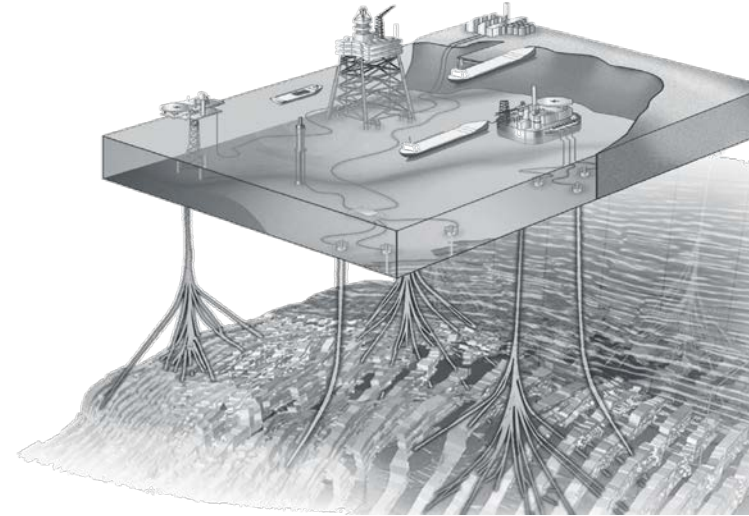


Types of Reservoirs, Wells & Equipment

Telemetry, Smart Wells, Real Time Data

Actuators
Feedback Controls

The Digital Twin

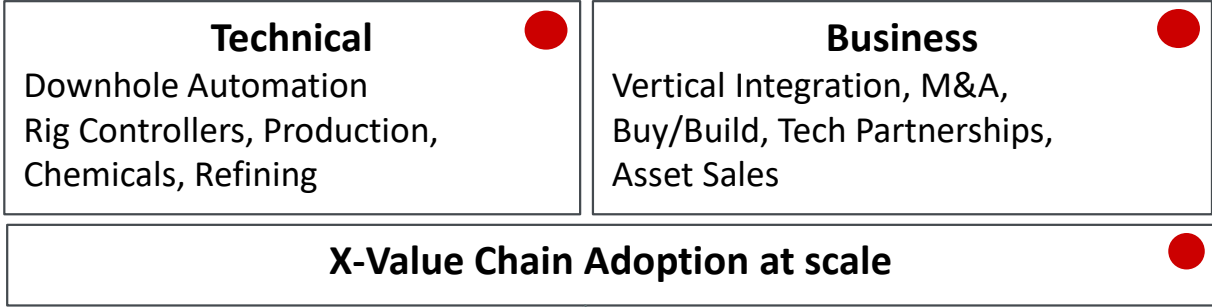
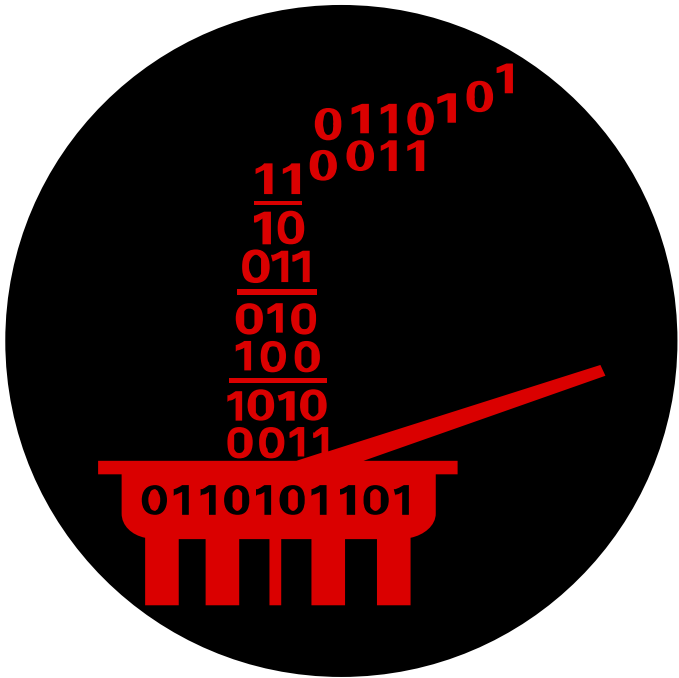


Prototypes modeling physical assets

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




DOMAINS
 Geoscientists
 Directional Engineers
 Reservoir Engineers
 Production and Chemical engineers

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


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

How?

Efficiency and Transformation Focus – MVP, Agile, Fail fast

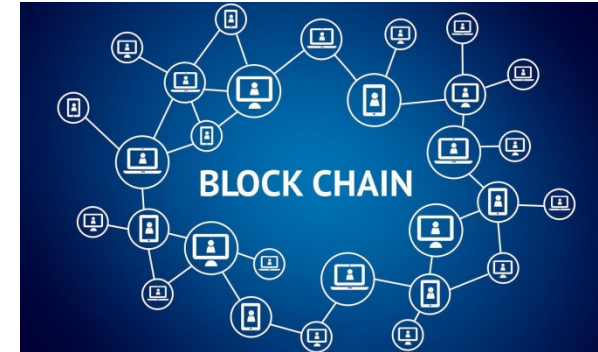
Digital Platform – Define, build, enhance

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

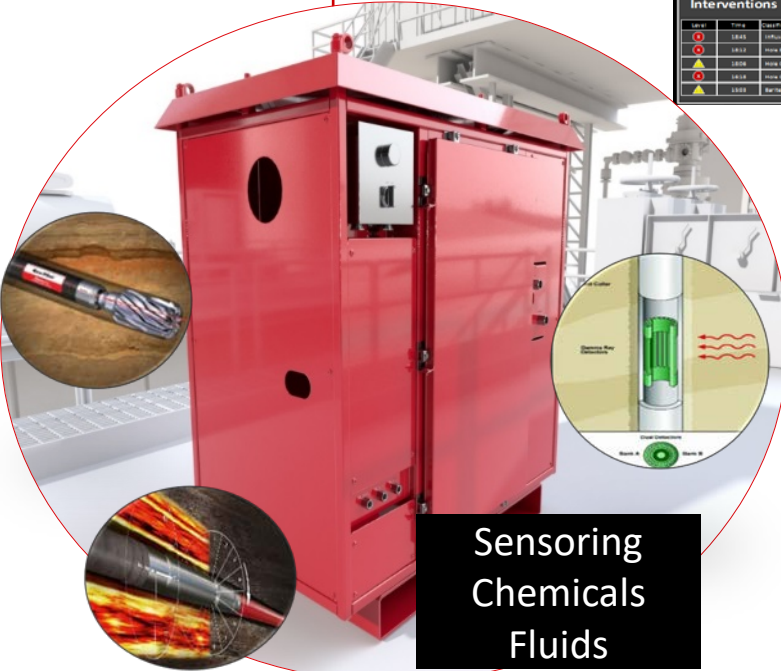
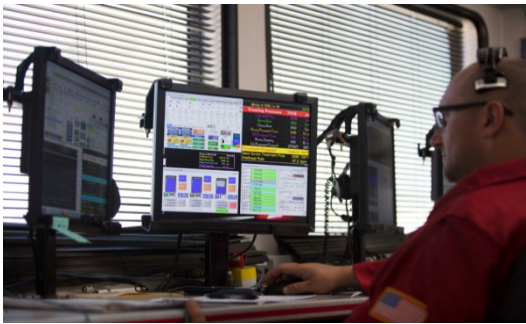
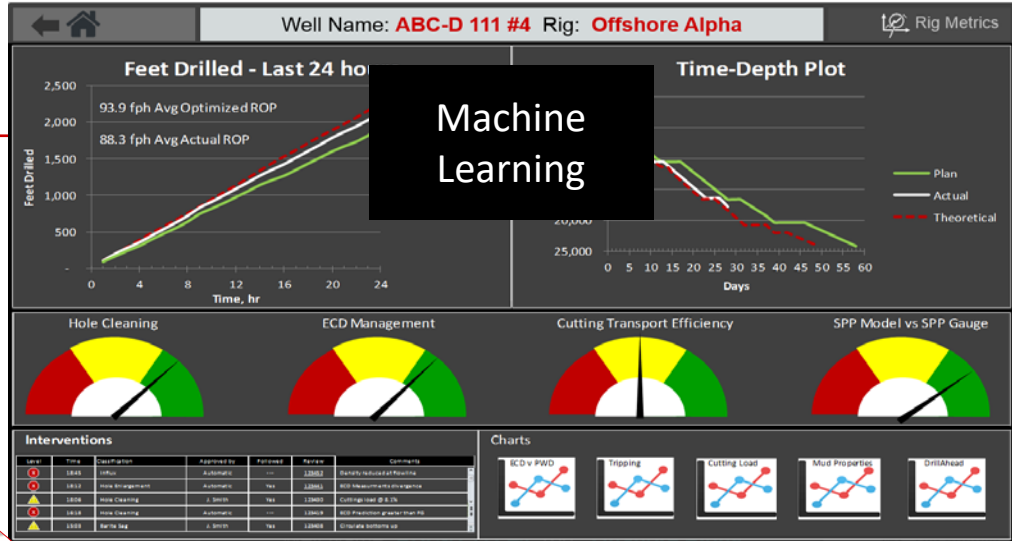


- Sub surface & reservoir insights with infinite details

Example: Drilling Automation

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

Digital Platform



Sensing
Chemicals
Fluids

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

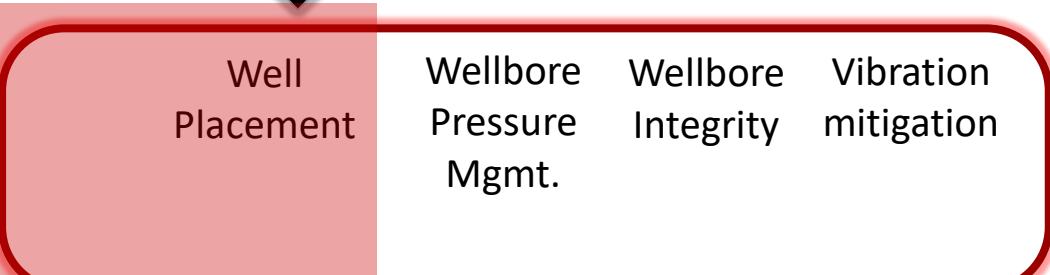
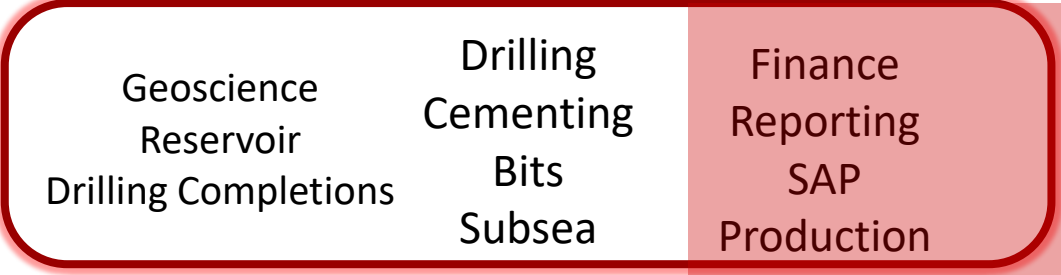
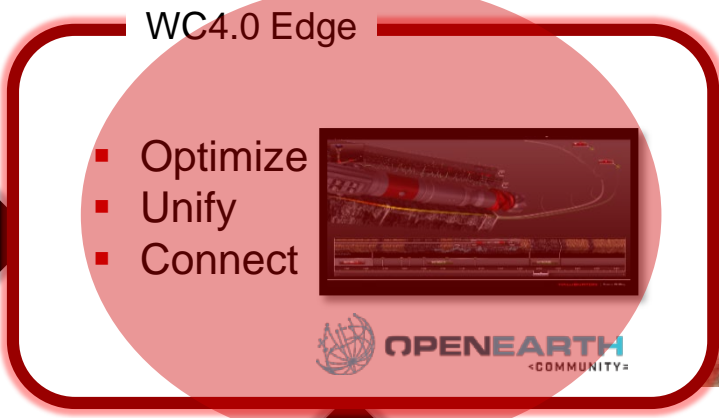
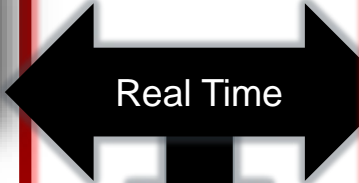
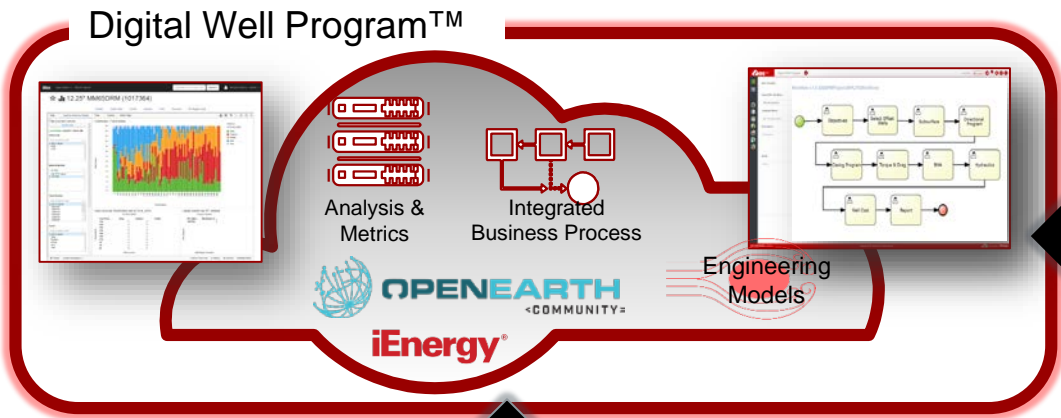
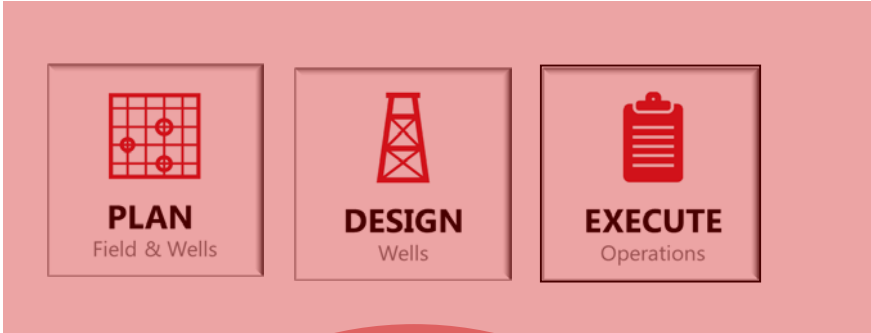


Hardware Automation

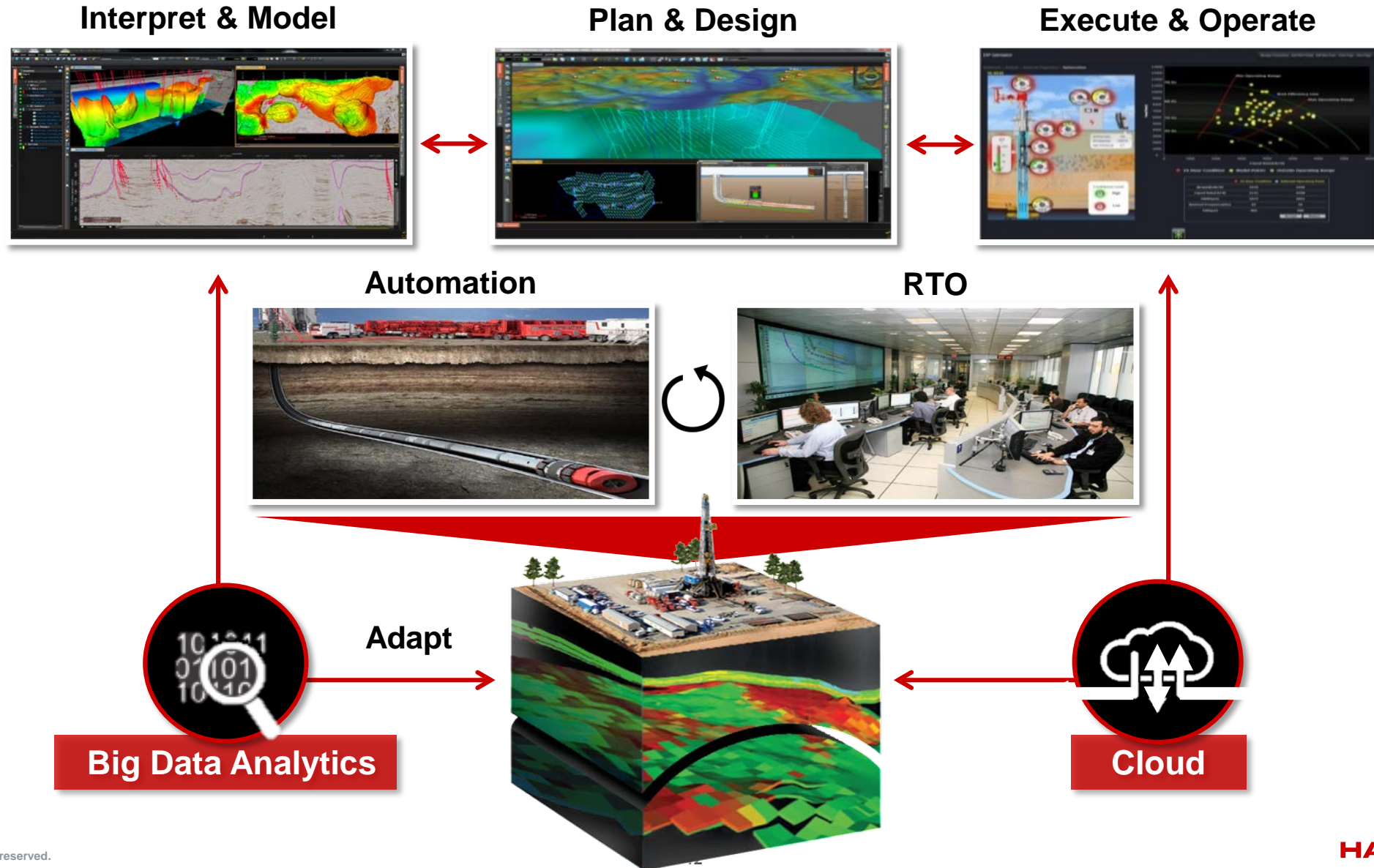
Managed Pressure Drilling (MPD)

Alliances, Partnerships, Ecosystems...

Lower Planning & Drilling Time
Increase Wellbore Quality
Increase AFE Predictability



E&P and OFS Solving Challenges, Together.



THANK YOU

