Cognitive E&P DataEcosystem

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The Promise of Digital

Potential Range of Impact on Global Expenditure in Conventional E&P UNIT DEVELOPMENT COST (2018 baseline)

- **Exploration**: 7% to 30%
- **Well Construction**: 9% to 37%
- **Development & Planning**: 4% to 20%
- **Production Operations**: 6% to 35%

**$60B to $290B of Savings**

Source: multiple market studies and consultant reports.
Digital Technology Ecosystem

Security

Cloud

IloT

Mobile

Automation

AI

UX

Machine Learning
Digital Technologies

Domain

Industry Goals

Efficient exploration

Reserves growth

Accelerate 1st Oil
Petrotechnical Suite

- Security hardened with continuous monitoring & enhancements
- Automated provisioning
- Optimized remote visualization
- Optimized file system & storage
- Automated software upgrades
- Subscription model with structured approval tools for customer
- Automated billing

3rd party apps & ocean plug-ins

Delphi
Cognitive E&P Environment

Shared Services

Data Ecosystem/OSDU

Secure 24/7 managed automated

Cognitive open

Schlumberger
Cognitive E&P Environment

**Petrotechnical Suite**
- PM
- GEOX
- GPM
- ECL
- IX
- VIS
- OLGA
- PIP
- OFM

**Native Domain Experiences & App's**
- Explore
- Develop
- Drill
- Produce
- [others]

**Shared Services**

**Data Ecosystem/OSDU**

**Data ecosystem services**
- unstructured
- data management
- cross-tenant
- E&P optimized
- open-source

**Shared services**
- 3DViz
- LogViz
- Engines
- Analytics

**Managed & Automated**
- 24/7
- secure
- automated

**Open & Cognitive**
- </>
- open-source

**Explore & Develop**
- cross-tenant
- E&P optimized
- open-source

**Native Domain Experiences & Apps**
- Drill
- Produce
- [others]

** Schlumberger**
A collaborative industry Forum formed to establish an open subsurface reference architecture:

- A cloud-native subsurface data platform reference architecture, with usable implementations
- Consistent API standards
- Master and reference data standards
Benefits of Open Sourcing the Data Platform

- Enablement of E&P Industry Digital Transformation Journey
- Domain Expertise & Knowledge Collaboration
- Accelerating innovation and delivery of new solutions
Data liberation

Application

Discover In-Context

Deliver In-Context

Build In Context

Automatic submission of data to Data Ecosystem

Search and discovery of data

Make data available enriched workflows

Access data through DE API's

Data Ecosystem
Automated Well Interpretation

Application

QC Visualization and Analytics

ML Correlation and Mapping

Data Ecosystem

WELLBORE DM SERVICES

WELLBORE LOGS

Liberation to DES

'Most logs'

Markers

ML Models
Cloud Computing is Transformational and Disruptive

With new technologies come...
- Cyber security
- Cloud
- Mobile
- AI / ML
- UX
- Automation
- IoT
- Data and analytics

Adoption challenges and disruptions...
- Business operating model changes
- New ways of working
- New IT operating model
- Cyber-security risk and control increase
- Data security model change
- Agile adoption of new digital services
- Acceleration of digital service introduction
- Customer digital maturity and risk to cloud migration
- Digital culture and competencies
- End-user digital service consumption
- New digital partner and supplier model changes
Press Release

Schlumberger Announces Enterprise-Wide Deployment of DELFI Environment for Woodside Energy

LONDON, August 20, 2019—Schlumberger announced today an enterprise-wide deployment of the DELFI cognitive E&P environment through a seven-year technology collaboration with Woodside Energy. By leveraging this secure cloud-based software environment to increase consistency, reduce study cycle time, and foster innovation in its operations, built around its expertise and digital transformation, the DELFI environment will provide agility to its customers and accelerate oil and gas discovery.

Schlumberger Selects Google Cloud as a Preferred Cloud Provider

Schlumberger expands petrotechnical workloads running on Google Cloud Platform to perform seismic processing, interpretation and subsurface modeling. Built on GCP, the DELFI data ecosystem enables secure cross-discipline collaboration and powers the environment’s domain workflows such as seismic and wellbore processing and interpretation.

Schlumberger Open Sources Data Ecosystem and Contributes to The Open Group Open Subsurface Data Universe Forum

Open source data ecosystem enables collection, integration, management, enrichment and discovery of upstream oil and gas data.

LONDON, August 22, 2019—Schlumberger announced today that it will open source its data ecosystem and contribute to The Open Group Open Subsurface Data Universe™ (OSDU) Forum to accelerate the delivery of the OSDU Data Platform. Schlumberger’s data ecosystem is based on core components of the DELFI™ cognitive E&P environment.

Schlumberger, Chevron and Microsoft Announce Collaboration to Accelerate Digital Transformation

Global organizations will work together to accelerate development of cloud-native solutions and deliver actionable data insights for the industry.

MONACO, September 17, 2019—Tuesday at the SIS Global Forum 2019, Schlumberger, Chevron and Microsoft announced the industry’s first three-party collaboration to accelerate creation of innovative petrotechnical and digital technologies.

Data is quickly emerging as one of the most valuable assets to any company, yet extracting insights from it is often difficult as information gets trapped in internal silos. As part of the collaboration, the three companies will work together to build Azure-native applications in the DELFI™ cognitive E&P environment initially for Chevron, which will enable companies to process, visualize, interpret and ultimately obtain meaningful insights from multiple data sources.