Putting Data at the Center: All Subsurface and Wells Data Stored in a Single Data Platform
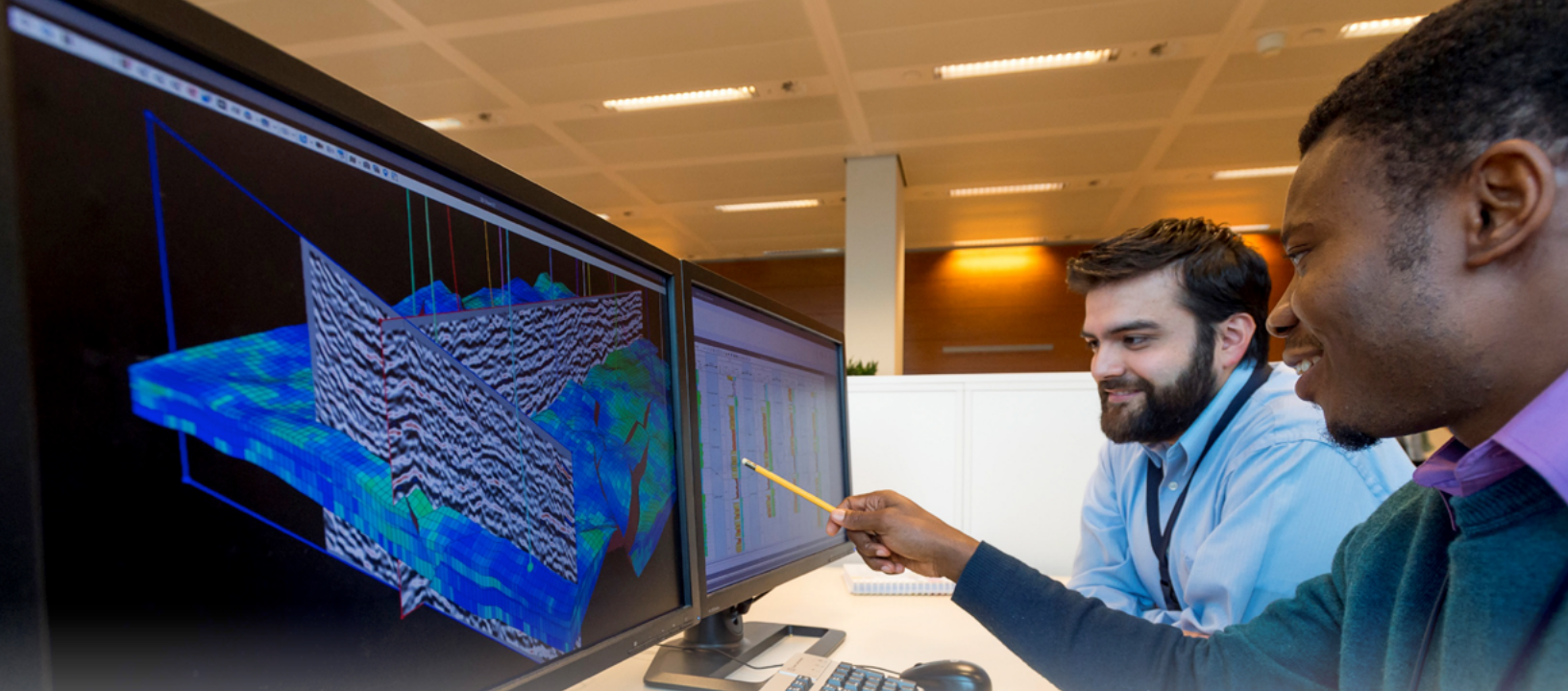
OSDU™
Open Subsurface Data Universe

The Open Group Open Subsurface Data Universe™ Forum is developing a standard data platform for the oil and gas industry, which will reduce silos and put data at the center of the subsurface community.

The OSDU data platform will:

- Enable secure, reliable, global, and performant access to all subsurface and wells data

- Reduce current data silos to enable transformational workflows

- Accelerate the deployment of emerging digital solutions for better decision-making

- Create an open, standards-based ecosystem that drives innovation

This will revolutionize the industry's ability to deliver new capabilities and reduce implementation and lifecycle costs across the subsurface community.

www.opengroup.org/OSDU

THE **Open** GROUP

The Open Group Open Subsurface Data Universe™ Forum

In the Spring of 2018, a group of leading oil and gas companies met to discuss how contemporary cloud technology could be used to transform the current complex data and application environment. The Open Subsurface Data Universe™ (OSDU) Forum, a Forum of The Open Group, was created with the objective of enabling new cloud-native data-driven applications with seamless access to the full range of subsurface and wells data as well as supporting existing applications and data frameworks.

The core principle of the OSDU solution is to separate data from applications. This will be achieved by developing a common data platform with standard public APIs and to involve global cloud hosting vendors to build working implementations that will:

- Allow companies to **focus on the truly differentiating parts of business activities**

- **Reduce the resource and cost burden** of independently designing and validating a subsurface data platform

- **Influence and accelerate key reference components that will be the foundation of the Upstream Digital Transformation**

By making this an open and transparent initiative, the OSDU data platform will be attractive for the industry as a whole, including oil and gas operators, cloud services companies, technology providers, software companies, academia, and others.

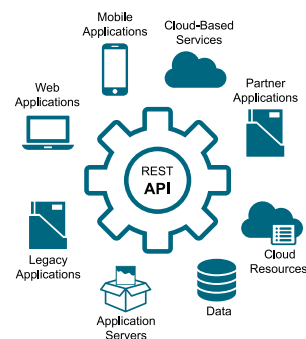## The OSDU Data Platform as an Industry Solution

The OSDU Forum will:

- **Publish a Reference Architecture:** a cloud-native subsurface and wells data platform reference architecture with initial implementations by Microsoft® Azure, Amazon Web Services® and Google® GCP, with others expected.

- **Define Application Standards** to ensure applications (microservices), developed by various parties, can run on the same OSDU data platform

- **Leverage Industry Data Standards** for frictionless integration and data access

Business Impact

- **Reducing data silos:** subsurface and wells data integrated and accessible in one data platform
- **Workflows in the cloud:** user workflows seamlessly executed across the OSDU data platform, taking advantage of powerful cloud-native solutions
- **Access to all metadata:** users will have access to powerful search capabilities
- **Competition and co-operation:** software vendors, oil companies, academia, and open community projects can develop software on the OSDU data platform

Current Members

Founding Members

Operators: Anadarko, BHP Billiton Deepwater, BP, Cepsa, Chevron, Concho Resources, ConocoPhillips, Devon Energy, Equinor, ExxonMobil, Hess, Marathon Oil, Noble Energy, Oil and Gas Authority, Pandion Energy, PETROBRAS, PETRONAS, Reliance Industries, Shell, Total, and Woodside

Suppliers: Altus Well Experts, Avanade, AWS, Baker Hughes GE, Beyond Limits, Bluware, CGG, CGI, Cognite, Dell Technologies, Dynamic Graphics, EACIIT, Earth Science Analytics, Emerson E&P Software, Energistics, EnergyIQ, Enthought, EPAM Systems, ESRI, Flare Solutions, Geophysical Insights, Google, Halliburton, Hitachi Vantara, IHS Markit, Ikon Science, INT, Intel, Interica, Intrepid Geophysics, KADME, Kappa, Katalyst Data Management, Larsen and Toubro Infotech, Logic Solutions Group, Maana, Maillance SAS, Microsoft, OAG Analytics, Oliasoft AS, Osokey, Petrabytes, PGS Geophysical AS, Quantico Energy Solutions, Qumulo, RagnaRock Geo, Schlumberger, Searcher Seismic Geodata, SecurityCompass, Softserve, Stonebridge Consulting, Target Energy Solutions, Teradata, TGS, Triton Data Services, Troika International, Well Log Data, Wipro, and XMPRO.

Become a Member

The Open Subsurface Data Universe™ Forum provides a vendor-neutral environment for the development of an open data platform and ecosystem. It utilizes the global reach of The Open Group to build awareness, recognition, and adoption.

The OSDU Forum is open to stakeholders from oil and gas operators, service companies, technology providers, software companies, academia, and others. The aim is to accelerate innovation and transformation in the industry.

By actively participating in the OSDU Forum your organization can:

- **Accelerate platform design and development efforts** by taking advantage of work that has already been proven
- **Reduce the cost burden** of designing and validating a subsurface data platform on your own
- Accelerate your **digital agility through increased collaboration with a community of experts**
- Benefit from a community developed non-differentiating data platform enabling the rapid and low cost development of **differentiating strategic business workflows and solutions** by vendors, operators, academia, and others

To find out more about participating in this new initiative, please visit www.opengroup.org/membership or email memberservices@opengroup.org

Current Scope

- **Coverage:** any organization with a need to store, manage or analyze subsurface and wells data
- **Portfolios:** subsurface including exploration, development, and wells
- **Support for data-driven applications:** all data in one data platform significantly accelerates an organization's ability to take advantage of advanced data science, machine learning, and deep learning tools

Current Problem Statement

- **Data is linked to applications:** we are not data-driven but applications-driven and, therefore, we will have silos
- **Data is stored in silos:** therefore, there is no lineage between data sources or from wells back to exploration
- **Metadata is not stored with the data:** metadata is information about the data
- **Limited/no search capabilities:** since we have no metadata, we have no real search capabilities
- **Data set-up:** not suitable for data-driven applications

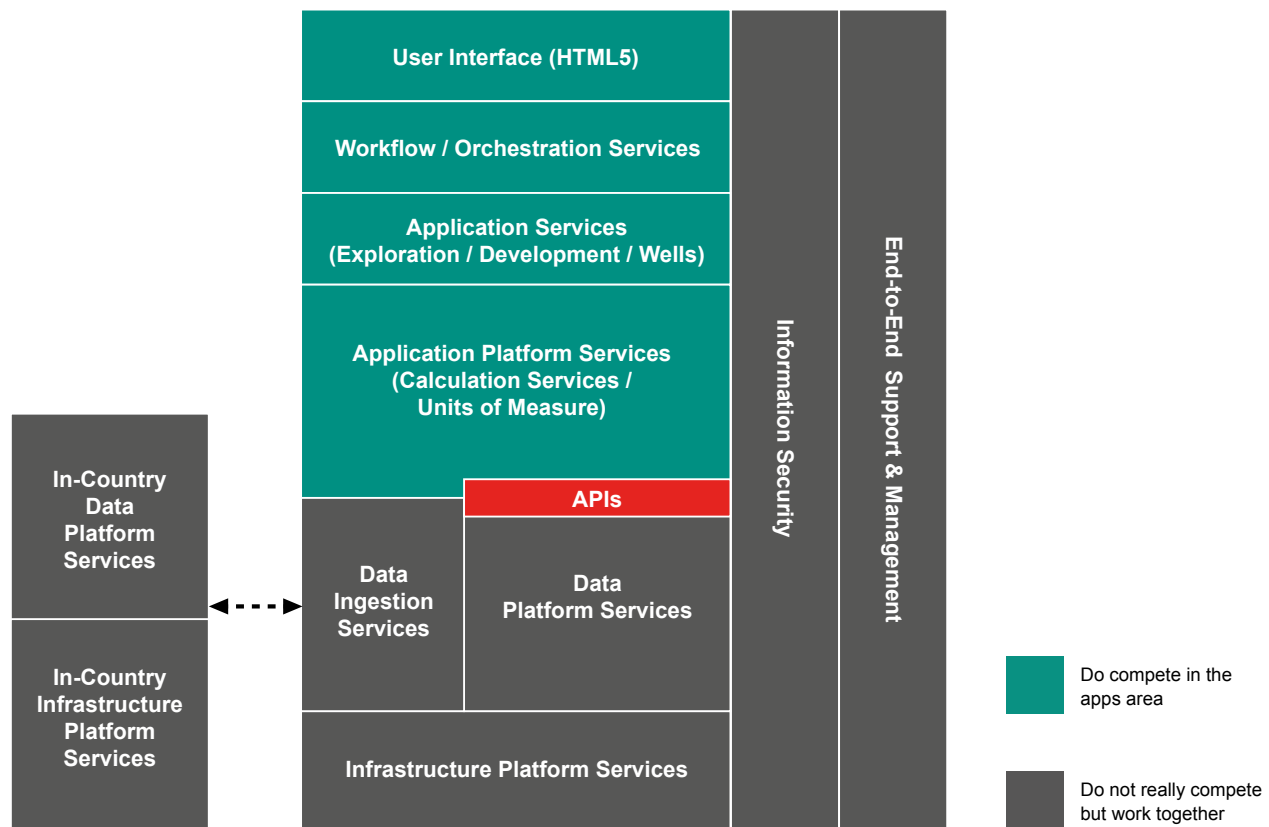## OSDU Value

The OSDU data platform will:

- Revolutionize the industry's ability to deliver new subsurface capabilities
- Create an open, standards-based ecosystem that drives innovation
- Accelerate the deployment of emerging digital solutions for better decision-making
- Reduce implementation and lifecycle costs
- Eliminate current data silos to enable transformational workflows
- Provide access to all metadata: users can access their data and applications wherever they are
- Create new opportunities for monetizing intellectual property:
  - Moving to subscription models for applications or services sold by independent software and services providers
  - Opportunity for multiple competitors to sell specialized algorithms or workflows that are easily integrated because of compliance to OSDU standards

"It is our belief that the foundation of a digital energy company is to make data available to our users at any time and place. The OSDU Forum supports this ambition by enabling standardized access to subsurface data, separating lifecycle data management from the applications enabling innovation and creative use of subsurface data."

Harald Laastad, VP and Program Lead Subsurface Analytics, Equinor

- User Interface (HTML5)
- Workflow / Orchestration Services
- Application Services (Exploration / Development / Wells)
- Application Platform Services (Calculation Services / Units of Measure)
- APIs
- Data Ingestion Services
- Data Platform Services
- Infrastructure Platform Services
- Information Security
- End-to-End Support & Management
- In-Country Data Platform Services
- In-Country Infrastructure Platform Services

Do compete in the apps area

Do not really compete but work together

- All public cloud-based: provides unlimited scalability

- All data for the data platform services loaded via the data ingestion services: extract metadata, data quality, etc.

- Well-defined (RestFUL) APIs defining the access to the data platform services

- Applications: (micro) services-based

- Information security: covering all elements with focus on data security

- In-country solution: for those countries where we are unable to move data out of the country and where there are no cloud services

- Support for legacy applications based on Microsoft® Windows or Linux® desktop

The OSDU Forum is actively working to publish an OSDU data platform demo that delivers the same cloud-enabled functionality on both Microsoft Azure and Amazon Web Services, as defined by OSDU Forum specifications. This shared demo will be available to OSDU Forum Members at the end of Q2 2019, and the first commercial release is scheduled for Q3 2019.

For further information, please visit www.opengroup.org/OSDU

"Having worked with The Open Group to launch the OSDU Forum and contributed several of our own developments, Shell is very pleased with the acceptance in the market to date. We believe in putting data at the center as an industry, and that offering a broad API-driven platform for application development is crucial to support organizations in this sector."

Johan Krebbers, GM Digital Emerging Technologies/VP IT Innovation, Shell

About The Open Group

Leading the development of open, vendor-neutral technology standards and certifications

The Open Group is a global consortium that enables the achievement of business objectives through technology standards. Our diverse membership of more than 700 organizations includes customers, systems and solutions suppliers, tool vendors, integrators, academics, and consultants across multiple industries.

Vision

Boundaryless Information Flow™ achieved through global interoperability in a secure, reliable, and timely manner.

Mission

The mission of The Open Group is to drive the creation of Boundaryless Information Flow™ achieved by:

• Working with customers to capture, understand, and address current and emerging requirements, establish policies, and share best practices

• Working with suppliers, consortia, and standards bodies to develop consensus and facilitate interoperability, to evolve and integrate specifications and open source technologies

• Offering a comprehensive set of services to enhance the operational efficiency of consortia

• Developing and operating the industry's premier certification service and encouraging procurement of certified products

Keys facts include:

• Over 700 Member organizations, with 43,000+ participants in The Open Group activities from 126 countries

• Our Platinum Members are DXC Technology, Fujitsu, HCL, Huawei, IBM, Micro Focus, Oracle, and Philips

• Services provided include strategy, management, innovation and research, standards, certification, and test development

• Over 90,000 TOGAF® 9 certifications worldwide

Further information on The Open Group can be found at www.opengroup.org.

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