TETRA TECH RPS ENERGY | TRAINING

N597: Managing Subsurface Data and More - OSDU™ Fundamentals

Instructor(s): Jürgen Grötsch

Format and Duration

Classroom - 1 Day
Virtual - 2 Sessions

Summary

Managing large amounts of complex data types on a global scale, as with subsurface projects, is a major challenge for the energy industry, regulators, and new geo-energy developments related to the energy transition (geothermal, subsurface energy storage, carbon sequestration). Currently, geoscientists and engineers are spending a large amount of their time to search and collect data for projects and use in various technical applications, which results in inefficiencies. This is not just slowing down project progress significantly but is also a major cost and capability factor for the energy industry and public institutions. In addition, it also hampers development of data-driven workflows and the application of data science tools (AI/ML). Even more concerning, it obstructs the execution of end-to-end workflows and their orchestration. This applies to all four major subsurface project workflows, which are exploring for new energy opportunities (PBE), developing and executing such opportunities (FDP), drilling new wells (WDP), and optimising them during long-term operations (WRFM). In order to address this digitalisation and organisational challenge, the energy industry, service providers, and IT companies have decided to stop competing in the field of technical data management and setup the open-source Open Subsurface Data Universe (OSDU™) project managed via the Open Group. The newly established cloud agnostic data platform is revolutionising technical data management and is now considered production ready. The roughly 230 consortium members are currently working on the implementation in their organisations, services, and applications. This course provides participants with awareness level knowledge on fundamental elements of the open-source data platform, data ingestion into it, deployment of it in large organisations, and some use cases for workflow improvements. It also provides insight into future developments around subsurface data and applications.

Learning Outcomes

Participants will learn to:

1. Detail the data management challenges in the energy industry and public organisations and the benefits of implementing the OSDU™ data platform.
2. Simplify and standardise technical data management in large organisations.
3. Enhance data-driven and technical workflows in subsurface & wells projects via the OSDU™ data platform.
4. Enable data and application interoperability in subsurface E2E workflows.
5. Collaborate more efficiently on complex projects with subsurface or wells professionals.

Training Method

This is a classroom or virtual classroom course comprising a mixture of lectures, discussions, and case studies. The course will follow the discover, ask, and learn approach.

There is also an option to arrange an on-site workshop internally for companies or public organisations

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based on the course content. The event can serve as an awareness level introduction or, alternatively, as a kick-off session for an OSDU™ data platform implementation project within your organisation. Such a workshop aims at developing a common understanding and an integrated implementation approach for the OSDU™ data platform involving subsurface and wells professionals, technical data managers, and IT services staff in your organisation.

Who Should Attend

This course has been designed for senior level geoscientists, well engineers, reservoir engineers, production technologists, technical data managers, data scientists, and IT professionals who are working with subsurface and engineering data or a portfolio of technical applications. Managers and others who have previous experience in large-scale data management activities in their organisations will be enabled to develop a better understanding of how to apply state-of-the-art cloud technologies and workflow improvement opportunities in their respective sectors.

The course is recommended for staff from the energy, service, and IT industries, as well as for employees in the public sector or academia. Particularly staff involved in geo-energy, new energy, nuclear waste site projects, or major national subsurface initiatives (e.g., geothermal) are encouraged to attend this offering.

Course Content

This course will address questions about why a paradigm shift has happened in the field of technical data management in subsurface and wells driven collaboratively by the energy, service and IT industry. The benefits, opportunities and implementation of this revolution via the open source OSDU™ data platform solution are at the heart of this course offering. The course will provide insights into the following questions:

1. Why is a fundamental change in subsurface data management (and beyond) required?
2. What is the open-source OSDU™ Forum and who participates in it?
3. Why is the OSDU™ project rapidly becoming a global success?
4. What is the difference between a data lake and a data platform like the OSDU™ data platform?
5. What opportunities does a cloud agnostic data platform provide for the energy, service, and IT industries as well as the public sector and regulators?
6. How can you enable data-driven workflows and data science applications via the OSDU™ data platform?
7. What is the importance and status of subsurface and wells data type standardisation?
8. How does the OSDU™ data platform simplify subsurface & wells data management?
9. What are the requirements for OSDU™ data platform deployment in large organisations?
10. What is data ingestion and how does it work?
11. How to manage data access and security in a global cloud-based infrastructure?
12. What is the role of the newly established marketplace?

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13. What are the business and technical workflow improvement opportunities triggered by the OSDU™ data platform?

Part 1: Basic introduction to the OSDU™ Forum and data platform

- Why change in subsurface & wells technical data management is required
- What is the OSDU™ Forum and how does it manage software development?
- Introduction to the open-source OSDU™ data platform
  - Basic architecture
  - Difference between a data lake and the OSDU™ data platform
  - Cloud agnostic data platform-as-a-service (PaaS)
  - Data types, global standardisation, and JSON schemas
  - Role of the RestFul APIs
- Main components of the data platform
  - Entitlements & Obligations – access and security
  - Data ingestion and meta data enrichment
- Shared services in the OSDU™ program
  - Georeferencing
  - Units of Measure

Part 2: Benefits and application

- Simplification of technical data management via standardisation
- New opportunities introduced by the OSDU™ data platform
  - Enabling interoperability between technical applications
  - Enabling data-driven workflows (AI/ML)
  - Lineage and audit trails for project data
  - E2E workflow orchestration
- Technical applications and market-place developments

Part 3: (Optional) onsite workshop for your organisation

- Interactive workshop tailored to organisational needs