

Digital Transformation of the NDR

Kerry Blinston

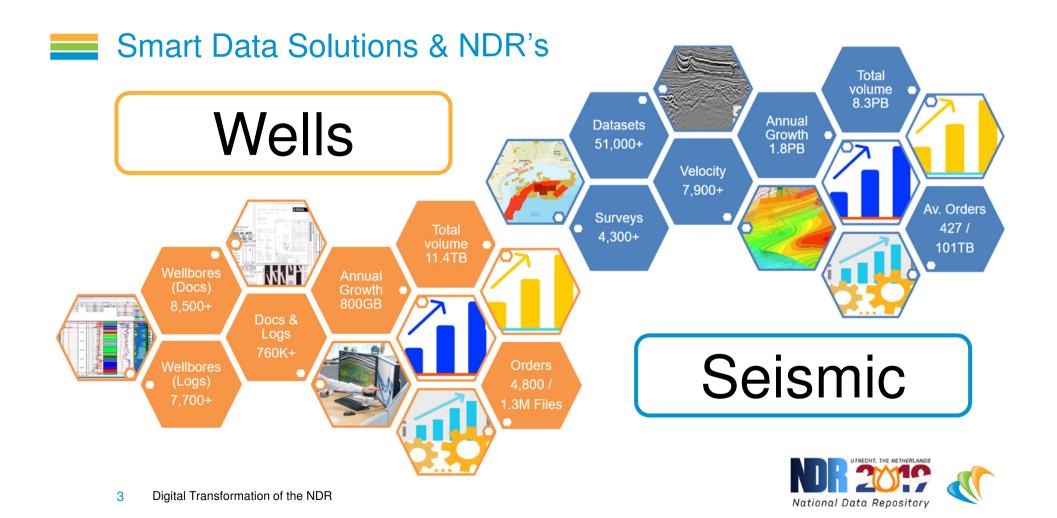


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Topics

- Smart Data Solutions
- Failure
- Success
- Improvement vs Transformation
- Challenges
- Achieving Digital Transformation





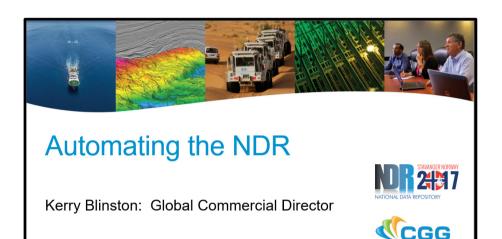
Introducing Smart Data Solutions





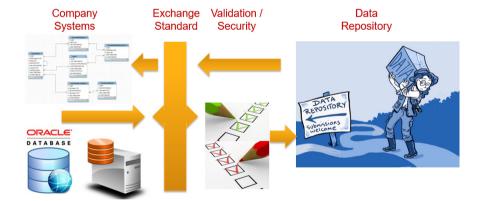






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WHITE PAPER

Creating value from National Data Repositories

Introduction

As the name suggests, National Data Repositories or NDRs are typically set up by government agencies and regulators as part of a long-term strategy to protect and optimize the value of a nation's natural resources. By collecting, standardizing and making data available quickly and efficiently they reduce barriers blocking investor entry, eliminate competitive positions based on data holdings and thereby maximize inward investment on exploration, development and production operations.

To achieve this, NDRs must create value for key data generators and users - the operating companies and the service providers. In many respects, the value of NDRs to operating companies, especially in territories that have implemented public data release policies, can be argued to be the data volumes they enable them to access. In a study commissioned by Common Data Access, "The business value case for data management - a study" (Hawtin and Lecore, 2011), it is stated that, since oil company value is directly related to an understanding of the subsurface data contributes 25-33% of the value. Of course, unless the data can be efficiently accessed and integrated into a company's systems and processes and be considered of recognized quality, that value is diminished.

CGG & NDRs CGG Data Management Services has

implemented and operated NDRs around the world since 2008. In 2013 CGG was awarded the contract to operate Diskos Norway's National Data Repository Widely regarded as the first true NDR and referenced as an example of internation best practice, Diskos serves over 6 different companies and over 300 regula users. It celebrated its 20th anniversary of operation in 2015. A core team of CGG experts deliver the services together wit staff from our project partners, EVRY and Kadme. The initial phase of the contract included migration of a proprietary dat model format into the PPDM data mode the development of new functionalities, th design and implementation of the I environment and the transfer of nearly PB of data. Today the data volum exceeds 5 PB. Each month an average of 150 TB of new data is loaded. The 300-Diskos users place over 1000 data orden every month, averaging 65 TB of downloads and distribution

In this white paper we discuss curren NDR best practice and share ou experience on how best to initiate implement, operate and create value from NDRs. We reveal how NDRs have developed to provide greater automation and new capabilities and consider how they must further evolve to meet the future needs of the industry.

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Successes

- ✓ Ordering / Download
- Header Validation
- ✓ Header Population
- ✓ Data Upload
- Machine Access

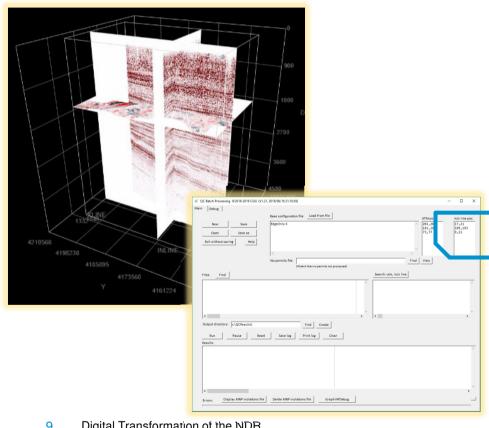
- ✓ Cloud Data Delivery
- API Data Streaming
- Advanced Seismic QC
- Classification, tagging and metadata extraction



Crawler checks Crawler checks

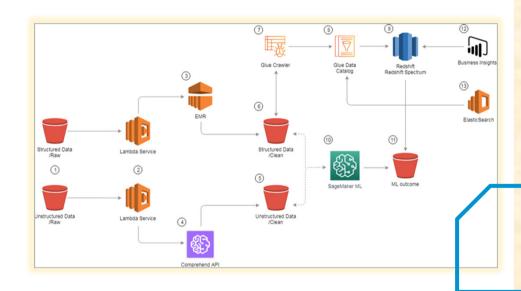
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Transformation: A new term for improvement or something genuinely different?

Improvement: the fact of something getting better, or the act of making something better

Transformation: the process of changing completely the character or appearance of something in order to improve it



Success, Failure or Both?

Improvement	Transformation
Fix existing 'pain points'	Develop new, better and sustainable futures
Tactically driven relying on processes, methods and technologies	Strategy driven, fundamentally changes attitudes, mind sets and beliefs
Delivers <u>small increments</u> in performance and results	Creates <u>significant increments</u> in performance and results







Technology Challenges

Efficient / Effective Operations

Automation

Application Integration

Data Integration

File Formats

Enabling Technology

Global Cloud



The tyranny of distance

Data File Formats Integration Global Cloud Korea Central West US US DoD East US Gov Texas US DoD Central Southeast Asia Geographic holes Latency South Africa North **Export restrictions** Distributed data

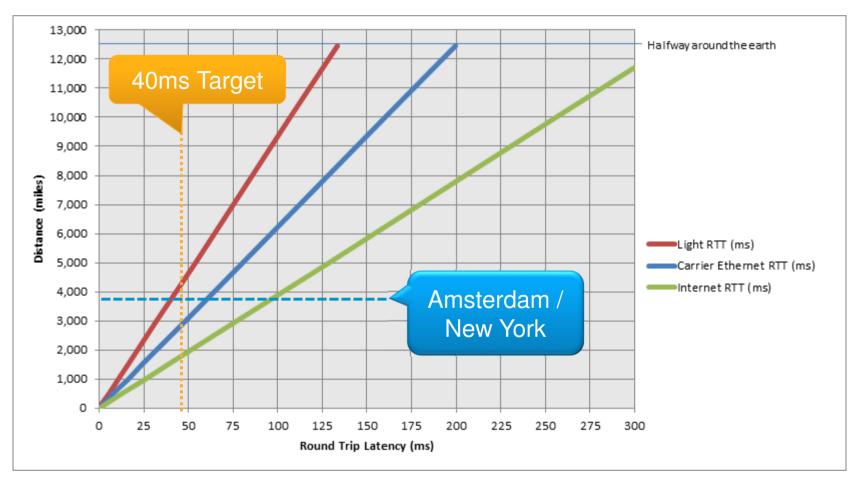




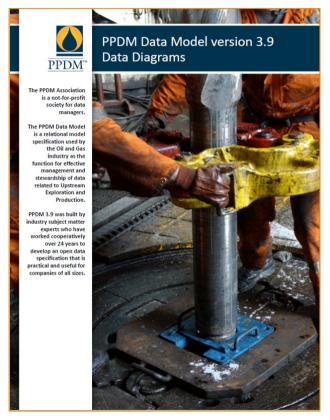
Application

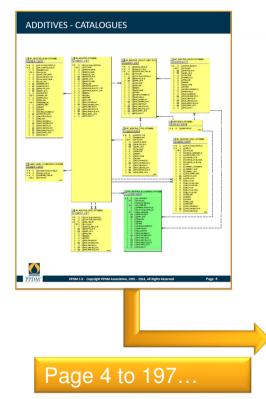
Integration

Automation



Data scope





Automation

Application Integration

Data Integration

File Formats

Global Cloud





Unlocking access to seismic data

The Open Group launches the Open **Subsurface Data Universe Forum** 21st March 2019

"By using new digital technologies and business best practices, we can transform the way the industry stores, shares, and analyzes subsurface data." Steve Nunn, president and CEO of The Open Group

Bluware has recently donated its OpenVDS software... enabling true workflow efficiency and collaboration on large geophysical datasets" Dan Piette, CEO Bluware

https://www.opengroup.org/open-group-launches-opensubsurface-data-universe-forum

Automation

Application Integration

Data Integration

File Formats

Global Cloud

Why is Legacy Data Difficult to Access?



Finally, the format might not be suitable for the purpose you have in mind, like for example analytics.

"Teradata talked about data lakes. A talk that was clear that something has to happen in companies to change their relationship with data. Seq-Y and LAS are great transfer data types, but sub-par to terrible to work on"

Jesper Dramsch - extract from an article entitled Geoscience and Machine Learning - EAGE 2017 Workshop.

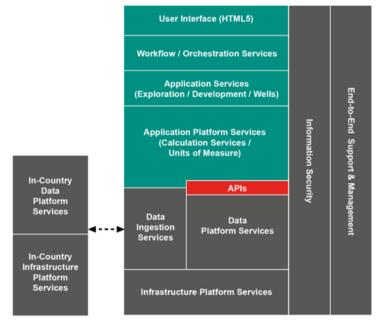


Embracing Emerging Technologies to Economically Revisit Legacy E&P Data. Andy Cairns (CGG Services (Australia) P/L)



A long time coming

Open Subsurface Data Universe™ Forum - Scope



https://www.opengroup.org/membership/forums/open -subsurface-data-universe/scope

Application Automation Integration Data File Formats Integration Global Cloud

1. Open Spirit

Do compete in the

Do not really compete but work together

apps area

- 2. Ocean Store
- 3. Open Earth Community
- 4. Open Subsurface Data Universe





Behaviours & Business Models

- Collaborative working
- Maintaining competition

Standards

- Development / Evolution
- Disciplined usage
- Regulatory oversight

Resource

- Attracting talent
- Enabling digital immigration
- Recognition



Achieving NDR Transformation





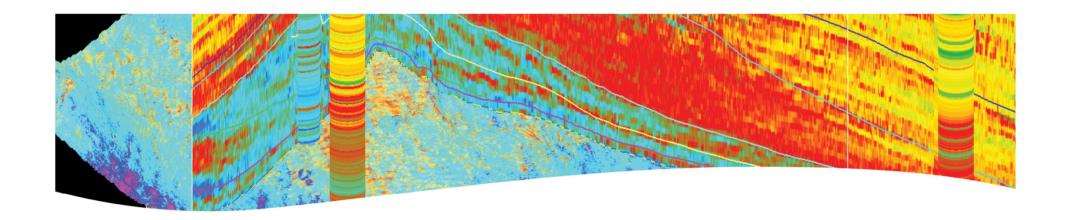


Get off the side lines and into the game

Uphold the highest standards

Technology enables, people create





Thank you

