

Governments are the custodians of oil and gas data worth many billions of dollars. National Data Repositories (NDRs) are where governments store that data, to preserve and protect it, and to exploit it for the benefit of future generations.

Why a National Data Repository?

National Data Repositories sit at a confluence of information technology, regulations, energy policy, and internet commerce. They contain terabytes of data, some of which must be kept confidential, and all of which must be made available to the right people in a simple, secure, and speedy fashion. They are the embodiment of regulations that set out how oil and gas data must be submitted to the regulator, stored, and preserved over a period of decades for future uses we cannot yet imagine. (Twenty years ago, who would have thought that oil and gas data would be critical to the development of the carbon capture and storage industry?)

The data that NDRs contain lets governments craft energy policy, prioritise areas for licensing, and ensure current licensees carefully steward the nation's natural resources. And one way or another, NDRs must pay for themselves: a combination of drop box, internet shop, trading floor and Library of Congress does not come cheap. Arguing for, and securing the money to set up and run an NDR is neither quick nor easy.

It takes a special kind of person to run an NDR. Someone that understands data, IT, contracts, laws and regulations, has the vision to build and grow a user community, and is willing to do all this as a public servant, rather than as CIO of a multinational corporation. Such people are few and far between, but every couple of years they get together at the NDR Conference, to share experiences, learn from and support each other, hear about new technologies and trends, and figure out how to tackle the shared problems faced by NDRs around the world.

Policy, presentations and pancakes

NDR2017 has just wrapped up. 165 delegates from 30 countries came together for three days of meetings, discussions, presentations and pancakes at the conference facilities of the Norwegian Petroleum Directorate in the port city of Stavanger, Norway. Delegates came from near and far – some from the same business park, some spending a day on a plane to journey from the other side of the world, but all in the spirit of celebrating the unique and diverse natures of their countries, their NDRs, and to share the progress they've made since they last met.

We heard from the oldest and the youngest NDRs on the block. The Energy Regulator in Alberta, Canada, has been collecting data since 1938, and had a wealth of experience and expertise to share with the conference, such as how to handle the permitting of over 500 wells per month. Zanzibar's NDR has been in existence for just 56 days, and its delegates attended to learn, network, and make their first steps on this long, but valuable journey.

Many countries shared the unique challenges in building and running an NDR. New Zealand shared its efforts to keep track of the whereabouts of oil and gas resources when an earthquake can move one part of the country relative to another by tens of metres. From Sudan, we learned of their dedicated work to keep their NDR running in the face of overwhelming international sanctions. And Greenland (population 56,500) shared their solution to the problem of gaining access to skilled resources, by partnering to create an NDR through out-sourcing rather than trying to build one from scratch.

Open data, open government

The Director General of the NPD, Bente Nyland, opened proceedings by speaking powerfully to the benefits Norway's oil and gas industry has received from easy access to open data.

"Companies compete on the use of the data, not by limiting access to it. This 'open data' policy gives us a competitive advantage in attracting global investment", she said.

This theme was echoed in the training programme running alongside the conference. Sessions on standards in E&P data transfer and seismic data storage emphasised the benefits of adopting common, standard approaches, including seamless interoperability between software packages; lower cost delivery of required data to regulators; and certainty of access to high value data, even decades later.

The need for standards continued in the data science and analytics workshops held. Delegates expressed frustration that so little subsurface oil and gas data is "analytics ready" – either represented as scanned images of paper, stored in formats that are not consistently followed, or lacking the software tooling and programming interfaces needed by data scientists to get going. Together, these pose a real barrier to moving subsurface data science to the next level.

When is good good enough?

Standards also cropped up in the update shared by the NDR Data Quality Project, which began at the NDR 2012 meeting in Malaysia, gathered pace at the 2014 meeting in Azerbaijan, and is now approaching a conclusion. Three substantial documents written by the project are soon to be published by Energistics, and cover the business case for data quality management; the core concepts of data quality, standard business rules and metrics, and their place in a data quality framework; and guidance on how to implement that framework within an NDR or an oil company.

The group made the very pertinent point that without a view of data quality, modern data science techniques will just help us make faster, more confident decisions that are completely wrong.

A quorum in the forum

For some, meeting every two years isn't enough to make progress. To get things really moving, regional groups have emerged within the NDR community. Around the North Sea, the regulators of Norway, Denmark, the Netherlands, and the UK have got together to form the North Sea Data Management Forum, set up to establish common data standards across all North Sea countries, particularly where interchange with the regulator is concerned. Through a Memorandum of Understanding, the countries will agree an annual programme of work that starts to tackle these shared issues – making the North Sea a simpler, and more cost-effective place to work.

Seeing the same need, regulators in Africa have also come together to form the Africa Petroleum Data Management Forum. Composed of representatives from Angola, Ghana, Kenya, Mozambique, Southern Sudan, Tanzania and Uganda, and backed by the NPD's ground-breaking Oil for Development programme, the forum provides a venue to tackle the unique challenges of running an NDR in Africa, and for each of the individual member countries to share their talent and expertise, whether regulatory or technological in nature. The forum was announced at the meeting with great passion and verve. It will be exciting to hear at the next meeting of the progress it has made.

Turning to the future

The conference would not have been possible without the sponsorship of many companies. The platinum sponsors – Schlumberger, CGG, and Target – each shared their view of the future of the NDR. Whether in the cloud, through machine learning, or honed by the relentless pursuit of automation, these approaches hold answers to some of the long-standing challenges identified in the breakout sessions considering the future of well and seismic data management: how do you build a collection of national data that is of known quality and completeness, and that is accessible to current and future oil & gas explorers and, increasingly, directly to the computing systems they use?

It's not all about the technology

Despite the rise of the machines, artificial intelligence, and data science, NDRs still need people to oversee them, and those people need a solid foundation of skills and training to get their job done well. We heard from CDA on their efforts to improve access to education in data management, including the undergraduate level course developed at the Robert Gordon University and delivered by distance learning which had three conference delegates as students.

They also shared their intentions regarding the next educational step, at Masters level, and the need that all these initiatives share to build the “Body of Knowledge” acquired by all oil and gas disciplines – the “know-how” and best practice that sets a professional data manager apart from a new hire. Many delegates committed to help put this BoK together, and we look forward to hearing about their progress in future NDR meetings.

Going out with a boat

The conference focus on food and fun should not go unreported. It started with a “where in the world is that?” icebreaker quiz that got everyone talking, continued with the delicious food and snacks served by the NPD at every break, and reached a peak at the marvellous conference dinner at “Flor & Fjære”, a tropical island paradise a short boat ride from Stavanger, covered in begonias and home to the only palm trees in Norway. Amidst beautiful gardens, good food and great company, the NPD toasted the success of the 2017 NDR conference, and looked forward to the next gathering of this most remarkable of groups, in 2019.