Diskos Vendor Conference

Diskos 2.0

21.03.2019

Agenda
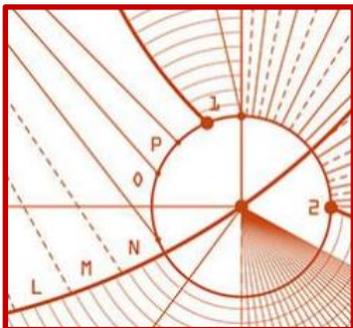
Agenda points

Introduction: Presentation of Diskos and the purpose of the conference	12.00-12.15
Presentation of the planned RFI and tender process including future needs	12.15-13.00
Q&A: Response to selected pre-submitted questions	13.00-13.30

01

Introduction

Presentation of the
Diskos solution
and the purpose of
the conference

Purpose of the Diskos vendor conference and tender process

The conference will provide an overview of current and future requirements in Diskos

The purpose of the vendor conference is to provide potential vendors with a **high-level overview** of the current Diskos-solution as well as **future needs** prior to an RFI- and tender-process.

The aim is to encourage early **dialogue** between vendors to consider **partnership** in the RFI, RFP and contract period.
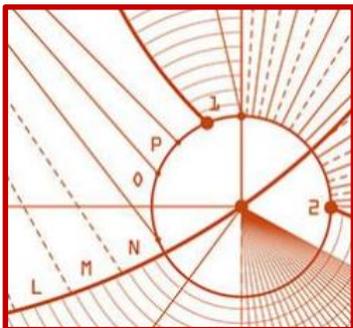
About the Diskos solution

The Diskos database stores the majority of E&P data from NCS (Norwegian Continental Shelf)
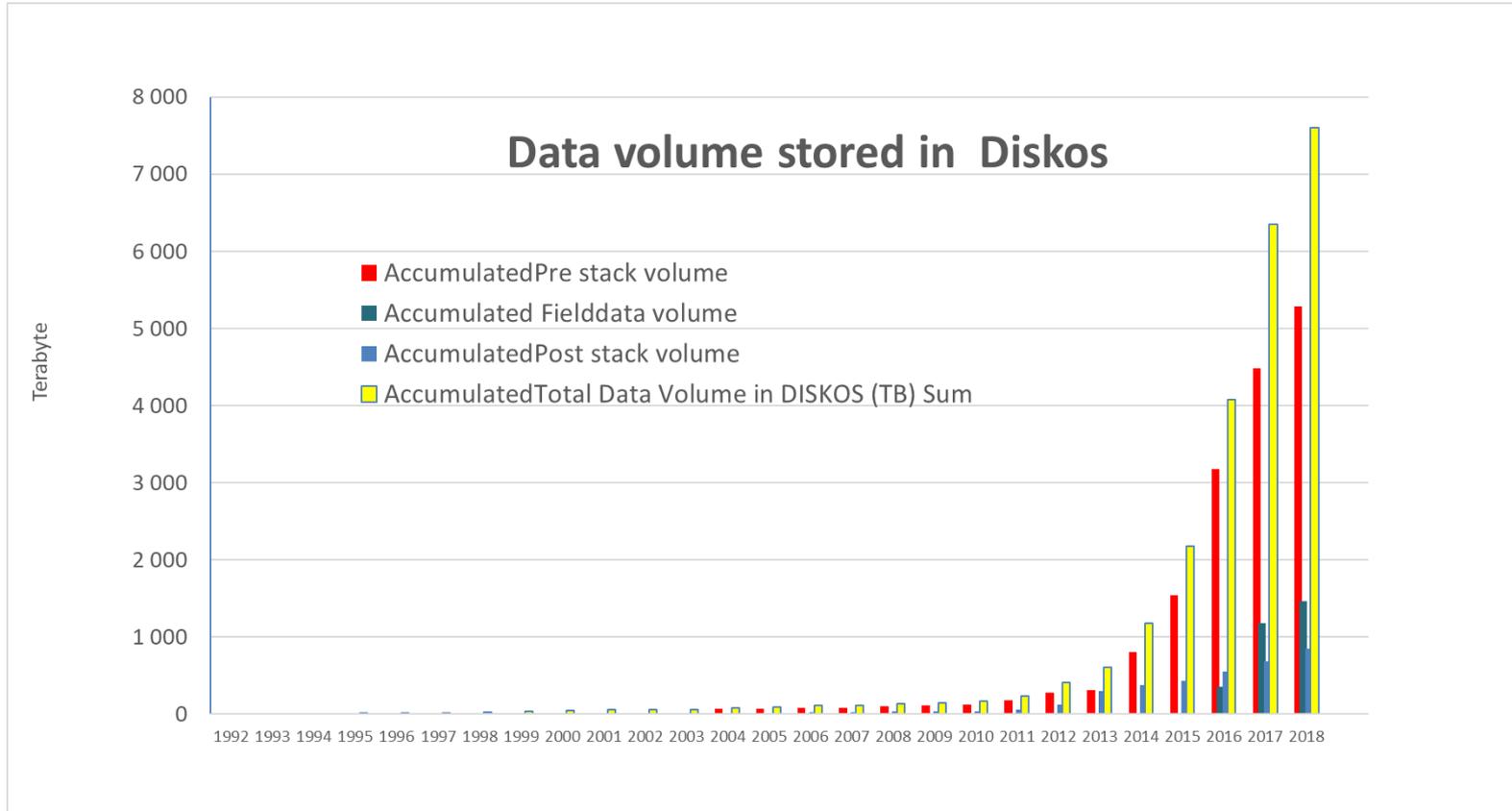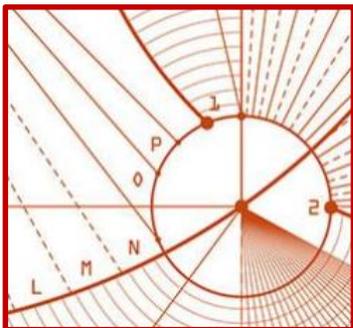
History

- A joint venture, comprised of a group of oil and gas companies (~40), collaborating on data management

- Formed to efficiently handle exploration and production data on behalf of the NPD and the Diskos member companies

Diskos today

- Data types:

    - **Reference data (Licence areas etc.)** source: NPD Fact Pages

    - **Well***

    - **Seismic***

    - **Production***

- Companies frequently **trade*** confidential data through Diskos (public data is accessible to all)

- Current supplier contracts were in 2015 estimated to have a total value of **over 250 mill**. NOK allocated over a six-year period

*Modules in the Diskos system

Diskos currently stores ~8 PB of data.
The volume is assumed to increase by ~2 PB per year

Data volume stored in Diskos

- AccumulatedPre stack volume
- Accumulated Fielddata volume
- AccumulatedPost stack volume
- AccumulatedTotal Data Volume in DISKOS (TB) Sum

NDR (National Data Repository) modules' key functionality

Key functionality in the Production module

Data receipt:
Monthly Production figures are reported from operators M2M
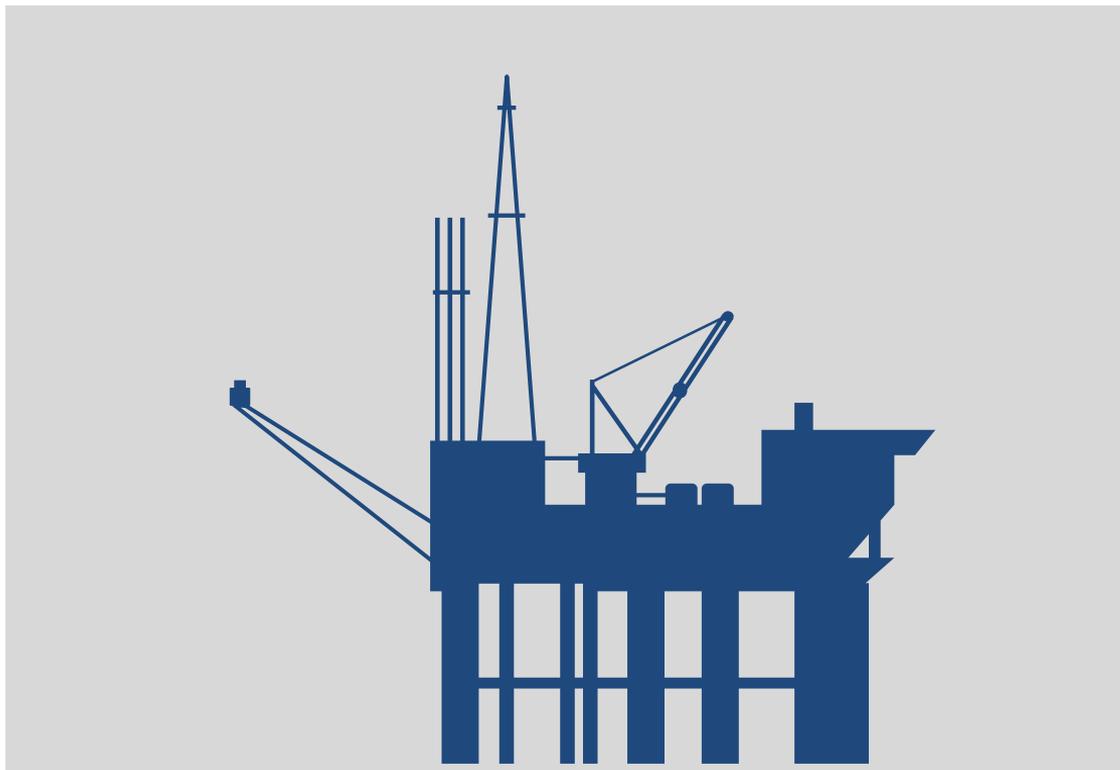
Data validation:
Validation of the production figure reports.
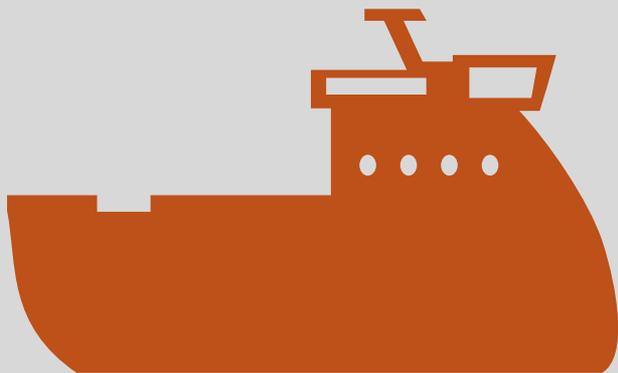
Data view and export:
Public production information is made available through the public production portal.

Data reporting:
Production figures are made available to the NPD and to other authorities as legally required.

Key functionality in the Seismic module

Data submission: Upload selected field data, pre-stack and post-stack data for sharing and long-term storage.

Data format validation: Verification of uploaded data and navigation data

Data quality control: A basic QC is performed to check trace headers before loading. Meta-data is checked according to Yellow Book Table S-1.

Authority reporting: Seismic data is made available to the NPD and to other authorities as legally required.

Data view, orders and delivery: Search and identify the availability of specified seismic data. The company can can download data to ftp or request the data to be delivered on media.

Data entitlement: Manage changes in entitlements to datasets. Entitlements change on instruction from the data owner or on request from the Trade module when a trade is executed.
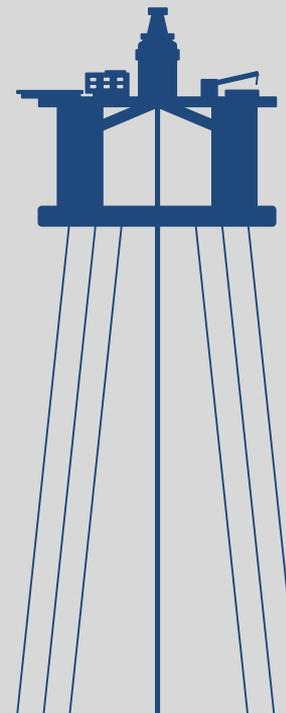
Key functionality in the Well module

Data submission: Upload of well data and geo-reference related documents for sharing or long-term storage.

Data format validation: Verification of data before and after uploading.

Authority reporting: Well data is made available to the NPD and authorities as legally required.

Data view, orders and delivery: Search and identify the availability of specified Well data. The company can download the data to ftp or request the data to be delivered on media. Data can also be accessed through and API

Data entitlement: Manage changes in entitlements to datasets. Entitlements change on instruction of the data owner or on requests from the Trade module when a trade is executed.

Key functionality in the Trade module

Trade registration: Trade proposals are registered in the system.

Trade simulation: Simulation tests the benefit of a potential trade before the trade is executed.

Send for review: Proposed trades are sent for review to all trade object stakeholders (owners).

Contract/Agreements document store: Trade contracts are archived.

Changing entitlements: Entitlement changes are managed in the system and communicated to the seismic and well modules where changes are made.

Tracking for mandatory reporting: Dataset completion within the Seismic and Well module is tracked.

Trade reporting: Customizable and standard trade reports can be created and distributed to the trade operator and the operators.

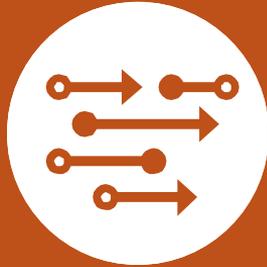# Links to more information

Here you will find more information about Diskos and the Diskos Group:
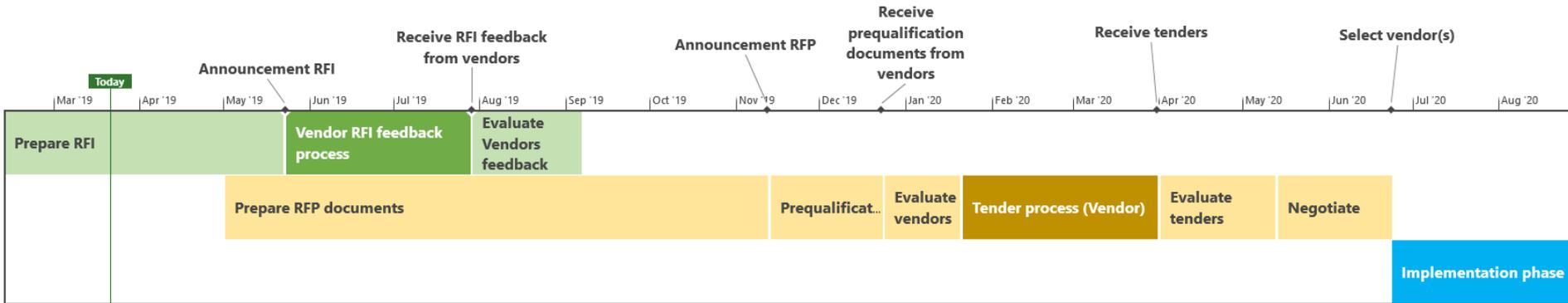
www.diskos.no

02

Tender process

Presentation of the planned RFI- and tender process

Planned timeline for the tender process*

Actual dates may vary and NPD is not obliged to proceed with the RFI and RFP process, and reserves the right to amend dates

The purpose of the RFI process

- Give vendors a **high-level** description of the Diskos Group and Diskos solution to enable the vendors to answer the questions in the RFI

- Challenge vendors by pointing at some of the goals we want to achieve with Diskos 2.0

- Identify opportunities (i.e. technology and functionality) in the market that we have not considered yet

- Allow vendors to understand their own limitations and **consider partnering** with other vendors players in the market

- Use the vendors feedback to improve the RFP and tender process

Unfortunately we will not be able to have separate meetings with vendors or answer questions before the RFI is announced

The planned RFP process

- The procurement process will be governed by "Lov om offentlige anskaffelser" (the Public Procurement Act, henceforth "LOA") of 17.06.2016 no. 73 and "Forskrift om offentlige anskaffelser" (the Public Procurement Regulation, henceforth "FOA") of 12.08.2016 no. 974 Part I and III.

- The procurement process will conducted under a competitive procedure - a two-stage process with negotiation.
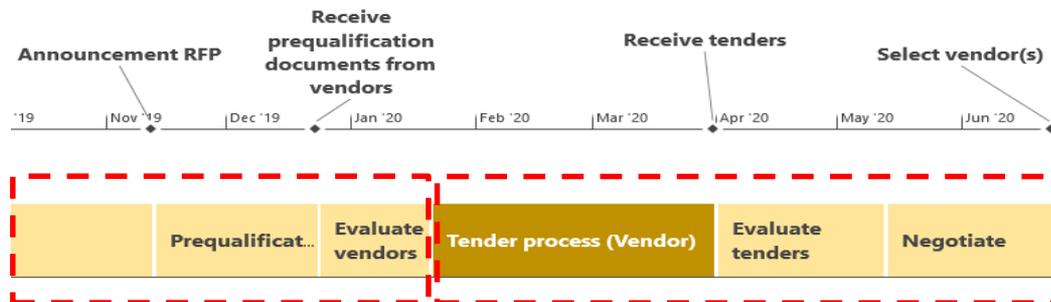
We are planning for one procurement process / contractor for Seismic, Well and Production and one procurement process / contractor for Trade.

The two contracts will have strong dependencies

Seismic	Well	Production	Trade
One contractor			One contractor

03

Future needs

High level description of future needs in the Diskos solution

Diskos Core Services

The minimal requirements for a new Diskos solution is that it fulfills the core services that NPD and Diskos offers to the Diskos member companies with the current solution

Data Storage

Diskos must be able to load, store and retrieve reference, well, seismic and production data from the Norwegian Continental Shelf that is reported to the authorities according to the legislation. The data must be validated and subject to a basic QC before loading.

Trading of data

The trade module enables Diskos Members to effectuate the trade of confidential data and simulate a possible «gain or give» for all companies involved in the data to be traded.

Data Security

The database contains valuable confidential information. The contractor of The Diskos database must ensure secure data storage and management

Entitlements

The Diskos Contractor(s) must handle the access control of all data stored in Diskos. This includes uploading of new data, change of ownership, user rights and expiration of confidentiality periods.

Disaster recovery

The Contractor must have a Disaster Recovery Solution and back-up enabling full restore of data and operations

Front end

The Contractor must provide a compatible, seamless front end interface (incl. GIS) between Diskos and all users of the Diskos database, and a REST API to metadata and data files

The top goals for Diskos 2.0

- Continuous operation

- Evolution not revolution – Modern proven technology

- Efficient information and data flow

- Enhanced performance

- Improved QC of data

- Minimize data transfer

- Interoperability

- Cost efficient

= basis for better decisions

04

Commercial model

Cost elements of the next Diskos Contract

Cost elements in the next Diskos contract

The next Diskos contract(s) will <u>most likely</u> contain 6 cost elements*:

- Uploading   (Unit price for wellbores and volume-based prices for each kind of seismic data)

- Storage   (Unit price/year * volume of data stored at a certain date)

- Data access (downloading)   (Unit price * volume of data)

- Diskos Joint Projects   (Hourly rates)

- Software Cost   (Annual fixed fee)

*The Diskos Contractor is free to offer non-exclusive optional services to Diskos members

05

Q&A

Response to pre-submitted questions

1. "How will the RFI/future tender process be announced?»

2. "What are the next steps in the RFI process and their timing?"

3. "What is the likely timing and requirements of the tender process?"

4. "What is the expected duration of the next contract period?"

1. The future tender process will be publicly announced in Doffin and TED through Mercell.

2. See slide 16

3. See slide 16

4. Most likely 6 - 7 years + extentions

1. "Will there be qualification/shortlisting requirements and a process or can it be confirmed that this is an open tender?"

2. "Will Diskos announce seismic, well and production data in separate tenders?"

3. "Will there be announced inquiries for other data types than mentioned in the invitation?"

1. See slide 18. The tender process will be open to all vendors

2. See slide 18

3. The inclusion of other data types into the solution may be considered by Diskos and if so these will be described in the RFP

1. Will there be geographical restrictions or stipulations on data and operational locations?

2. How will contractor written responses to the RFI/RFP be distributed/used and could they enter the public domain if an access request were made?

3. Is there an opportunity to mark sections that are commercially sensitive or contain personal details?

1. Contractor must be present in Norway, in the Stavanger area. The storage location has not been decided yet.

2. The response to the RFI and RFP-process will respect confidentiality in accordance with Norwegian procurement legislation

3. Yes, see answer above

1. What are the reasons for the contract extension / delay?

2. What is the timeline for the completion, transition and implementation phases from the current contract to the new contract?

3. Could you detail the overall tender process including the interaction process between bidders and the NPD? For example, will there be a request for a demo/prototype of the proposed solution.

1. The current contract gives us this flexibility

2. See tentative timeline in slide 16. The implementation phase will depend on the chosen solution.

3. See slide 16 for tentative detailed tender process. No decision has been taken regarding demo/prototype at this stage

1. Are there any lessons learnt from the last tender process and if so what will you do different this time?

2. What are the Diskos preferences regarding cloud technology and digitalization in the next contract period?

3. Could you please provide us with a detailed technical description of DISKOS database as per today ahead of the publication of the tender documents?

1. Yes, and the RFI/RFP process will address specific issues.

2. Must reflect the functional requirements. See overall goals in slide 21

3. More technical information than presented in the RFI and RFP documents will be made available for the contractor when the contract(s) has been awarded

1. If a proposal does not meet 100% of all mandatory technical and SLA requirements, will it automatically be disqualified or will there be flexibility to propose variations that may improve the overall cost/benefit of the solution?

2. What do you see as the anticipated growth during the next contract period for the following:
   a. Data (seismic, well, other)
   b. NCS License activity
   c. Diskos membership/user numbers

1. Due to the procurement legislation we are committed to disqualify a proposal in the RFP-phase, if mandatory requirements are not met.

2. See statistics on slide 8
   a. Vendor must do own forecast based on the presented history
   b. No answer to offer
   c. This will depend on activity on NCS and how attractive the solution will be

1. What is the estimated future usage and growth?

2. Safety/security and storage of data?

3. Planned development of the system and chosen platform?

1. See slide 8

2. Will be covered in the RFP

3. Information will be given in the forthcoming process

1. "To what extent different types of reports (wells, seismic, other) will be part of DISKOS for online searches?"

2. "Will core images and core descriptions also be (*part*) of DISKOS and should be searchable?"

3. You state for the next contract period that you will also consider including: "Other data and documents related to Production Licenses". Can you elaborate on the other data types you were considering?

1. We expect as comprehensive as possible search capability, but this must not compromise data entitlements (not only meta-data search)

2. Yes, core images and descriptions are part of Diskos and should be searchable, however, such search capability and results must not compromise data confidentiality

3. Not decided yet. Will be specified in the RFP

1. What is the Diskos strategy for storing prestack and field data (newly acquired and legacy)?

2. What storage methods are currently used and how could this affect a transition if required?

3. What is your strategy for well log data, such as formats?

1. This will depend on the petroleum legislation – we are not aware of plans to change current practice

2. Currently stored in the IBM Spectrum Archive solution ++ on both disk and tape. The transition to another system needs to be investigated further

3. All data types listed in Blue Book Table A-1 must be supported. This will be specified further in the RFI and RFP documents

1. How much of the data is stored cold/offline? How often are the "cold storage" layer accessed?

2. What requirements do you have for the vendors in terms of long term authenticity and integrity of data?

3. What is the lifetime requirements of the data? How does NPD verify access to data that are 10-20 years old++ ?

1. No data is stored cold or offline

2. We expect that all data stored in the solution retains 100% authenticity and integrity throughout the contract period and thereafter

3. There is currently no lifetime limit on the data stored. There is no end-user verification of data stored except for user feedback. All data must be stored in open standard industry formats that should stand the test of time.

1. An open database platform for the use of AI&ML technologies, is Diskos considering to be the leader of this new possibility?

1. Diskos seeks to enable AI&ML for end users without compromising data confidentiality. We expect viable and practical solutions to be presented in the RFI

1. Is it a requirement that you have to answer the RFI to be part of the RFP?

2. Do you have an idea of how much volume or how many companies are using the well APIs at the moment?

3. You explained that you don't have any cold data. Where are your back up copies stored?

4. How are you fulfilling the trade module if CGG operates the other modules?

1. No

2. 12 companies are currently using the well API with an estimated 1 mill items (documents/files) per month

3. The main data store is the Green Mountain data centre at Rennesøy. There is also a mirror site about 6 km from Stavanger at Evry's data centre. This is where the data is loaded into the system before being copied across to Rennesøy. All this data is live. There is also a full back-up on tape stored in a separate location from the main data store.

4. The trade module is managed by Kadme. This works very well as there is an excellent relationship between the two contractors