

# Petrel Studio for Reservoir Data Management Implementation to Eni Mozambique Assets

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## What's Next?

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# Abstract

The scope of this presentation is to outline the implementation of Petrel-Studio to support Eni Mozambique asset team with managing well, seismic, modelling data and related interpretations. The motivation for testing and adopting Petrel-Studio was fueled by the serious necessity of providing the asset team with a pre-defined but flexible and customizable tool for data classification, sharing, consolidation, ease of access and user collaboration.

The presentation will show the main features of the customized Studio implementation to the Mozambique case, highlighting the key advantages with using this tool as well as the potential improvements.

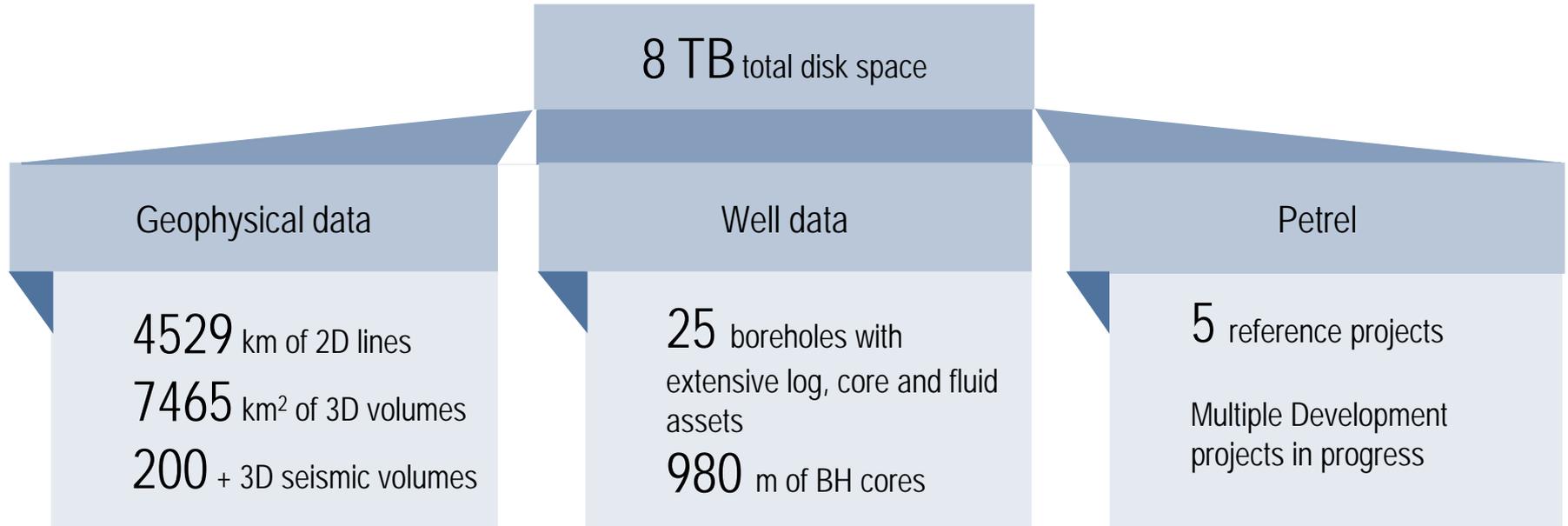


# Agenda

- Introduction and motivation for Studio project
- Database setup and roles configuration
- Description of data search, sharing and consolidation
- Final remarks



# Introduction and motivation – Mozambique Database





# Motivation for Studio Project

The lessons learnt from experience that data management is a crucial and sometimes overlooked aspect of reservoir studies and fields development



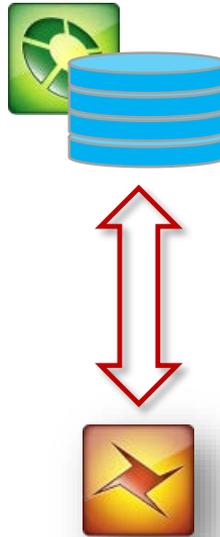
- To build a clean asset database and regulate the consolidation of reservoir data therein
- To have a single data repository instead of multiple reference Petrel projects
- To have the data properly classified and indexed
- To configure clear roles and responsibilities (data manager, administrator, simple users)
- To improve sharing of working data among team members



# Database setup (1)

A Studio repository was created for the Mozambique reservoir team and hosted in the Oracle Cluster in Eni HQ (Milan, Italy)

Connection to Studio repository setup  
by data manager with SLB support



## Database setup (2)

A Studio repository was created for the Mozambique reservoir team and hosted in the Oracle Cluster in Milan



Data are copied into Studio Repository  
from Petrel reference projects



ZGY Seismic volumes and 2D lines are  
only linked into Studio repository (they  
remain stored in the network drive)

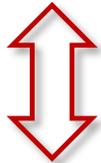




# Reference and Collaboration repositories



Reference repository for consolidated data



Administrative privileges for data managers, read only for other users



Collaboration repository for sharing working data



Administrative privileges for all users

Users and data managers



# Key role

- **Data Manager**
  - Manages other user profiles (administrator or simple user)
  - Manages criteria for regulating data transfer into the Repositories
  - Accesses Repositories data tables
  - Sets-up the indexing routine and daily update of the indexed database
- Tool → **Studio Manager**



# Key profiles

- **Administrator profile:** enables writing/deleting privileges
  - *Reference repository:* for the data manager and for other senior users
  - *Collaboration repository:* every user
- **Standard User profile:** enables to browse the Reference Repository and retrieve data from it
- **Special Roles**



# Data covered

- Data fully manageable in Studio v.2015:
  - All input data (input pane of Petrel):
    - Wells: trajectories, logs, markers, cores
    - Seismic volumes
    - Interpreted horizons, interpolated surfaces
    - Polygons, points, etc.
    - Annotations and attachments
  - 3D grids and properties
- Data partially manageable in Studio v.2015:
  - Velocity models:
    - Can be indexed in a Petrel project and searched via “find” (Studio Search)
    - Cannot be shared in the “Collaboration” or consolidated in Studio Reference repository
- Data not yet manageable in Studio v.2015:
  - Volumetric cases
  - Dynamic simulation results

# Workflow for Collaboration with working data

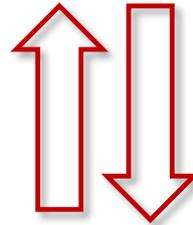
Collaboration  
Repository



Monitoring

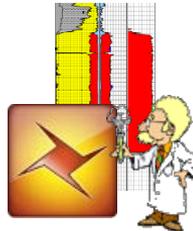


Data Manager  
/Administrator



Working  
Environment

Well data



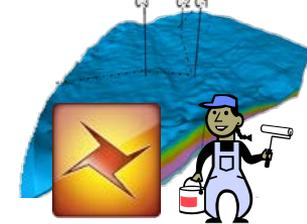
Geological map



Structural map



3D model



# Workflow for consolidation and retrieval of Reference data

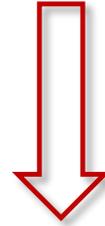
Collaboration  
Repository



Monitoring

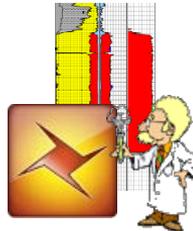


Data Manager  
/Administrator



Working  
Environment

Well data



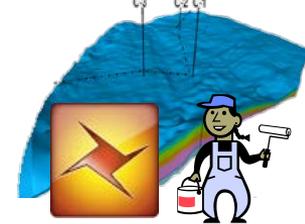
Geological map



Structural map



3D model



# Data indexing

- Studio Reference Repository is indexed; index updating runs daily
- Reference Petrel projects are also indexed

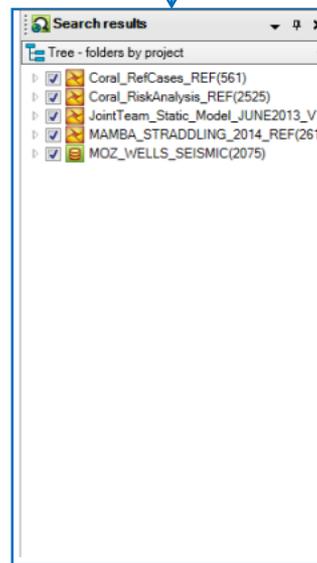
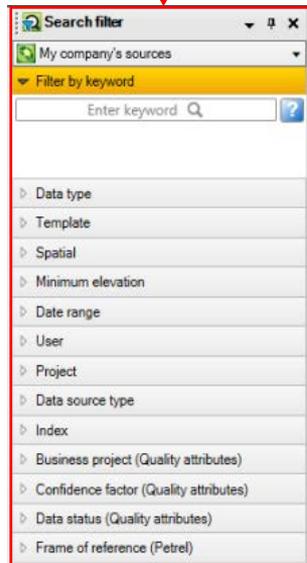
## Filtering options

Any metadata →

Data type, template,  
unit of measurement {

Space and time range {

Quality attributes {



Accessing  
Studio  
Repository and  
Reference Petrel  
projects at once



# Quality Attributes

- Petrel **Quality Attributes (QA)** are important for Studio implementation
- QA drop menus can be customized in Studio Manager
- QA entries are used for data classification, consolidation in reference Studio repository and searching via the *Find* option
- Very good practice to use QA irrespective of using Studio or not.

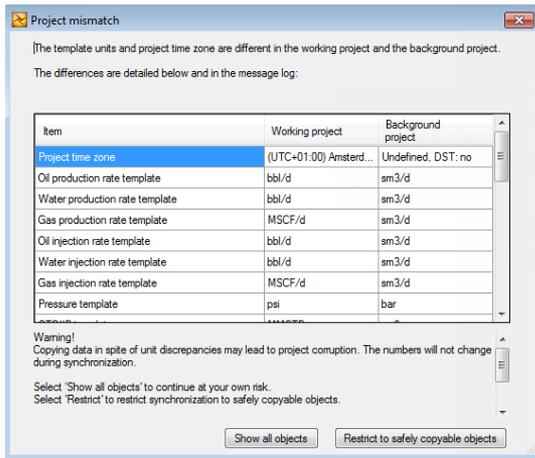
# Rules for data sharing and consolidation





# Managed data

- 3D Grids and properties are shared as working data, or consolidated as final results from reservoir studies:
  - *Working data*: exchanging 3D grids for dynamic simulations (current activity)
  - *Data consolidation*: final 3D models from Coral AR2/AR3 risk analysis, Mamba Joint Team study and Mamba AR2 risk analysis
- *Managed data* workflow forces the users to have consistent template units in all Petrel projects:

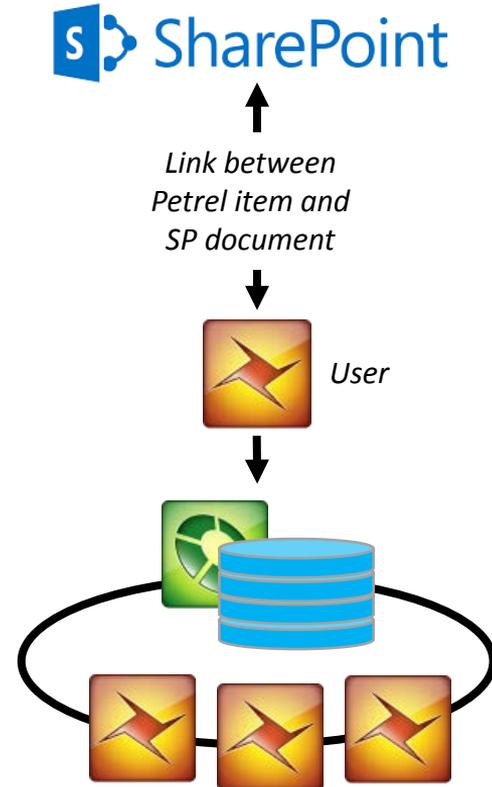


## Reference Project Tool warning message

- Ignoring *Project mismatch* is not possible with Studio  
→ All projects must have consistent Units

# Documentation: Link to SharePoint Collaboration Site

- Integrated Reservoir Study reports
- PoDs
- Reservoir Management Plans
- Technical notes
- Well documents:
  - BHC and SWC study reports
  - Composite logs / Strip logs
  - Final geological well reports
  - CPI plots (pdf)
- Geophysical documents:
  - Acquisition reports
  - Processing reports
  - Interpretation reports
- Reservoir modelling:
  - Risk analyses files
  - Data elaborations





## Final remarks on Studio implementation (green field)

- Team organization and Data preparation
  - Requires a change of mind-set and a strong commitment to build a clean and organized G&G database
  - Tagging data is important
  - Best with an integrated G&G asset team
  - Data manager role is preferentially for reservoir geologist or team leader: familiar with any kind of G&G data, proficient in Petrel and Studio Manager;
  - Initial team training on some Studio functionalities (data transferring, notifications setup) is suggested to speed-up learning
- Close IT support is crucial
  - Setup & Configuration
  - Adequate bandwidth connection between HQ and BU teams
- (Brown or non operated fields: implementation could be difficult and time consuming)



# Pros

- High standard for data classification, storage and access: workflow and rules can be clearly defined, data monitoring and indexing facilities provided
- Common platform for sharing working data within G&G and with Reservoir engineers
- Along the field development, it can represent a value for the asset:
  - Business activities not affected by non efficient data gathering
  - Learning time for new-comer team members reduced
- Source documents stored in windows or project SharePoint site (reports, presentations, technical notes) can be associated to any object (wells, horizons, 3D properties, ...) and accessed from Petrel



# Potential improvements

- Some functionalities are still under-developed or not user friendly:
  - Multi-item selection for sending/retrieving not enabled
  - Quality Attributes: no flexibility for adding meta-data; sorting not enabled in Studio Manager
  - Administrator privileges selection by data type not enabled (*Special Roles*)
  - Setup of Managed data (3D grids/properties)
  - Management of data templates and colour tables
- Still limited data coverage (velocity models, dynamic simulations)
- Not yet fully integrated with other Slb software (Techlog, Avocet / OFM)

# Q & A

