Drilling Data Management

RASHMI BHANGALE
DATA MANAGER, RELIANCE INDUSTRIES LTD.
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Agenda

- Case for Drilling Data Management
  - Challenges
  - Objectives
  - Solution Design
- Drilling Data Lifecycle
- Drilling Data Types
- EDM as a Central Data Repository
- Business Value Derived
- Drilling Data in the E&P world
Case for Drilling Data Management

1. Drilling - the most Expensive, Challenging and Risky part of the E&P Business

2. Drilling - Delivers a Well: {Dry|Wet|Producing...}
   - Exploratory
   - Appraisal
   - Development
   - Production

3. Drilling - Generates Vast volumes of complex data, in various proprietary formats

4. This Drilling Data is,
   - The GUARANTEED output from every drilling activity
   - The most valuable output for historical and cross-function analysis
   - Highest value creator for
     - i) Cost optimization
     - ii) Problem Prediction
     - iii) Risk
Challenges

Domain
- Diversity of terminology
- Absence of Structured Vocabulary

Database
- Legacy Data
- Data structure and semantics
- Integration of planning and well engineering data with drilling operations activities

Business
- Convert data to the “best” business value \{ \text{COST OF DDM} <> \text{VALUE to Business} \}
Objectives

Central Database
Role based instant access to data
Consistent rig site data capture and reporting
Defined best practices, workflows, policies and procedures
Standardised RIL Units of measure, Operational Activity & Cost codes and Pick lists
Provide accurate operations statistics and performance benchmarks
Solution Design

Scalable solution
Single Data Repository
Trusted Data Quality
Enable business to track Operational efficiency
Enable Decision making through verifiable process
Preparing for the future....
Drilling Data Lifecycle

- **Data Capture**: at Rig-site & Office- Consistent data captured/ stored in a Centralized Database
- **Data QC**: for Completeness and Correctness
- **Data Accessibility**: across the organization – Secured Role based Access
- **Data Reporting**: – Customized Reporting as per RIL & Regulatory requirements
- **Data Analysis**: – Summary Reports, Statistics and Performance Benchmarking
Lifecycle Contd..

Data Capture & Entry

- OpenWells

Engineer’s Data Model (EDM)

Central Repository

Reporting & Analysis

- OpenWells
- Data Analyzer

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Data & Configuration Sync

RIG SITE

Auto Sync (Data)

Master Sync (Configuration)

RCP OFFICE

Client

Server
Drilling Data Types

- Well Planning & Engineering Data
- Drilling Operations Data
- Completions, Testing & Work over Data
- Performance Monitoring & Management Reporting Data
- RTOC Reports
Well Planning & Engineering Data

Direction Profile

Drilling Fluids

Cementing Chemicals

Torque & Drag

Hydraulics

- Well Plan
- Well Cat
- Compass
- Stress Check
- Casing Seat
- Openwells

Engineer’s Data Model (EDM)
Drilling Operations Data

Daily Drilling Report

- Well Details
- Location
- HSE Summary
- Operations Summary
- Mud Properties
- Pump / Hydraulics
- Drilling Bits
- BHA
- Hole Sections
- Surveys
- Personnel
- Support-craft
- Weather information
Completions, Testing & Work over Data

- Well Testing Daily Report
- Plug & Abandon Report
- Stimulation
- Completions Daily Report
- Wellbore Equipment Report

Openwells

Engineer’s Data Model (EDM)
Performance Monitoring & Management Reporting Data

Planned v/s Actual

End of Well Report

Rigs Summary

Lessons Learnt

NPT Summary

AFE

Well Cost Comparison (Depth v/s Cost)

Openwells

Well Cost

Engineer’s Data Model (EDM)
RTOC Reports

- **RTOC Reports**, including:
  - RTOC Morning, Weekly Performance Reports, Event Analysis, Lessons Learnt Reports, End of Well Report, Pre-drill and Post Drill Pore Pressure Reports - PDF

- **Depth Based data in - LAS Ver. 2.0 or higher**, including:
  - Depth Logs - Formation evaluation log, Drilling Composite log and Bit performance log in 1:500 scale in - PDF

- **Time Based data in - LAS Ver. 2.0 or higher**, including:
  - Drilling Time log for the entire well on a scale of two inch per hour in - PDF

- **Intervention Database - .mdb (MS Access)**
- **DB Backup at end of each Well - .adi (Insite)**
EDM as a Central Data Repository

Drilling Operations Data
Completions, Testing & Work over Data
RTOC Reports & Intervention Data
Well Planning & Engineering Data
Performance Monitoring & Management Reporting Data
Business Value Derived

- Faster, Better & Informed Decisions
- Reduced Cycle Time
- Reduced Cost
- Improved Performance
Drilling data in E&P data world

- E&P Data universe is complex
- Drilling Data Management has diverse and high-value opportunity
- Domains need to develop modern “Structured Vocabulary”, “Re-usable workflows” and “Powerful collaboration” to derive full business value.
Thank You