



Getting The Most Out Of Drilling Data - Using WITSML

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Outline

- Vision
- Barriers
- Case Studies for value today

Vision

- Data quality
- Optimized well manufacturing
- Autonomous rigs – QHSE benefits
- High-rate data for all purposes

Barriers

- Lack of data sharing on the rig
 - No common clock, sensors
- Lack of takeup of newer standards
 - WITSML 1.4.1.1, wired pipe
- Missing data from standards
 - e.g, Quality flags
- Bandwidth
- Training

Case studies

- Large US Independent
- Saudi Aramco
- PEMEX
- Statoil

US Independent - Situation

- Drilling and completion data available in the field
- Completion data manually entered in Excel in the office
- Then re-entered into completion database at HQ
- Lots of data entry inconsistency

US Independent – Standards Solution

- Operator developed a WITSML adapter for Excel
 - Completion data comes from the field, is reviewed in Excel and goes to the completion database all via WITSML
 - Standard reference values are applied
- Manual data entry eliminated
 - Improving data quality
 - Chain of custody is clear



- Multiple service and software companies
- Each service company has its own software infrastructure and visualization tool
- Lack of coherent content and format standards
- No connection between real-time and static master data environments



- Implemented WITSML-based solution
 - Data enters WITSML store from all vendors
 - Common reference values applied
- Static data also translated into WITSML
 - Validated static data improves real-time quality
 - Integrated analysis reduces re-work and re-keying

- Major service and software companies and many smaller ones present and handling data
- Each service company has its own software infrastructure and visualization tool
- Users have to copy and paste or re-type data from one vendor's system to another to bring information together for analysis

- Implemented WITSML-based solution
 - Data enters single WITSML store from all vendors
 - Common reference values applied
- Elimination of vendor-specific solutions meant
 - Duplicated data resolved, improving quality
 - Manual work to resolve differences eliminated??

Statoil - Situation

- Many technical computing applications with well-related information
- Transferring data among these applications is either:
 - Pair-wise movement between applications A and B
 - Vendor-specific transfer environment
- Automating transfers is problematic

Statoil – proposed standards solution

- Use WITSML as a data transfer standard
- Many technical applications already support it for near real-time trajectory transfer
- Just expand to all the well data

Some ideas for solutions

- WITSML 2
 - WebSocket
 - HDF5
 - New API
- SPE DSA-TS with OPC-UA
 - Closed-loop process control