WITSML v2.0
Release Candidate Overview

Presented by JF Rainaud IFP En
On behalf of Energistics Consortium
• Energistics: who are we?
• WITSML presentation
• ETP for Interoperability
• WITSML to RESQML How do we construct the connection?
Energistics is a global, non-profit, membership consortium focused on developing open data exchange standards in the upstream oil and gas industry. We have served the industry for more than 25 years.

Our membership consists of E&P companies, oilfield service companies, software vendors, system integrators, regulatory agencies and the global standards community.

Our standards are developed by workgroups (known as Special Interest Groups, or SIGs) made up of industry experts from our member companies.

In short, the standards are created by the industry for the industry.
Industry-Wide
Energistics Family of Standards

UNIVERSAL INTEROPERABILITY

DRILLING
RESERVOIR
PRODUCTION

COMMON TECHNICAL ARCHITECTURE

OGC®
Original WITSML Business Challenge

Service/technology providers:

Drilling environment consists of

- Many services & technical solutions
- Each provides a vital part of the operation
- Each operates under their own system, environment, corporation
Original WITSML Business Challenge

• Operator challenge:
  – Consistent view of services
  – Conform to corporate standards (Security, audits, reporting, etc.)
  – Allow:
    • Sharing with partners
    • Data management
    • Integration

Operators:
Version 1.X Use Cases

• Consistent high-quality transfer of wellbore and drilling-related data
  – Data transfer to real-time operations centers
    • Reference objects – Well and Wellbore
    • Growing objects – Log (time, depth), Trajectory, Mudlog
    • Snapshots in time – with “report” information
  – Move well-related data between applications
  – Real-time availability of drilling operations
WITSML Scope

• Distinct classes of objects
  – Reference objects – Well and Wellbore
  – Growing objects – Log (time, depth), Trajectory, Mudlog
  – Snapshots in time – with “report” information

• Communications process
  – Simplify problem: point to point
  – Any number of point to point steps in a larger communications chain of events

• Solution requires
  – Mechanism for communicating between 2 end points
  – Object definitions for the transfer of data
**Producers**
- Source for data transfer
- Deploy interface to accept requests

**Consumers**
- Destination for data transfer
- Invoke the interface calls to initiate requests
WITSML Misunderstandings

- **Rig to Office transfer**
  - Most WITSML transfers are not from the rig
- **Real time only**
  - Transfer of data collected in real time.
  - Near-real time & historic transfer
- **Producer / Consumer only**
  - A consumer may also be a producer, allowing for more complex implementation including data collection, assimilation and aggregation services
- **Intended to replace WITS**
  - Extended WITS capabilities to allow cross-firewall data transfer
  - Market drivers select data standards
New Requirements on Transfer Standards

- Big data/analytics
  - Analytics on data in motion
- High-performance transfer standards
- Broader workflows – not just well site to office
  - Application to application
  - File-based transfers
  - Archival workflows
  - Expanded metadata
• Among the MLs
• Between the standards bodies
  – SEGY/SEGD in epc
  – HDF use
  – OGC in MLs
  – IEP/ISO 19115
  – MathML coming
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<th>WITSML 2.0 Data Objects</th>
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ETP: Protocols

» ETP is a new data exchange specification
» Enables real-time data transfer between applications
» Is delivered as a specification and as sample code
» Works by sending pre-defined messages
  • The messages are grouped together into “protocols”
  • The description of these protocols make up the standard
» No server required, just sender and receiver
WITSML to RESQML How do we construct the connection?
From the Driller to the Reservoir Engineer

1. Create a permanent reference geometry: the Wellbore trajectory
   - Make sure the MD definition of the trajectory is specified
   - Convert to Local CRS for RESQML

2. Create a reference WellboreFrame along the trajectory
   - Choose an MD sampling interval for each log type

3. Attach Properties / Markers to the Wellbore Frame:
   - Properties may be on the ticks (nodes), or between ticks (intervals)
4.2 RESQML WellboreFrame using WITSML data

LEGEND
- Feature
- Interpretation
- Representation
- Property

Wellbore
- Wellbore Interpretation
- Wellbore Trajectory & WITSML Trajectory Reference
- MD Information
- Logs as Properties
- Wellbore markers
- Cubic parametric Line
- WITSML Logs
- WITSML markers
- WITSML Log Reference
WELL FRAME APPROACH
Connecting to Stratigraphy

MEASURED DEPTH

12
24
35
47

FRAME

MARKERS

UNITS

Top dunlin
Top talbert
Top Ranoch
Top T1

Brent
Dunlin
Talbert
Ranoch
T1
Connecting to the Grid: Blocked well frame

### MEASURED DEPTH

- 12
- 24
- 35
- 47

### FRAME

- NODE
- INTERVAL

### FACEEXIT

- Grid 0, 54+
- Grid 0, 78-
- Grid 0, 43+
- Grid 0, 82-
- Grid 1, 23+
- Grid 1, 82-
- Grid 1, 23+

### FACEENTRY

- NoGrid
- Grid 0, 28
- Grid 0, 54
- Grid 0, 82
- Grid 1, 23
- Grid 1, 82
- Grid 1, 23

### CELLS

- No Grid
- Grid 0, 28
- Grid 0, 54
- Grid 1, 3
- Grid 1, 73
Thanks for Attention

Open to exchange ..