2019 “STATE OF ENERGISTICS” ORIENTATION

Jana Schey, COO
Jay Hollingsworth, CTO

January 31, 2019
Introductions

Philip Neri
Marketing Director

Jana Schey
Chief Operating Officer

Jay Hollingsworth
Chief Technology Officer
Agenda

» About Energistics
» Standards Overview
» 2019 Plans
» How We Work
» Q&A
About Energistics
Energistics…past and present

» Energistics is not a vendor. We are a non-profit industry organization.

» Our role is to help companies manage and share data more efficiently and cost-effectively by using industry-defined data exchange standards

» We have served the industry for more than 25 years

» Our 110+ members include leading E&P companies, oilfield service companies, software vendors, system integrators, regulatory agencies

» Our standards are the result of open collaboration between members, facilitated by Energistics

» In short, the standards are created by the industry and for the industry
Our Current Members – Come Join Us!
Standards Overview
Energistics’ Spectrum of Standards

- Defined by collaboration between member SMEs
- Coherent set of standards to eliminate data ‘friction’
- Goal is to cover all key activities in upstream
- Shared components enable cross-functional workflows
Well Information Standards: WITSML™

» Consistent high-quality transfer of wellbore and drilling-related data
  • Real-time data transfer
    ✓ Reference objects – Well and Wellbore
    ✓ Growing objects – Log (time, depth), Trajectory, Mud Log, etc.
    ✓ Snapshots in time – with “report” information
  • Move well-related data between applications
  • Real-time availability of drilling operations
  • Archival history of drilling operations
Production Standards: PRODML™

» Consistent, high-quality transfer of production-related data

• Data transfer to production surveillance centers
  ✓ Real-time measurements from sensor through analysis
  ✓ Static configurations of production and surface facilities
  ✓ Regulatory and partner reporting
  ✓ Movement of analyses from service company to operator

• Move production-related data among databases and applications

• Archival history of production operations
Reservoir Standards: RESQML™

- High fidelity transfer of earth model data across applications and vendors
  - Sharing earth model data across asset teams
  - Movement of data through the seismic to simulation workflow
  - All kinds of grids
  - Traceability via metadata
  - File-format-neutral archival of earth model at key decision points
BP/Shell Implementation Pilot

» Multi-vendor pilot of RESQML v2 to exhibit the value of standards in normal partner earth model data transfers

» Pilot participants: BP, Shell, CMG, Dynamic Graphics, Emerson (Paradigm and Roxar), IFP/Beicip, Schlumberger and Energistics

» Successful in demonstrating data exchange of real field data, across six different vendors using several applications

» Live demonstration in a poly-cloud environment at SEG 2018
Data - Kepler Field, Na Kika, Gulf of Mexico

Data in project:
- Wells (trajectories, logs, picks)
- Faults
- Horizons
- Polygons
- 3D grid arrays (static)
- 3D grid arrays (dynamic time-stepped)
RESQML 2.0.1 Pilot/Demonstration

- Grid creation (RMS)
- Facies modeling (Skua)
- Reservoir simulation (Builder, IMEX and Results)
- Property calculation (Petrel)
- Results visualization (CoViz 4D)
- Fracture porosity (OpenFlow)

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Energistics’ Transfer Protocol (ETP)

» Latest version of Energistics’ standards leverage a new streaming transfer protocol called ETP (Energistics Transfer Protocol)
  • 10x faster than previous technologies
  • “Real-time” is truly Real Time, for the First Time!
  • Uses 1/10th of the bandwidth
  • Can supply a given data feed to multiple recipients with no overhead

» Not limited to transfers from remote locations to onshore monitoring sites
  • Can also be used to stream data between applications, eliminating typical I/O files
2019 Plans
Vision & Mission

» Vision
  • Seamless Data Sharing in Oil & Gas

» Mission
  • The Energistics community is dedicated to the development and adoption of open data standards in the Oil & Gas industry.

Adopt > Advance > Accelerate™
Strategic objectives

1. Demonstrate value of standards to the industry
2. Make standards easy to implement and use
3. Ensure standards evolve to remain relevant as technical environments change
4. Ensure organization growth and sustainability
Development

» Update WITSML v2 to expand capabilities and address bugs found during commercial implementations
» Publish ETP v1.2 to expand coverage for drilling, reservoir and potentially production workflows
» Update RESQML v2 capabilities for post-2019 publication
» Update PRODML v2 to include pressure transient analysis coverage and improve distributed acoustic sensing capabilities
» Define and document how standards support implementations in a cloud environment
Adoption

» Forum for implementers to share successes and lessons learned
» Continue BP RESQML Implementation Pilot – Phase 2; possibly others
» Webinar series highlighting our standards and how they are being used
» Tools to aid development and deployment
» Conference and user forum papers and participation
» Documentation to guide implementers and users
» Case studies and white papers
» Public and private training courses
How We Work
Standards Development Process…and Beyond

**Phase 0: Project Concept**
- Project charter [Template]
- Project plan [Template]
- Team distribution list
- ECC project

**Phase 1: Project Definition**
- Use case(s) [Template] [Ex]
- Requirements [Example]
- Gap analysis [Example]
- Conceptual architecture
- Outlines for test data and documentation
- Refined project plan

**Phase 2: Planning & Design**
- EA model*
- Derived schemas and/or services specification
- Examples*
- Documentation [Example]
- Issues list [Example]
- Public review (PR) package

**Phase 3: Development**
- Final phase 3 docs
- MarComm Plan
- Support plan
- PR feedback & response
- Website posting

**Phase 4: Release**
- DevKit support
- Education/Training
- Promotional materials
- Case study/Paper
- Lessons learned
- Marketing
- Communications
Organizational Structure

» Board: Strategic and financial oversight of Energistics

» Special Interest Groups for domain-specific standards work
  • Executive Team (elected annually) – provide day-to-day oversight for SIG activities
  • Steering Committee – typically main company and business reps focused on business usage
  • Technical Team – technical and business representatives focused on technical aspects of development and adoption activities

» Cross-SIG teams for cross-domain and common technical architecture
  • ETP
  • Cloud
## 2019 SIG Executive Teams

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<tr>
<th>WITSML</th>
<th>PRODML</th>
<th>RESQML</th>
<th>X-SIG/Architecture</th>
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<tr>
<td>Pete Morrison, BHGE</td>
<td>David Smith, BHGE</td>
<td>Astor-Lonice Ball, BP</td>
<td>Executive Teams</td>
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<td>Nick Whiteley, BP</td>
<td>Curley Thomas, Chevron</td>
<td>Laurent Deny, Emerson</td>
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<td>Shaddick Keagy, Chevron</td>
<td>Peter Westwood, EnergySys</td>
<td>Marcus Apel, Equinor</td>
<td>Philippe Verney, F2I-Consulting</td>
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<td>Lars Olav Grøvik, Equinor</td>
<td>Magnus Svensson, EPIM</td>
<td>Matthias Imhof, ExxonMobil</td>
<td>Robert Schave, Halliburton</td>
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<td>James Jerry, Halliburton</td>
<td>Raed Charrouf, Halliburton</td>
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<td>Mark Farnan, Petrolink</td>
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<td>Ted Abramsen, Kongsberg</td>
<td>Daniel Lucas-Clements, SLB</td>
<td>Jean-Francois Rainaud, Geosiris</td>
<td>Bobby Diaz, PDS</td>
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<td>Eric Griffith, PDS</td>
<td>Wilfred Berlang, Shell</td>
<td>Jessie Lu, Halliburton</td>
<td>Nathaniel Burger, Scientific Drilling</td>
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<td>Nigel Deeks, Schlumberger</td>
<td>Laurent Ricarrere, Total</td>
<td>Tormod Slettemeas, Schlumberger</td>
<td>Energistics</td>
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<td>Sushma Bhan, Shell</td>
<td>Energistics + Advisors (invitation)</td>
<td>Jerre Parker, Shell</td>
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<td>Yannick Barbel, Total</td>
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<td>Francis Morandini, Total</td>
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Join Us!

RESQML SIG
August &
December 2018

Board of Directors and staff – November 2018

WITSML SIG
September 2018
Thank you!

www.energistics.org