Industry Collaboration for Open Data Exchange Standards

An Energistics Update

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What is Energistics?

Energistics is a global, not-for-profit, membership organization that serves as the facilitator, custodian and advocate for the development and adoption of technical open data exchange standards in the upstream oil and gas industry.
Who is Energistics?

• An open standards industry consortium
• Serving the upstream industry since 1990
• Over 110 active corporate members…
  – Integrated, independent & national energy companies
  – Oilfield service and professional service companies
  – Software, hardware and integration vendors
  – Regulatory agencies and standards bodies
  – Universities, research institutes and media partners
• Regions:

1. Africa (South Africa, Angola, EG, Nigeria…)
2. Asia Pacific (China, Japan, Korea, Vietnam…)
3. Eastern Europe (Russian Federation and non-EU states)
4. Latin America (Mexico, Central & South America)
5. Middle East (Saudi Arabia, Kuwait, UAE, Qatar…)
6. North America (United States and Canada)
7. South Asia (India, Indonesia, Australia, Malaysia…)
8. Western Europe (European Union and Norway)
Our Flagship Standards…

<WITSML/TM>

<PRODML/TM>

<RESQML/TM>
An Open Information Transfer Standard for the Digital Oilfield

“The ‘right-time’ seamless flow of well-site data between operators and service companies to speed and enhance decision-making”
WITSML Data Objects

* Most used; ** new

- Cement Job
- Frac/Stimulation**
- Fluids
- Drilling
- Operations

**Log**
- Log*
- Mudlog*
- Formation Marker
- Core
- Risk

**Contextual**
- Well* & Wellbore*
- CRS
- Rig / Rig Equipment
- Tubular / string
- Wellbore Geometry
- BHA Run
- Survey Program
- Target
- Trajectory* & Tool Error

**General**
- Message
- Attachment
- Change log
- Object Group

Source: BakerHughes/Paradigm
PRODML…Production Optimisation

- Gas lift optimisation
- Natural lift optimisation
- Single-well optimisation
- Gas compression optimisation
- Produced fluids optimisation
- Equipment optimisation
- Production optimisation
- Multi-well optimisation
- Injection optimisation

<PRODML/>™  <WITSML/>™  <RESQML/>™  <energistics/>™
PRODML Data Objects

1. Flow Network
2. Product Volume
3. Production Operation
4. Well Test
5. DTS
6. Time series
7. Fluid Sample and Analysis
8. Wireline formation tester
9. Shared Asset Model (SAM)
Completion Data Drilling ↔ Production

Drilling & Completions Domain

Drilled Well → completion → Completed Well

Drilling DB

Production Domain

Completion DB

Optimization using models

E.g. Gas Lift Change

Optimization

Well Services

PRODML

Flowing Intervals, sensor depths

Perm. Gauge

Perforations

Tubing

SSSV

DTS

Completion DB

PRODML

Reporting

Drill

Complete

Workover

WITSML

WITSML

WITSML

WITSML
RESQML Reservoir Modelling Standard

- Multiple petrotechnical domains
- Multiple petrotechnical applications
- Multiple software vendors
- Multiple use cases within the business

Graphic adapted from Roxar IRAP/RMS
Required by geoscientists and engineers for a more robust way to share and use reservoir and earth models across subsurface toolkit portfolios. Based on next-generation XML-based standards coupled with the HDF5 standards for large array data.
Standards DevKit v1.0

- High level development platforms such as .Net and J2EE need a mechanism to produce and consume XML. The DevKit developed and donated by ExxonMobil generates this bridge for the .Net platform thus easing WITSML and PRODML based application development.

- **Supports**
  - WITSML API Specifications, version 1.4.1
  - WITSML Data Schema Specifications, Version 1.3.1.1
  - WITSML API Specifications, version 1.3.1
  - PRODML Data Schema Specifications, Version 1.2
  - PRODML Web Service Specifications, Version 2.0
National Data Repository (NDR)

• Regulatory data delivery and management
  – Formed by the UK, Norway and The Netherlands
  – Last meeting involved 31 countries, 130 delegates

• NDR meetings held about every 18 months
  – NDR8 in Cape Town in February 2008
  – NDR9 in New Delhi in September 2009
  – NDR10 in Rio de Janeiro in March 2011
  – NDR11 to be in Kuala Lumpur in October 2012
At NDR10 many countries expressed an interest in having a standardized Daily Production Report

- NPD-Statoil already using a report based on WITSML and PRODML

An NDR Work Group was convened to develop common business processes/attributes for the report

- Eight countries, three operators and five service companies
- Requirements gathering completion targeted for 30th May

Handover to PRODML SIG for standards development

- Develop technical solution based on the common attributes reflected from the requirements gathering
- Develop data exchange standard for October demonstration
The Future...Cross-SIG Collaboration

Standards Interoperability Umbrella

Common Technical Architecture Foundation
More future...Standards Leadership Council

• Potential & Current Collaborations...
  – PPDM, SEG & Energistics
    ▪ Units of Measure
  – PPDM & Energistics
    ▪ WITSML/PRODML Connectors to PPDM
  – MIMOSA & POSC Caesar
    ▪ Life-cycle data standards
  – PODS & PIDX
    ▪ Pipeline data standards
Are your partners and vendors speaking different software languages?

Want To Improve Digital Oilfield Communications?
**Energistics Has A Standard For That!**