A Prototype Implementation of the Energy Industry Profile ("EIP") Metadata Exchange Standard

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\(^1\) Previously with Energistics; \(^2\) Previously with NOAA
A Quick Refresh:
- The Opportunity and Vision
- The Approach: Energy Industry Metadata Initiative

The Core Deliverable:
- The Energy Industry Profile (EIP) metadata exchange standard

The EIP Prototype Project, Phase I
- Prototype Implementation based on EIP v1.0 Release Candidate

Future Plans
Initiative Background:  Business Driver & Goal State

**Business Driver**
40% of staff time devoted to finding, retrieving, and verifying information, while data volume is growing at 60-80%/yr and need for integrating distributed, diverse resources is increasing

**Goal State:**
Realize metadata standards and guidelines which enable stakeholders in the energy industry (“the community”) to effectively and efficiently **discover, evaluate, and retrieve structured and unstructured** information resources.

Support both proprietary data management needs, and exchange of data between and within organizations.

Leverage existing open standards to encourage adoption within the community and integration into the business, and exploit existing organizational resources needed for governance and long-term maintenance.
Background:
**Vision for Industry Metadata Exchange & Use**

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**Application Managed**
- (e.g., EPOS, Gocad, Petrel)

**Externally Harvested**
- (Commercial, Gov’t & Academic: e.g., AAPG, EGI, USGIN, USGS)

**Partner & Subscription Delivered**
- (e.g., CoreLogic, IHS Energy, Neftex, Wood Mackenzie)

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**Legend:**
- Metadata exchange via EIP standard

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**Structured resources**
- (e.g., OpenWorks, RESQML, WITSML)

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**Unstructured resources**

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**EIP-compliant Catalog**

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**Internally Harvested**

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**External Metadata Catalog**
Initiative Participants

Work Group

Dave Danko, ESRI
Lisa Derenthal, Gimmal
Alan Doniger, ACD Consulting Solutions ¹,²
Ted Habermann, HDF Group ³
Scott Hills, Chevron ¹
Hari Koduru, BP ¹,²
John Kozimor, U. of CO/Cieres
Steve Richard, USGIN, AZ Geol Survey ¹

Active Participants (SMEs)

AAPG
Apache
Boise State Univ.
Carbon Lifecycle Technology
ConocoPhillips
DCP Midstream
Deloitte Services LP
Devon Energy
ETL Solutions
Exprodat
ExxonMobil ¹
First American Spatial Solutions
Flare Solutions
Fugro Robertson
Geoscience Australia
Geosoft
Ies Brazil Consulting & Services ¹
IHS Energy
Maersk Oil ¹
New Century Software
North West Geomatics
Oracle ¹
ORNL
P2 Energy Solutions
PEMEX
PennWell
PetroWEB
Pioneer Natural Resources ¹
PPDM ¹
Premiere Consulting Group
SAS Global Oil & Gas
Schlumberger ¹
Shell¹
Univ. of Auckland, NZ
Virginia Dept of MM&E
Wood Mackenzie

¹ Energistics member
² Previously with Energistics
³ Previously with NOAA

Bold: Contributed initial EIP requirements, feedback about v1.0 Release Candidate
Key External Engagements

**USGIN Project**
- Joint project of U.S. Geological Survey and all 51 U.S. State Geological Surveys
- Steve Richard (AZ State Geol. Survey) on Work Group Steering Team, contributing significant technical input

**ISO/TC 211, 19115 Revision Project**
- Energistics granted Class A Liaison status to ISO TC 211
- S. Hills represented Work Group on ISO 19115 Revision Project Team & Editing Committee
- Contributed several enhancements to ISO/DIS 19115-1 important to the Energy Industry Metadata Initiative vision

**ISO/TC 211, 19115-1 XML Encoding Project**
- Energistics submitted New Work Item Proposal for XML encoding of ISO 19115-1
- Invited Dr. Ted Habermann (NOAA\(^1\)) to fill Team Lead role
- S. Richard representing Metadata Work Group on Project Team

**NOAA/National Geophysical Data Center**
- Accepted key role in EIP Prototype Project

\(^1\) Now with HDF Group
Primary Deliverable - *EIP Specification*

**Leverage existing standards**

- ISO 19115 *(content model)*
  - and ISO 19139 *(XML encoding)*

- Existing profiles of ISO 19115
  - ANZLIC Profile (Australia, New Zealand)
  - European Union INSPIRE guidelines
  - USGIN Profile

**... to Deliver**

- “Energy Industry Profile of ISO/FDIS 19115-1” v1.0
  - ISO Conformance Level 1 Profile designed to enable community interoperability

- 125 pp. Release Candidate spec. includes:
  - Normative Specifications
  - Implementation Guidelines
  - Selected XML Encoding Examples
Initiative Roadmap

2011

ISO Participation:
- ISO TC 211, Toulouse
- Jeddah
- Busan

ISO 19115-1 Revision (Drafts: WD0, WD1, CD, DIS, FDIS)

Selected Updates:
- EIP v1.0 Release Candidate Development
- EIP v1.0 Rel Candidate

2012

- EIP v1.0 published
- AGU
- OGC TC (TX)
- Esri PUG

2013

- ISO TC 211, Toulouse
- Jeddah
- Busan

- Initial Workable XML Encoding
- EIP Prototype
- Community Workshop
- Finalize EIP v1.0
- EIP v1.0 published
- EIP v1.1 dev.

- ISO 19115-3 XML Encoding (CD ISO 19115-3)
- OGC TC (CA)
- Esri PUG
EIP Prototype Project Overview
Objectives

Demonstrate the feasibility of the vision, and Expedite and encourage adoption of EIP v1.0

- Provide a working, Prototype Implementation based on EIP v1.0 Release Candidate
- Place all project artifacts in the public domain
Focus

Customization needed to demonstrate a subset of the initiative vision, and to develop freely-available resources that encourage community adoption.
Participants

Martha Gardill *(Pioneer Resources)*
Doug Gregory *(Chevron)*
Chris Legg *(BP)*
Mark Stehm *(ExxonMobil)*
Steve Peltier *(ExxonMobil)*
Vicki Raney *(Chevron)*

Dave Danko *(Esri)*
Lisa Derenthal *(Gimmal)*
Scott Hills *(Chevron)*
Hari Koduru *(Energistics)*
Steve Richard *(AZ Geol. Survey)*

Ted Habermann
John Kozimor

Christine White *(Esri)*

Sky Bristol
Jennifer Carlino
Energistics Geoportal Server is live at [http://geoportal.energistics.org/eip](http://geoportal.energistics.org/eip)
Energistics Geoportal – Home page

Energistics’ Geoportal is a prototype implementation for the energy community of a searchable catalog compliant with the Energy Industry Profile of ISO/DOIS 19115-1 (EIP) metadata standard. This implementation is based on the EIP v1.0 Release Candidate specification. It was developed during the EIP Prototype Project to demonstrate both progress toward the vision of the Energy Industry Metadata Initiative and the ability of the EIP to enable discovery, evaluation, and retrieval of distributed information resources.

The EIP is an open, non-proprietary metadata exchange standard designed to document structured and unstructured information resources of importance to members of the energy community, and to maximize metadata interoperability within the community.

The EIP user community includes anyone cataloging, searching, evaluating or accessing information with value to members of the energy industry:

- Energy companies & consortia
- Data & Information providers
- Software vendors
- Government agencies & Academia

As demonstrated by the Energistics Geoportal, the EIP can be used for a wide variety of energy industry resource types, but the initial focus is on structured and unstructured information resources which have associated geographic coordinates:

- Geospatial data sets & web services
- Mapping, Interpretation & Modeling project data sets
- Physical resources with associated location coordinates

The Geoportal provides easy and convenient ways to share geospatial data. All it takes is just 3 simple steps.
Energistics Geoportal – Browse page
Deliverables – Enabling Artifacts

1. XSL Transforms
2. Schematron rules
3. EIP Metadata Editor
4. Documentation

- ISO 19115-2
- ISO 19115:2003
- ISO 19115-3
- ISO 19115-4*
- EIP
- FGDC
- Schematron validation
- Geoportal Server index

This Branch
Harvest, validate, and create or edit

This Branch
Harvest, and validate, but **not** create or edit

*Future ISO Technical Specification
Outcomes

• Documentation and artifacts are accessible via
  http://energistics.org/asset-data-management/eip-prototype-implementation

• Identified improvements to EIP v1.0 Release Candidate
  – Finalized EIP-specific streamlining of four ISO codelists
    ▪ Including ScopeCode values used to validate compliance with resource type-specific element Conditionality
  – Evaluate if EIP specification is too strict
    ▪ Most harvested records did not pass EIP validation

• Identified value of integrating EIP metadata completeness measures as part of next phase
Next Steps: 2013-2014

EIP Prototype Project Phase II

- Developing proposal with Phase I Sponsors
- Finalize costs and secure funding in 1-2Q 2013
- Execute 3-4Q 2013

Pilot Implementations

- Identify candidate organizations, with Phase I Sponsors
- Current discussions with AAPG/Datapages, Elsevier/Geofacets
- Other candidates: C&C Reservoirs, EGI, Fugro Robertson, IHS Energy, SEG, SPE, Wood Mackenzie