

# Accelerating Upstream Energy Industry Innovation through Streamlining OSDU Adoption

How 47Lining accelerates Subsurface data readiness and AI/ML Innovation.

Hitachi Digital Services

Whitepaper

The challenge for Oil & Gas Upstream organizations isn't just deploying OSDU; it's making existing subsurface data AI-ready to derive rich business insights that help transform businesses. The scale, diversity, and siloed nature of legacy data, coupled with data quality & governance issues, typically exacerbates the data management challenge and constrains data-driven business value realization. Legacy wells, seismic surveys, and logs lack the rich metadata, quality validation, and relationships required to unlock the benefits of interoperability and AI-driven innovation.

47Lining, a Hitachi Digital Services company and an AWS Advanced Consulting Partner, addresses the data-readiness challenge through intelligent automation. Our platform combines OSDU-compliant infrastructure with WISE AI—agentic workflows that automatically enrich, validate, and prepare subsurface data for AI/ML applications.

## Three integrated capabilities enable data transformation:

- Express for Energy Data Insights (EDI) provides a fully managed OSDU environment, enabling customers to realize OSDU's capabilities in days.
- WISE AI Workflows bring intelligent automation to data enrichment, quality assurance, and cross-domain linking. Agentic AI handles the repetitive work of metadata extraction, standardization, and validation while human experts focus on high-value interpretation and decision-making.
- AWS-Native Architecture delivers enterprise-grade OSDU infrastructure integrated with AWS Bedrock for foundation models, AgentCore integration enabling organizations to build AI/ML capabilities on enriched, validated data.

This whitepaper explores how data enrichment transforms OSDU adoption, the role of intelligent agents in accelerating data readiness, and the measurable business impact of making subsurface data AI-ready from day one.



# The OSDU Readiness Challenge: Data Quality is the Foundation

Organizations recognize OSDU's strategic value: unified subsurface data, vendor interoperability, and AI/ML acceleration. Yet most existing data isn't ready for OSDU adoption.

## The legacy data reality:

- **Incomplete metadata:** Well headers are missing critical attributes like datum, coordinate systems, or operator information
- **Inconsistent formats:** Seismic data in proprietary formats, well logs with non-standard curve names and units
- **Poor data quality:** Duplicate records, outliers, missing validation, no quality scores
- **Broken relationships:** Wells disconnected from logs, seismic surveys isolated from interpretations
- **No lineage:** Transformation history lost, source provenance unknown

**Why this matters:** OSDU compliance requires proper schemas, typed work products, rich metadata, and established relationships. Without these, OSDU becomes just another data store, interoperability remains theoretical, AI/ML adoption stalls, and ROI never materializes.

**The enrichment bottleneck:** Manual data preparation is slow, error-prone, and unscalable. Engineering teams spend months cleaning, standardizing, and enriching data that should be feeding AI models to drive decisions.

## AI-Ready OSDU: Intelligent Automation for Subsurface Data

Hitachi Digital Services transforms legacy subsurface data into AI-ready OSDU assets through intelligent automation, combining OSDU-compliant infrastructure, automated data enrichment, and agentic AI workflows that unlock immediate AI/ML innovation.



### How we transform legacy data into AI-ready data assets

#### Pre-integrated OSDU services:

Storage, Schema Registry, Search & Discovery, Workflow and Entitlements ensure every data object is automatically typed, validated, and stored according to OSDU standards.

#### Custom enrichment capabilities:

Handle operator-specific data landscapes, automated validation identifies quality gaps and compliance scores; format converters process proprietary data (LAS, DLIS, SEG-Y, etc.) while preserving metadata and capturing full lineage; AI-powered enrichment extracts metadata from headers, standardizes naming conventions, and establishes relationships across wells, logs, and seismic data.

**Result: Wells validated, transformed, and made AI-ready in days instead of months!**



## WISE AI: Production-Ready Intelligent Agents

Built on AWS Bedrock and integrated with AgentCore, WISE (Workflow Innovation Services for Energy) AI delivers agentic workflows that transform how teams interact with OSDU data through natural language and intelligent automation.

- **Discovery Agent:** enables natural language querying of OSDU data.
- Example: Ask “Show me all wells in the United States” or “Provide details about well ID 1444” and receive comprehensive responses with metadata, operational history, and related assets, built on OSDU Search & Discovery APIs with conversational, multi-turn exploration.
- **OSDU Schema Knowledge Bases:** provide AI agents with queryable documentation constructed from OSDU schemas (Master Data, Work Product, Work Product Component, Reference Data). Agents understand data structures, relationships, and domain rules, ensuring contextually accurate responses grounded in actual OSDU standards.
- **MCP Server Integration:** gives AI agents structured access to OSDU schemas through Model Context Protocol servers. Agents generate production-ready API calls and queries that handle OSDU authentication, entitlements, and data access patterns correctly, enabling intelligent code generation, dynamic validation, and automated compliance with evolving OSDU standards.

**Now bring your own agents to connect to OSDU via our MCP servers!**



## How it accelerates AI/ML innovation

- Quality-scored datasets are ready for model training.
- Rich metadata supports sophisticated feature engineering with geological context, operational parameters, and quality scores.
- OSDU APIs provide programmatic access for data scientists.
- Complete lineage ensures model explainability and trust.

**Organizations move from data preparation to AI experimentation in weeks!**

# Measurable Business Impact: AI/ML Acceleration Through Data Readiness

Our platform delivers transformation through OSDU-ready, enriched data by removing the preprocessing barrier that delays AI-driven innovation.

## Strategic Outcomes Delivered:

Organizations leveraging the EDI platform and WISE AI capabilities achieve measurable transformation:

- **Exploration timelines reduced from 7 months to 3 weeks**  
Data scientists access clean, validated datasets via OSDU APIs, enabling time-to-first-model in weeks instead of months
  - **Analysis cycles compressed from 10 weeks to 1 week**  
Rich metadata enables sophisticated feature engineering with geological context, operational parameters, and quality scores that improve model accuracy
  - **Increased engineering productivity**  
Teams shift from data preparation to high-value interpretation as automated enrichment ensures new data is AI-ready on ingestion, keeping models current without manual cycles
  - **Accelerated AI/ML adoption**  
Production-ready datasets with complete lineage from source to insight build trust in AI-driven decisions, critical for regulatory and operational acceptance
  - **Improved data quality from 40% to 95%**  
Metadata completeness, enabling comprehensive OSDU Search & Discovery with schema knowledge bases and MCP-enabled intelligent automation
- The underlying principle:** Make data OSDU-compliant and AI-ready so teams can focus on extracting value rather than wrestling with infrastructure.

## Why Partner with Us

47Lining delivers transformation through a unique blend of technical depth, energy domain expertise, and global scale.

- We operate at the intersection of cloud innovation and energy sector insight, ensuring solutions are both technically sound and business-relevant.
- As an AWS Premier Consulting Partner, we hold competencies in Machine Learning, Data & Analytics, and Solution Provider, backed by a robust ecosystem of future-ready platforms.
- With operations in 120+ countries, we combine global capabilities with local insight to accelerate upstream energy transformation.
- As part of the Hitachi Group, we bring over a century of experience solving complex infrastructure challenges across oil & gas, energy, mining, life sciences, mobility, retail, and industrial sectors.
- We work as part of One Hitachi, delivering end-to-end digital solutions, from strategy to operations, with continuity and scale.

**Partnering with 47Lining means making your subsurface data not just AI-ready, but business-ready.**

# Experience OSDU Readiness & AI-Powered Discovery

Visit Hitachi Digital Services' booth at the OSDU Forum to see how we transform legacy data into AI-ready OSDU assets —and enable intelligent discovery through WISE AI agents.

## Live Demonstrations:

- **WISE AI Discovery Agent**
- **MCP Server Integration**

## Strategic Consultations:

Our energy data experts will discuss:

- **OSDU Readiness Assessment:** Evaluate your current data landscape and identify enrichment priorities
- **AI Acceleration Strategy:** Map your path from data preparation to AI-driven innovation
- **Custom Implementation:** Explore deployment options tailored to your specific requirements

**You can also find our solution on AWS Marketplace**

Simply search “47Lining Energy Data Insights” and you will find us in the search results.

## How you can get started:

To schedule personalized demos, technical discussions, or consultations, please write to [prashanth.muniraju@hitachids.com](mailto:prashanth.muniraju@hitachids.com)

**Transform your subsurface data from a legacy burden to an AI-ready strategic asset.**

Connect with us today. Visit [www.47lining.com](http://www.47lining.com).

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## About 47Lining

47Lining, a Hitachi Digital Services company, is an AWS Advanced Consulting Partner specializing in energy data platforms and OSDU adoption. With deep expertise in subsurface workflows and cloud-native architectures, we help upstream organizations accelerate their digital transformation journey.

Our team combines decades of energy industry experience with cutting-edge cloud and AI capabilities. We've helped organizations across oil & gas, mining, and energy utilities unlock the value of their subsurface data—faster, easier, and with less risk than traditional approaches. For more information on 47Lining, please visit the company's website at <http://www.47lining.com/>

## About Hitachi Digital Services

Hitachi Digital Services, a wholly owned subsidiary of Hitachi, Ltd., is a global systems integrator powering mission-critical platforms with people and technology. We help enterprises build, integrate, and run physical and digital systems with tailored solutions in cloud, data, IoT, and ERP modernization, underpinned by advanced AI. By combining Information Technology and Operational Technology (ITxOT), we drive efficiency, innovation, and growth across industries. With over 110 years of Hitachi Group's engineering and technology leadership, Hitachi Digital Services is powering smarter platforms for a safer, more sustainable future. For more information on Hitachi Digital Services, please visit the company's website at <https://www.hitachids.com>.

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Corporate Headquarters - 14643 Dallas Parkway, Suite 800, Dallas, TX 75254

**Hitachi Digital Services**