

## Technical understanding

### 1. Expertise in Vector Databases and RAG architecture (Jan 2024 – Present)

#### Summary:

Lumi Conversational Insights (Lumi CI™) is a GenAI-enabled solution architected on the OSDU platform to enhance data accessibility via an intuitive conversational interface. It supports efficient querying and analysis of structured and unstructured data sources. For unstructured data, Lumi CI integrates a Retrieval-Augmented Generation (RAG) pipeline, combining semantic search with generative AI to produce reliable, context-aware answers. This pipeline utilizes the Milvus vector database for high-performance similarity search, enabling rapid and accurate retrieval across heterogeneous datasets.

#### Technical Expertise:

I specialize in vector databases with a strong focus on Milvus and its integration into GenAI applications. While Lumi CI primarily uses Milvus, I've also built expertise in Pinecone, PGVector, and MongoAtlas.

- Skilled in designing collections and defining schemas with vector and scalar fields, ensuring optimal structure and search performance.
- Solid understanding of Milvus' multi-tenancy architecture—managing isolated databases, collections, and partitions for scalable and secure data segregation.
- Proficient in using Milvus-supported indexes like HNSW, IVF, PQ, and Flat for efficient Approximate Nearest Neighbor (ANN) search and metadata filtering.

Below are some GenAI integration Skills:

- Creating and applying vector embeddings
- Using similarity metrics like cosine similarity and Euclidean distance
- Designing efficient systems that use ANN algorithms to enable fast, meaning-based search over large vector datasets.

This foundation enables me to build scalable, intelligent GenAI solutions that deliver fast, accurate, and context-aware insights.

#### Contributions:

- Collaborated directly with the Data Science team to implement similarity search enriched with metadata filters, improving precision and contextual relevance in GenAI responses.
- Guided the Data Science team in developing PoCs to explore scalar indexing across diverse data types (text, arrays, JSON). This was critical for enabling access-controlled prompt responses—a mandatory prerequisite for Lumi CI's Early Adoption phase.
- Engineered a solution to support Retrieval-Augmented Generation (RAG) for structured search using vector database principles. This enabled automated querying across all schema types in the OSDU store, transitioning Lumi CI from manual to dynamic structured search.
- Designed and implemented enhanced similarity search by incorporating complex relationship metadata from OSDU. This included real-time synchronization of relationship updates with the vector database to maintain search accuracy.

#### Impact and Results:

My expertise in vector databases has played a pivotal role in shaping critical GenAI workflows for Lumi CI, directly enabling key commercialization milestones such as Early Adoption and Controlled Commercial releases. By architecting scalable, high-performance solutions, I've

helped accelerate Lumi CI's market readiness—driving customer adoption and positioning the product for long-term success.

**Evidence:**

Entitlement on unstructured data on vector database: <https://wiki.slb.com/x/eIXVG>

Dynamic schema context for increasing footprint of supported OSDU entities:

<https://wiki.slb.com/x/4fnRGQ>

Metadata management for related records for unstructured data: <https://wiki.slb.com/x/3yMeH>

Training completed: [https://slb001-my.sharepoint.com/:i/g/personal/vlad2\\_slb\\_com/IQD9\\_5GfVt51SKvIP82ahdSLAcKou41VYaUTynBWdr8upo4?e=rGgLvP](https://slb001-my.sharepoint.com/:i/g/personal/vlad2_slb_com/IQD9_5GfVt51SKvIP82ahdSLAcKou41VYaUTynBWdr8upo4?e=rGgLvP)

Vector store multi-tenancy model: <https://wiki.slb.com/x/757RGQ>  
[https://slb001-my.sharepoint.com/:f/g/personal/vlad2\\_slb\\_com/EIholrRWFHBLjE6RK0CpFCwBQrp7nl\\_IxFqlAkBuIAk03w?e=h1dvYo](https://slb001-my.sharepoint.com/:f/g/personal/vlad2_slb_com/EIholrRWFHBLjE6RK0CpFCwBQrp7nl_IxFqlAkBuIAk03w?e=h1dvYo)

**Reference:**

Prashanth Pillai (Data Scientist - Manager)

Geeta Ramdas (Data Platforms - Architect)

Akanksha Gaur (Project Manager – Conversational Insights and Discovery)

**2. Expertise in Data Science, GenAI Concepts, and Large Language Models (LLMs)-(Jan 2024 – Present)**

**Overview:**

I have developed strong expertise across data science, generative AI, and large language model architectures, applying these to build intelligent, context-aware systems. My work bridges traditional machine learning with modern Transformer-based reasoning to enable semantic retrieval, contextual understanding, and conversational automation in enterprise-scale AI solutions.

**Technical Expertise:**

- Comprehensive understanding of Generative AI paradigms including *RAG (Retrieval-Augmented Generation), prompt engineering, chain-of-thought reasoning, few-shot learning, embedding generation, and vector similarity search*. Skilled in designing hybrid systems that combine LLM reasoning with domain-specific data retrieval for factual and context-grounded outputs.
- In-depth knowledge of Transformer architectures, *attention mechanisms, token embeddings, and positional encoding*. Hands-on with GPT and Mistral, applying them for semantic search, contextual reasoning, and generative summarization.
- Practical understanding of *semantic embeddings, cosine similarity, and vector databases* such as Milvus for large-scale information retrieval and similarity search.
- Proficient in *Regression* (Linear, Polynomial, Decision Tree, Random Forest) and *Clustering* (K-Means, Hierarchical) algorithms with strong grasp of *model evaluation metrics and hyperparameter tuning*.
- Advanced use of *Python, TensorFlow, PyTorch, Scikit-learn, Pandas, NumPy, Matplotlib, and LangChain* for pipeline orchestration. Hands-on with *Dataiku* for preprocessing, model deployment, and experiment tracking.

**Key Contribution:**

- Integrated LLMs into *Lumi Conversational Insights* (*Lumi CI*) to enable natural-language access over OSDU datasets.
- Worked closely with Data Science team to build semantic query translation logic to convert user prompts into Lucene queries via LLM-driven schema interpretation.
- Implemented RAG workflows combining LLM reasoning with vector search for domain-grounded answers.
- Developed multi-representational indexing pipelines synchronizing OSDU metadata with vector databases for relational reasoning.
- Led model optimization and access control initiatives to ensure low-latency, secure, and compliant AI responses.
- Developed a cost measurement strategy.

**Result:**

These contributions transformed *Lumi Conversational Insights* from a show-stopper innovation at SLB Forum 2024 into a controlled commercial product now ready to be adopted across *business units and customer onboarding*.

The platform validated the technical feasibility of applying GenAI and LLM-driven retrieval architectures to real enterprise data, setting a new standard for conversational intelligence and forming the foundation for SLB's next generation of digital AI products.

**Evidence:**

11 months Executive Post Graduate Certification in Data Science & Artificial Intelligence – IIT Roorkee (*IHub Divya Sampark*)

<https://tih.iitr.ac.in/certificate/intellipaat/IPTIH25070879.jpg>

**Reference:**

Prashanth Pillai (Data Scientist - Manager)

Akanksha Gaur (Project Manager – Sustainability)

Shrikant Jadhav (Project Manager – Conversational Insights and Discovery)

- Architect for Large-Scale Cloud Systems across Azure, LightOps & CSPs – (Jan 2022 – Present)

**Overview:**

As an Architect for the Discover and Conversational Insights (LUMI CI™) workflows within the Data Workspace project, I have developed deep architectural expertise across Azure and other major cloud providers while also working extensively with SLB's LightOPs platform — a managed cloud abstraction layer built on top of Azure.

My expertise spans cloud-native design, distributed systems, infrastructure scalability, observability, and cost optimisation.

Working across both native CSP capabilities and LightOps abstractions has strengthened my end-to-end understanding of enterprise-grade, multi-tenant cloud architectures.

**Technical Expertise:**

- Strong foundation in cloud service models — IaaS, PaaS, and SaaS — and their architectural trade-offs.
- Proficient in containerization and orchestration using Kubernetes, with advanced scaling via KEDA.

- Experienced in Azure DevOps for CI/CD pipeline design, aligned with DORA standards.
- Hands-on expertise across Azure services such as API Management, Front Door, Web Application Firewall (WAF), Key Vault, Event Hub, Cosmos DB, and cloud-native AI offerings.
- Experienced with Kafka-based streaming and distributed event-driven system patterns across cloud environments. Deep understanding of observability stacks integrating Prometheus, Grafana, and custom telemetry pipelines for system reliability.

#### **Key Contributions:**

- Architected and deployed a scalable, cloud-native infrastructure for the Conversational Insights (CI) platform using LightOps, ensuring high availability, secure multi-tenant isolation, and efficient management of distributed backend services.
- Designed and led the deployment of the Conversational Insights UI as cloud-hosted microfrontends, enabling:
  - Independent build and release cycles for UI capabilities
  - Safer, incremental rollouts without full application redeployments
  - Improved resilience and blast-radius isolation across UI modules
    - Seamless integration with CI backend services in multi-region environments
- Designed and led end-to-end CI/CD pipelines in Azure DevOps for both backend services and microfrontend UI components, significantly improving deployment velocity, environment consistency, and release reliability across regions.
- Reviewed Web Application Firewall (WAF) security findings and guided the team on remediation, ensuring:
  - Alignment with enterprise security standards
  - Correct handling of headers, cookies, CSP, and request validation
  - Reduction of false positives without weakening security posture
- Engineered KEDA-based auto-scaling for the multi-tenant CI Engine, optimizing resource utilization and enabling elastic scaling in response to LLM request volume and user traffic patterns.
- Drove adoption of Azure AI Foundry services via the AI Foundation FM Hub, standardizing model access, governance, telemetry, and operational consistency across environments.
- Implemented a comprehensive observability and auditability framework for CI workflows, strengthening production readiness and compliance:
  - Built a robust observability stack using Prometheus, Grafana, and Usage Analytics for deep diagnostic visibility
  - Architected SLI/SLA tracking and usage telemetry across tenants
  - Established partition-aware audit event publishing for compliance and user-level traceability
- Performed detailed Azure PTU (Processing Throughput Unit) assessments to model LLM endpoint scaling, optimizing concurrency tiers, cost efficiency, and production provisioning strategies

#### **Impact:**

- Enabled reliable, cloud-scale operations for Conversational Insights by architecting LightOps-based infrastructure that delivered higher availability, faster recovery, and predictable performance for all tenants.

- Accelerated release velocity and improved software quality by leading the design and implementation of Azure DevOps CI/CD pipelines, reducing deployment effort, eliminating manual steps, and standardizing release governance.
- Achieved cost-efficient, elastic scaling by integrating KEDA into the Dataiku platform, allowing the CI engine to auto-scale per-tenant based on workload demand while optimizing resource consumption.
- Strengthened AI adoption across programs by championing Azure AI Foundry (via AI Foundation FM Hub), ensuring CI could leverage advanced model capabilities while maintaining consistent, compliant, and cost-effective usage patterns.
- Improved system reliability and stakeholder confidence through a comprehensive observability framework that enhanced monitoring, alerting, and end-to-end traceability, enabling proactive issue detection and significantly faster troubleshooting.

**Evidence:**

Completed Post Graduate Diploma in Cloud Computing (Great Lakes) – 11-month program covering AWS, Azure, and GCP.

Certificate: <https://www.mygreatlearning.com/certificate/AKSJFJK>

Attended 2-day workshop on Well Architected Framework organized by Swapnil Dubey, that covered 6 important pillars that build the foundation for any efficient cloud solution.

**Reference:**

Akanksha Gaur (Project Manager – Sustainability)

Shrikant Jadhav (Project Manager – Conversational Insights and Discovery)

Neeraj Kamat (Subsurface Data Platform Architect)

**3. Expert in Dataiku Platform Engineering & AI Workflow Orchestration – (Jan 2024 – Present)**  
**Overview / Summary**

I have been instrumental in architecting and optimizing the use of the Dataiku platform for deploying the Conversational Insights Engine (CI Engine) within our organization. By leading critical technical discussions and working closely with the AI Foundation team, I engineered a deployment model that leverages Dataiku's advanced features to deliver scalable, secure, and cost-effective solutions tailored to multi-tenant environments.

**Technical Expertise**

- Deep expertise in Dataiku concepts such as API Nodes, projects, code environments, code agents, and deployment automation using APIs.
- Proficient in deploying Python code as APIs within Dataiku's API Node to support efficient and scalable Conversational Insights Engine operations.
- Experienced in implementing automation pipelines via Dataiku deployment APIs, streamlining the CI/CD process for rapid, reliable deployments.
- Well-versed in designing and managing data partitions (Proxy Partition) to optimize infrastructure utilization and reduce costs.
- Strong understanding of authentication and authorization strategies for securing access to Dataiku-hosted REST endpoints.

**Key Contributions**

- Architected an engineering-managed Proxy Partition model, enabling one regional Dataiku instance to securely serve multiple clients—drastically reducing infrastructure and subscription costs.
- Established a robust deployment topology for CI Engine—combining automation nodes, API nodes, and shared environments for scale and maintainability.

- Initiated and drove the development of authentication and authorization strategies for secure access to the CI Engine REST endpoint, strengthening security and compliance.
- Mastered and applied key Dataiku features—including automation nodes, code agents, and deployment APIs—to automate environment setup and code deployment, minimizing manual interventions and improving consistency.
- Identified platform limitations—including lack of streaming support on API Nodes, cold-start latency with Code Agents, and absence of request-based scaling—and raised them to AI Foundation for roadmap consideration and architectural enhancement.

#### **Impact**

- Achieved substantial reductions in infrastructure and subscription costs by consolidating Dataiku instances with proxy partitions and automation nodes.
- Enabled consistent, reliable, and automated code deployments—resulting in a single source of truth for code and eliminating discrepancies across data partitions.
- Strengthened security posture through robust access control and authentication mechanisms.
- Scaled CI Engine operations to support rapid onboarding of new clients, establishing Dataiku as a foundational platform for enterprise GenAI deployments.

#### **Evidence:**

##### Certificates:

Generative AI practitioner: <https://verify.skilljar.com/c/jc6vbswehxyh>

Core Designer : <https://verify.skilljar.com/c/2g7qb3t3uosm>

Comparison Dataiku vs Managed deployment: <https://wiki.slb.com/x/iNJhGw>

#### **Reference:**

Geeta Ramdas (Data Platforms - Architect)

Neeraj Kamat (Subsurface Data Platform Architect)

Prashanth Pillai (Data Scientist - Manager)

#### **4. Comprehensive Mastery of the OSDU Data Ecosystem (Jan 2022-Present)**

##### **Summary:**

The Data Workspace and Lumi CI™ solution are built on OSDU (Open Subsurface Data Universe) standards, providing a unified framework for managing energy data across domains like wells, seismic, and reservoirs.

A key element of OSDU is its standardized schemas, which define how data is structured, linked, and described. These schemas ensure consistency, enable interoperability across tools, and support automation in workflows.

By leveraging OSDU schemas, the Data Workspace ensures seamless data integration, improved discoverability, and compatibility across platforms.

Understanding OSDU standards is essential for building scalable, future-ready solutions, as it ensures alignment with industry standards and simplifies collaboration across teams and systems.

##### **Technical Expertise**

Over the years of building Data Workspace solutions, I have developed a strong and practical understanding of various OSDU standards, which includes core data types—such as wells, seismic, logs, and interpretations—are structured and interrelated. I have worked extensively on

implementing and extending these schemas to support development of various features and workflow of Data Workspace. My understanding of OSDU includes:

- Strong understanding of core OSDU schemas covering wells, seismic data, logs, and interpretations, ensuring structured, interoperable data modelling.
- Deep familiarity with Reference Data Dictionary (RDD) for maintaining semantic consistency and aligning business logic with standardized terminology.
- Experience working with Work Product and Work Product Component schemas to logically group and manage related subsurface data assets.
- Hands-on experience with schemas for handling image files e.g. File.Generic, File.Image.JPEG, File.Image.TIFF and File.Image.PNG and domain-specific schemas like rock images.
- Proficient in leveraging the Augmented Indexing feature of OSDU to enhance search performance, enable faceted filtering, and power responsive user experiences.
- Applied schema knowledge in Conversational Insights workflows to resolve relationships in unstructured documents and cross-reference links.
- Mastery in architecting solutions on the OSDU platform using core APIs—Storage, Search, Entitlements, and Indexer—for seamless data ingestion, secure management, and efficient discovery. Skilled in designing automated workflows, implementing entitlement controls, optimizing federated search, and extending platform functionality with custom actions to deliver scalable, compliant energy data ecosystems.

#### **Key Contributions & Evidence**

- I have architected various solutions in Conversational Insights which directly leverages OSDU services and schemas. E.g.
  - Worked with Data Scientist to help understand the schemas to build a natural language to Lucene query conversion.
  - Made team understand the augmentation indexing feature and configurations to easily build solution for Lucene query generation from natural language.
  - Led the solution to support more OSDU schemas using a RAG based architecture.
  - Architected the solution to generate plots based on the search queries.
- Enhanced Data Workspace to fully support schemas using only their major versions, simplifying upgrade paths and reducing maintenance overhead.
- Designed and implemented a modular image visualization component for rendering and managing assets ingested through OSDU file schemas (TIFF, JPEG, PNG). The framework supports lazy loading of image using streaming,
- Extended document ingestion and query architecture by integrating Work Product Component and ProSource schemas, allowing schema-driven search, metadata linking, and cross-reference resolution in unstructured document workflows.

#### **Impact:**

By architecting Data Workspace and Lumi CI™ on OSDU standards, the products have delivered seamless, unified data workflows across subsurface domains. Users benefit from rapid data discovery, robust search, and automated analytics, driving faster insights and decision-making. The platforms' scalable architecture accelerated feature delivery, and smooth integration with enterprise tools have led to strong user adoption and proven operational efficiency.

#### **Evidence:**

**Wiki:** Group kind/schema based on major version: <https://wiki.slb.com/x/L1vFFQ>  
[https://slb001-my.sharepoint.com/:f/g/personal/vlad2\\_slb\\_com/En6mRSxrtiJCgGqsndFl-p8BxBksU31ujsUdzwAkwPp7eg?e=JsFwtH](https://slb001-my.sharepoint.com/:f/g/personal/vlad2_slb_com/En6mRSxrtiJCgGqsndFl-p8BxBksU31ujsUdzwAkwPp7eg?e=JsFwtH)

**Reference:**

Akanksha Gaur (Project Manager – Sustainability)  
Trond Benum (Lumi NDR Project Manager)  
Nikhil Vyas (Product Champion for Data Workspace)  
Prashanth Pillai (Data Scientist - Manager)

## Solutions

### 5. Architecture and Design decisions of Conversational insights as Micro-frontend with Data Workspace (Jan 2024 - Present)

**Overview:**

Conversational Insights was developed as an intelligent chat interface within the Data Workspace ecosystem, enabling users to explore structured and unstructured data through natural language. The solution combines large language models with enterprise data sources to deliver contextual, domain-aware responses. Architected as a federated micro-frontend using module federation, it allows independent development and deployment while maintaining seamless runtime integration with the parent workspace.

**Challenge:**

- Embedding a conversational AI experience within a large-scale, multi-tenant enterprise environment while ensuring modularity, scalability, and security.
- Enabling independent build and deployment cycles decoupled from the main workspace release process.
- Managing persistent conversation history containing markdown, visual content, and reference links.
- Integrating multiple domain viewers (Document, Seismic, Wellbore) for contextual visualization within chat responses.
- Establishing a backend orchestration layer to manage secure communication between chat UI, LLM services, and vector databases.
- Maintaining design consistency and accessibility aligned with SLB's Design Language System (DLS).

**Solution:**

- Architected the application as a federated micro-frontend leveraging module federation for runtime integration and version isolation.
- Introduced a NestJS-based Backend-for-Frontend (BFF) to orchestrate API interactions between the chat UI, conversation history service, and LLM reasoning layer.
- Designed independent CI/CD pipelines to enable autonomous deployments across Dev, QA, Canary, and Production environments.

- Integrated domain-specific viewers directly into the conversational interface for contextual and visual exploration.
- Implemented a dedicated conversation history backend to persist context, attachments, and response lineage.
- Applied DLS design principles for accessibility, consistent theming, and seamless visual alignment within the workspace.
- Enforced secure authentication and entitlement propagation across federated modules and backend services.

**Result:**

- Delivered a modular, scalable Conversational Insights framework with fully independent deployment capability.
- Improved developer agility and reduced release turnaround through decoupled pipelines and versioned module delivery.
- Enhanced user experience via contextual visualization and consistent DLS-compliant chat interface design.
- Strengthened security and compliance through robust authentication and entitlement enforcement.
- Established a future-ready foundation for extending conversational GenAI capabilities across OSDU workflows.

**Evidence:**

Design: <https://wiki.slb.com/x/GBH6GQ>

Design: <https://wiki.slb.com/x/UYXVG>

LADR 1: <https://wiki.slb.com/x/OoXVG>

LADR 2: <https://wiki.slb.com/x/OYXVG>

**Reference:**

Akanksha Gaur (Project Manager – Sustainability)

Shrikant Jadhav (Project Manager – Conversational Insights and Discovery)

Neeraj Kamat (Subsurface Data Platform Architect)

## 6. Regionalized and Multi-Tenant Deployment Architecture for Conversational Insights and Dataiku(March 2025 – Aug 2025)

**Overview:**

To align with the multi-tenant design of the Data Workspace platform, I led the redesign of Dataiku deployment architecture and its integration with the Conversational Insights (CI) Engine. The goal was to transition from cost-intensive, per-partition deployments to a scalable, regionalized model. This initiative enabled efficient resource utilization, simplified operational management, and improved scalability across multiple client tenants within each region.

**Challenge:**

- The existing per-partition deployment model bundled Designer and Automation Nodes for every tenant, leading to high infrastructure costs and redundant compute utilization.
- Each partition required its own pipeline setup, creating operational overhead and complex release management across multiple environments.

- The CI Engine, developed in Python and hosted on Dataiku API Nodes, needed to support multi-tenant execution without compromising isolation, performance, or security.
- Achieving secure interoperability across Dataiku, AI Vector Services, and LLM Mesh demanded consistent authentication and entitlement propagation across regions.

**Solution:**

- Proposed and implemented a regionalized Dataiku deployment model anchored on an engineering-managed proxy partition, enabling shared, multi-tenant infrastructure while maintaining data isolation.
- Optimized cost by deploying only the Automation Node of Dataiku instead of the default Designer + Automation configuration – reducing cost per deployment from  $\approx \$2000$  to  $\approx \$700$ .
- Enhanced the Conversational Insights Engine to be multi-tenant by design, embedding partition-aware logic within the Python service layer.
- Integrated KEDA-based autoscaling within Dataiku for efficient, demand-driven scaling of compute resources.
- Designed and implemented staged deployment pipelines (EVD, EVT, Canary, and Regional Production) to support consistent, automated rollouts across environments.
- Secured end-to-end interoperability between Dataiku, AI Vector Services, and Foundation Model (FM Hub provides endpoints for LLM integration) with sauth based authentication and authorization mechanisms.

**Impact:**

- Achieved  $\sim 65\%$  cost reduction per deployment through the optimized Automation-only model and regional proxy partitioning.
- Simplified CI/CD operations, eliminating partition-specific pipelines and reducing release cycle time across environments.
- Enabled a scalable, multi-tenant Conversational Insights platform, supporting multiple clients per regional deployment.
- Improved compliance, reliability, and observability through standardized authentication and data-access policies.
- Established a cost-efficient, production-ready foundation for Controlled Commercial rollout and early-adoption programs with clients such as Petronas and NOC.

**Evidence:**

LADR: <https://wiki.slb.com/x/7Z7RGQ>

Authentication design: <https://wiki.slb.com/x/6Z7RGQ>

CI Engine multi-tenancy model: <https://wiki.slb.com/x/6Z7RGQ>

Deployment Architecture: <https://wiki.slb.com/x/6Z7RGQ>

Deployment strategy: <https://wiki.slb.com/x/2haQGg>

**Reference:**

Geeta Ramdas (Data Platforms - Architect)

Neeraj Kamat (Subsurface Data Platform Architect)

Prashanth Pillai (Data Scientist - Manager)

Akanksha Gaur (Project Manager – Sustainability)

**7. Design to sync meta data changes from OSDU to VectorDB for Conversational Insights (July 2025 Sept 2025)**

**Overview:**

To support Early Adoption (EA) and transition towards Controlled Commercial (CC) release of Conversational Insights, a secure synchronization framework was required to propagate metadata — including Access Control Lists (ACLs) and relationship information — from OSDU to Milvus VectorDB. This ensured consistent, compliant, and context-driven vector searches across users and data spaces while maintaining alignment with OSDU data governance principles.

**Challenges:**

- Managing vector data in MilvusDB, which lacks native support for cross-referenced metadata objects.
- Applying ACL and relationship metadata from OSDU records during embedding creation and retrieval.
- Maintaining low-latency eventual consistency between OSDU and VectorDB to ensure entitlement accuracy.
- Enabling metadata-driven filtering in VectorDB queries for context-aware, role-specific search results.

**Contribution:**

- Led the technical design and data-modeling strategy to synchronize OSDU metadata (ACLs, relationships, lineage) with MilvusDB entries.
- Defined and implemented optimized data structures to support rapid metadata updates, including scalar indexes for faster ACL lookups and bulk-update mechanisms for efficient synchronization.
- Partnered with the Data Science team to conduct POCs evaluating Milvus performance across multiple indexing and query-filtering strategies; consolidated findings into a comprehensive LADR capturing design trade-offs and performance benchmarks.
- Facilitated architecture and knowledge sessions with cross-functional teams and group architects (Neeraj Kamat, Geeta Ramdas) to finalize the synchronization model and ensure alignment with Data Workspace architecture standards.
- Actively guided implementation and validation of entitlement enforcement logic, ensuring architectural consistency and scalability within the broader Data Workspace ecosystem.

**Result:**

- The ACL sync framework was successfully implemented, enabling entitlement-aware vector search and powering the Conversational Insights Early Adoption (EA) release.
- The design was extended to handle relationship and contextual metadata, becoming a critical enabler for the Controlled Commercial (CC) phase.
- The same synchronization framework is now being leveraged within Data Workspace workflows, allowing users to perform data-space-restricted and role-aware searches for improved compliance and experience.

- Strengthened SLB's foundation for secure GenAI applications by establishing a scalable, metadata-driven entitlement enforcement pattern across vectorized data systems.

**Evidence:**

Entitlements for CI (LADR): <https://wiki.slb.com/x/MIXVG>

Entitlements for CI (Design): <https://wiki.slb.com/x/eIXVG>

Metadata management (Design): <https://wiki.slb.com/x/3yMeH>

**Reference:**

Akanksha Gaur (Project Manager – Sustainability)

Shrikant Jadhav (Project Manager – Conversational Insights and Discovery)

Neeraj Kamat (Subsurface Data Platform Architect)

**8. Design to dynamically expand the support for OSDU schemas for Conversational Insights (March 2025 – June 2025)**

**Overview:**

Conversational Insights initially relied on a static list of OSDU schemas as context for its LLM-driven Lucene query generation. This static design required manual updates whenever new schemas were introduced, or existing ones changed. To overcome this limitation, a Retrieval-Augmented Generation (RAG) framework was designed, enabling dynamic identification and retrieval of relevant OSDU schemas at query time. The new design allows the platform to automatically expand its schema coverage, generating more accurate, context-aware search queries without manual intervention.

**Challenge:**

The core challenge was enabling the LLM to seamlessly access an open-ended, continuously evolving set of OSDU schemas. Key hurdles included:

- Building a scalable, low-latency mechanism to index and retrieve schema definitions based on user intent.
- Supplying concise, dynamically retrieved schema snippets within the LLM's context window while ensuring correct schema application.
- Managing multiple schema versions and maintaining consistency across updates.
- Ensuring schema retrieval and Lucene query generation remain performant and responsive.

**Contribution:**

- Initiated and led early discussions with the Data Science team to explore alternatives to support new schema support dynamically. We jointly identified semantic similarity search as a promising direction for improving schema discovery.
- Designed the end-to-end RAG architecture, defining how schemas are vectorized, retrieved, ranked, and injected as dynamic context into the LLM for accurate query interpretation.
- Architected an automated schema vectorization pipeline, triggered by OSDU storage notifications, enabling continuous indexing of both standard and custom schemas with metadata enrichment and version tracking.

- Authored a detailed LADR comparing similarity-based retrieval with traditional keyword search, providing a strong technical and business rationale that guided the decision toward a semantic-first retrieval strategy.
- Collaborated closely with the Data Science team to align on key design decisions including index augmentation, schema structural handling, and vector database schema definitions.
- Implemented similarity search–driven retrieval logic, allowing the system to dynamically select and inject only the most relevant schema fragments into the LLM—replacing the earlier bulk, static context approach.
- Delivered a scalable and extensible platform that can seamlessly incorporate future schema innovations such as ProSource DOVs and domain-specific schema extensions.

**Impact:**

- Transitioned the system from static schema lists to dynamic similarity-based retrieval, enabling seamless support for expanding OSDU schema libraries—including custom and non-standard types—without manual redeployment.
- Improved LLM query precision and recall, as dynamically retrieved schema context allows the generation of syntactically correct and semantically richer Lucene queries.
- Automated schema ingestion and indexing, reducing operational overhead and ensuring real-time adaptability to schema changes.
- Enhanced system scalability and responsiveness, as the similarity search and RAG workflow retrieve only the most relevant schema context per query.
- Strengthened cross-team collaboration and design clarity, accelerating adoption and future integration across the OSDU ecosystem.

This design establishes a future-ready foundation for Conversational Insights—enabling continuous schema evolution, lowering maintenance costs, and ensuring long-term adaptability across emerging OSDU standards and enterprise use cases.

**Evidence:**

LADR: [https://wiki.slb.com/x/\\_weyGg](https://wiki.slb.com/x/_weyGg)

Design: <https://wiki.slb.com/x/4fnRGQ>

**Reference:**

Prashanth Pillai (Data Scientist - Manager)

Shrikant Jadhav (Project Manager – Conversational Insights and Discovery)

Neeraj Kamat (Subsurface Data Platform Architect)

**9. Enhanced Data Workspace to reduce the technical complexity of working with multiple OSDU schemas versions. (Jan 2023 – Oct 2023)**

**Overview:**

I architected and implemented a major enhancement in the Data Workspace platform to simplify handling of multiple OSDU schema versions and reduce technical complexity. OSDU schemas are uniquely identified by entity type and version (major.minor.patch), which previously caused each minor version to be treated as a separate “kind,” resulting in redundant data products, complex configurations, and inefficient searches.

My design consolidated schema kinds by major version, treating all minor and patch versions as a single logical entity. This required a comprehensive impact analysis across

ingestion, discovery, and administration workflows to ensure backward compatibility and seamless transition for existing configurations from clients like Petronas and Chevron.

**Challenge:**

- Each minor schema update created a new kind, leading to exponential growth in data products and configuration sets.
- Needed consistent grouping logic across ingestion, discovery, and administration workflows to prevent data inconsistencies.
- UI and ingestion configurations were tightly coupled with specific kinds, requiring redesign to support grouped versions without data loss.
- Ensuring smooth migration and retention of customer-specific configurations was critical for platform stability.
- The change had to be deployed as a single coordinated release, with extensive validation to prevent disruptions

**Solution:**

- Implemented a unified “Group by Major Version” strategy across all affected components, ensuring that the platform no longer distinguishes minor or patch versions when resolving schema kinds.
- Performed comprehensive dependency mapping to understand how major-version grouping influences upstream and downstream workflows — including Discover, Administer, Ingest, DataOps parsing, and rule management.
- Redesigned schema resolution and configuration logic so all minor/patch variants of a schema collapse into a single major-version kind, eliminating redundant configurations and reducing noise in UI grids and admin tools.
- Refactored data product generation, facet definitions, and screen rendering pipelines to consistently operate on the grouped kind, preventing duplicate entries and simplifying entity selection across workflows.
- Standardized grouping behavior across tools such as the Reference Data Dictionary, DataOps Log Parser, Data Type & Collection grids, DQM Rules Editor, Data Catalog Admin, and CSV ingestion schema handling — ensuring uniform interpretation of major-version schemas.
- Delivered the enhancement as a coordinated, regression-tested release, introducing validation safeguards to maintain backward compatibility and ensure seamless adoption by all impacted modules.

**Result:**

- Significantly reduced operational complexity for customers by introducing major-version grouping, preventing the exponential growth of schema kinds and configurations caused by minor and patch version upgrades.
- Simplified data manager and administrator workflows by ensuring a single, stable kind per major version, enabling faster onboarding, clearer configuration ownership, and lower ongoing maintenance effort.
- Improved platform scalability and long-term resilience by decoupling schema evolution (minor/patch changes) from downstream workflows, eliminating the need for disruptive reconfiguration with each schema update.

- Delivered a seamless transition across multiple clients and workflows, strengthening customer confidence by preserving backward compatibility while improving consistency across Discover, Ingest, Administer, and DataOps experiences.

**Evidence:**

Design: <https://wiki.slb.com/x/L1vFFQ>

[https://slb001-my.sharepoint.com/:w/g/personal/vlad2\\_slb\\_com/ERSfNhJ6aMxCi1lo-Wj4YN8Bm9o6uumNLrNW7U7IRF1pkA?e=X8QBgA](https://slb001-my.sharepoint.com/:w/g/personal/vlad2_slb_com/ERSfNhJ6aMxCi1lo-Wj4YN8Bm9o6uumNLrNW7U7IRF1pkA?e=X8QBgA)

**Reference:**

Trond Benum (Lumi NDR Project Manager)

Nikhil Vyas (Product Champion for Data Workspace)

[IGNORE]Design and develop workflow to allow authentication for extended application of Data Workspace

**Overview:**

I designed and implemented an extensible authentication framework in Data Workspace to securely integrate both internal and third-party applications embedded as external tabs via iframes. This workflow ensures seamless user experience while maintaining strict compliance with SLB's security standards. A major use case involved integrating the IVAAP application, where I led the collaboration to align their platform with SLB's iframe security model and Content Security Policies (CSPs).

**Challenge:**

The key challenge was enabling authentication for diverse external applications such as SharePoint, PowerBI, and IVAAP, each with unique authentication mechanisms and CSP restrictions. Many third-party apps disallowed iframe embedding or required specific login handling. Balancing security (session management, CSP enforcement) with usability (reduced login friction) and driving alignment with external teams unfamiliar with SLB's security posture added complexity.

**Solution:**

I architected and developed a configurable, role-based authentication workflow that dynamically adapts based on application type and domain control:

- Introduced an "Authentication Required" flag in admin configuration UI for external apps.
- Implemented popup-based login flows for cross-domain applications using:
  - postMessage API for controlled integrations, and
  - popup close event handling for uncontrolled codebases.
- Designed session persistence using browser session storage with secure, time-bound tokens to minimize reauthentication.
- Enabled tenant-specific CSP policy generation for secure iframe embedding.
- Integrated role-based tab visibility to ensure least-privilege access.
- Led technical discussions with the IVAAP team, educating them on iframe sandboxing, cross-domain headers, and CSP adaptation, enabling successful and compliant embedding.

**Result:**

This solution unified and secured access for a wide range of internal and external applications within Data Workspace, simplifying the administrator's configuration experience and enhancing user productivity through seamless login management.

- Reduced login friction with persistent, secure sessions.

- Enabled IVAAP integration through cross-team collaboration and compliance alignment.
- Strengthened security posture via dynamic CSP enforcement and role-based access.
- Scalable and tenant-aware design ensures adaptability for future integrations and evolving authentication standards.

**Evidence:**

**Reference:**

Trond Benum (Lumi NDR Project Manager)

Nikhil Vyas (Product Champion for Data Workspace)

## Business inputs

### 10. Strengthening SLB's Position in GenAI through Patented Architectural Innovations

**Overview:**

As part of SLB's ongoing investment in enterprise-scale GenAI and data intelligence, I have contributed to strengthening the company's intellectual property portfolio by filing 6 patents that address key challenges in operationalizing AI, orchestration frameworks, and conversational reasoning within SLB's digital ecosystem.

These patents represent applied innovations derived from real-world product implementations such as Conversational Insights, Data Workspace, and AI Foundation-aligned architectures—ensuring that SLB not only leverages GenAI but also owns critical differentiating IP across the stack.

**Contributions:**

Each patent filing represents a concrete step in translating architectural research into defensible business assets:

- SELF-CORRECTING LARGE LANGUAGE MODEL-BASED ACTION INVOCATION FOR A CONVERSATIONAL INTERFACE (IS24.1269)  
Enables conversational AI systems to automatically detect, validate, and self-correct failed action invocations for reliable task execution.
- SYSTEMS AND METHODS FOR IMPLEMENTING ACCESS CONTROL POLICIES IN CONJUNCTION WITH SEMANTIC SEARCH ENGINES (IS24.1923)  
Provides fine-grained access control mechanisms that enforce user entitlements directly within semantic and vector-based search results.
- DATA INGESTION PREDICTION USING AGENTS (IS25.0393)  
Introduces intelligent agents that predict and optimize data ingestion workflows using contextual and historical patterns.
- ADAPTIVE LARGE LANGUAGE MODEL SELECTION FOR MODERN CHAT BASED GENERATIVE ARTIFICIAL INTELLIGENCE APPLICATIONS (IS25.0458)  
Dynamically selects the most efficient and capable LLM at runtime based on query complexity, cost, and latency constraints.
- VIEW COORDINATOR FOR A CONVERSATIONAL INTERFACE (IS25.1012)  
Orchestrates dynamic visualization components in conversational interfaces for context-aware, data-driven user experiences.
- SYSTEM AND METHODS FOR A CROSS-PLATFORM DATA ACCESS ENGINE USING DYNAMIC ADAPTERS DISCOVERING DATA USING CONVERSATIONAL AI (IS25.0883)  
Enables conversational AI to seamlessly discover and access heterogeneous data sources through dynamically adaptable connectors.

Collectively, these filings reflect a blend of architectural foresight, product innovation, and technical leadership, ensuring SLB remains at the forefront of enterprise GenAI evolution.

**Impact:**

- Positioned SLB as a thought leader in applied GenAI architectures, reinforcing its competitive edge across the energy digitalization landscape.
- Provided business defensibility by converting advanced R&D into tangible IP assets, securing long-term differentiation in Conversational AI, agentic workflows, and data-driven decision systems.
- Elevated SLB's visibility in the AI domain through cross-collaboration with corporate legal/IP teams.
- Contributed to future monetization opportunities through patent-backed frameworks that can be licensed, embedded, or extended across SLB products and partnerships.

This effort directly supports SLB's transition toward Controlled Commercialization of GenAI capabilities, aligning with our vision to create secure, cost-effective, and IP-protected AI platforms.

The patents not only safeguard SLB's technological leadership but also serve as strategic enablers for client confidence, cross-domain reuse, and sustainable innovation velocity within the organization.

**Evidence:**

[https://slb001-my.sharepoint.com/:f/g/personal/vlad2\\_slb\\_com/Epsl0KaAz9RBmxEE1qM4ocEBrJ8\\_ffzfo5KDxFu8-SWOQ?e=FmXexN](https://slb001-my.sharepoint.com/:f/g/personal/vlad2_slb_com/Epsl0KaAz9RBmxEE1qM4ocEBrJ8_ffzfo5KDxFu8-SWOQ?e=FmXexN)

**Reference:**

Prashanth Pillai (Data Scientist - Manager)

Akanksha Gaur (Project Manager – Sustainability)

Shrikant Jadhav (Project Manager – Conversational Insights and Discovery)

## 11. Business Enablement Through Secure, Entitlement-Aware Conversational Insights

**Overview:**

Conversational Insights, showcased at SLB Forum 2024, exemplified SLB's Generative AI innovation by enabling conversational exploration of unstructured data. To progress toward Early Adoption, it was critical to establish data entitlement enforcement within AI-driven responses, ensuring security, compliance, and client trust.

**Business Challenge:**

The absence of access control was a major blocker for Conversational Insights' EA rollout. The challenge was to enforce fine-grained user entitlements directly within semantic and vector-based AI search results, while maintaining performance and contextual accuracy.

**My Contribution:**

- Led the design and implementation of an entitlement-aware access control framework for Conversational Insights.
- Conducted architecture review sessions with the Portfolio leadership—Nikhil Vyas (Product Champion Data Workspace), Preetika Shedde (D & I Strategy Manager), and Group Architect Geeta Ramdas—to align on the design approach and unblock Early Adoption.
- Collaborated with Data Science and Platform Security teams to validate the approach for performance, compliance, and scalability.

- Co-filed the patent "SYSTEMS AND METHODS FOR IMPLEMENTING ACCESS CONTROL POLICIES IN CONJUNCTION WITH SEMANTIC SEARCH ENGINES (IS24.1923)", providing fine-grained entitlement enforcement within semantic and vector search frameworks.

**Business Outcomes & Impact:**

- Unblocked Conversational Insights for Early Adoption, enabling secure client trials across enterprise datasets.
- Following EA success, the solution enabled paid Proof-of-Value (PoV) engagements with Petronas and North Oil Corporation, marking the transition from showcase to revenue-generating product.
- Delivered secure, compliant, and high-performance AI search experiences, protecting sensitive data while maintaining seamless user interactions.
- Established a reusable entitlement framework that serves as the foundation for domain- and Data Space-level access models.
- Strengthened SLB's Generative AI business position and IP portfolio through the patented access control innovation.

**Evidence:**

[https://slb001-my.sharepoint.com/:f/g/personal/vlad2\\_slb\\_com/Eu2pceFEa-ZIkmm0nL-HeiEB9nZ1yIM5T9gzsfcRGdZvXw?e=FN7hxN](https://slb001-my.sharepoint.com/:f/g/personal/vlad2_slb_com/Eu2pceFEa-ZIkmm0nL-HeiEB9nZ1yIM5T9gzsfcRGdZvXw?e=FN7hxN)

LADR: <https://wiki.slb.com/x/MIXVG>

Design: <https://wiki.slb.com/x/eIXVG>

**Reference:**

Geeta Ramdas (Data Platforms - Architect)

Prashanth Pillai (Data Scientist - Manager)

Akanksha Gaur (Project Manager – Sustainability)

Nikhil Vyas (Product Champion for Data Workspace)

## 12. Defined Cost Measurement and Telemetry Strategy Enabling Commercial Readiness of Conversational Insights

**Overview:**

As part of the Controlled Commercial (CC) readiness for Conversational Insights (CI), It was identified the need for a transparent and scalable method to measure operational cost and resource consumption across client partitions. I proposed and led the design of a unified cost-measurement strategy that would enable accurate forecasting, pricing-tier definition, and commercial planning for early clients such as NOC and Petronas.

To accomplish this, I collaborated with AI Foundation and MRB teams, integrating insights across LightOps, VectorDB, and Dataiku infrastructure components.

**Contributions:**

- Proposed the foundational approach to measure cost and resource consumption for all CI workflows, ensuring commercial readiness and establishing a repeatable governance framework.
- Authored detailed LADRs and design documents defining the end-to-end cost measurement strategy for Conversational Insights, later presented and reviewed with stakeholders and leadership during monthly and bi-weekly forums.

- Designed and implemented the Phase-1 manual cost estimation framework, integrating data from AI Foundation, Data Workspace, and Vectorization services to establish partition-level visibility of operational costs.
- Defined and categorized fixed and variable cost components, covering compute, storage, licensing, token inference, and network egress, to enable transparent and accurate cost attribution.
- Collaborated with AI Foundation and MRB teams to align the strategy with organizational cost governance goals and ensure contract-wise and partition-wise billing attribution for client accounts (NOC and Petronas).
- Provided targeted inputs to AI Foundation telemetry enhancements, recommending the ability to measure cost by:
  - Contract, User, and Department for user-triggered consumption
  - AppCode of the consuming application
  - Workflow within the application
  - LLM engine/version used for inference or embedding
- Partnered with AI Foundation to evaluate Azure Pay-As-You-Go vs PTU-based offerings, helping business teams model operational costs across subscription tiers.
- Defined the Phase-2 automation roadmap, outlining integration with telemetry tools such as Prometheus and Grafana for real-time cost dashboards and analytics.

**Impact:**

- Established a repeatable cost measurement framework that directly supports commercial decision-making for Controlled Commercial rollouts.
- Enabled data-driven pricing and forecasting for NOC and Petronas engagements by quantifying real operational costs of CI workloads.
- Influenced AI Foundation's telemetry enhancements, ensuring future visibility of cost by user, workflow, and LLM model lineage—improving accuracy of cost recovery and internal chargeback.
- Strengthened collaboration across architecture, product, and business teams, positioning the CI team as a key contributor to SLB's GenAI cost governance model.
- The LADRs and design artifacts created as part of this work now serve as reference templates for future cost-governance efforts across for CI.

**Evidence:**

LADR: <https://wiki.slb.com/x/bqL1Gg>

Strategy: <https://wiki.slb.com/x/nvvVG>

Meeting invites with Nikhil and Preetika Data Workspace to explain them the PTU based costing for LLM models –

<https://slb001->

[https://my.sharepoint.com/:w/r/personal/vlad2\\_slb\\_com/Documents/PSE%2014/Evidence/CI%20Cost%20strategy/Cost%20Discussion%20with%20Nikhil%20and%20Preetika.docx?d=w69c4252ff3eb42bcbe5573fda3981a80&csf=1&web=1&e=SJmfT6](https://my.sharepoint.com/:w/r/personal/vlad2_slb_com/Documents/PSE%2014/Evidence/CI%20Cost%20strategy/Cost%20Discussion%20with%20Nikhil%20and%20Preetika.docx?d=w69c4252ff3eb42bcbe5573fda3981a80&csf=1&web=1&e=SJmfT6)

Presentation recording with Jesus and Espen to explain the cost structure of Conversational Insights to assist them create a pricing model - [https://slb001-my.sharepoint.com/:v/r/personal/vlad2\\_slb\\_com/Documents/PSE%2014/Evidence/CI%20Cost%20strategy/CI%20Cost%20Structure-20251003\\_090150-](https://slb001-my.sharepoint.com/:v/r/personal/vlad2_slb_com/Documents/PSE%2014/Evidence/CI%20Cost%20strategy/CI%20Cost%20Structure-20251003_090150-)

[with%20Jesus%20and%20Espen.mp4?csf=1&web=1&nav=eyJyZWZlcnJhbEluZm8iOnsicmVmZXJyYWxXcHAIoJPbmVEcmI2ZUZvckJ1c2luZXNzliwicmVmZXJyYWxXcHQBGF0Zm9ybSI6IldlYilsInJlZmVycmFsTW9kZSI6InZpZXciLCJyZWZlcnJhbFZpZXciOijNeUZpbGVzTGlua0NvcHkifX0&e=ZHfP3r](https://slb001-my.sharepoint.com/:f/g/personal/vlad2_slb_com/EI5PFIwxw5Ko9XiWeJGFGwBRIj26s2hWIN0ps3PQtw5jA?e=cO5Tjq)

[https://slb001-my.sharepoint.com/:f/g/personal/vlad2\\_slb\\_com/EI5PFIwxw5Ko9XiWeJGFGwBRIj26s2hWIN0ps3PQtw5jA?e=cO5Tjq](https://slb001-my.sharepoint.com/:f/g/personal/vlad2_slb_com/EI5PFIwxw5Ko9XiWeJGFGwBRIj26s2hWIN0ps3PQtw5jA?e=cO5Tjq)

#### References:

Geeta Ramdas (Data Platforms – Architect)  
Neeraj Kamat (Subsurface Data Platform Architect)  
Shrikant Jadhav (Project Manager – Conversational Insights and Discovery)  
Nikhil Vyas (Product Champion for Data Workspace)

### 13. Propose and implement a solution to intelligently render context aware viewers on Conversational Insights

#### Overview:

I proposed and led the design of the Context-Aware View Coordination Framework to enhance Conversational Insights with domain-specific OSDU viewers. The framework bridges conversational intelligence with dynamic visualization, enabling users to explore complex data visually from natural-language responses. It orchestrates multiple viewers and preserves conversational context, creating an integrated, data-driven experience that improves decision confidence and user engagement.

#### Challenge:

Conventional conversational systems are limited to textual outputs and cannot render complex, interlinked domain data. In CI, LLM responses frequently include references to entities such as wells, logs, or facilities that require specialized OSDU-based viewers for interpretation.

For example:

- Document viewers – shows references to actual source of text generation
- Log viewer – show log graphs
- Map – Locations of the result data.
- Chart – various types of plots which includes bar, pie, time series.

Synchronizing these viewers, maintaining conversational context, and orchestrating state transitions outside the UI execution boundary presented significant architectural complexity. Ensuring reliability, context retention, and dynamic responsiveness across multiple embedded viewers required a unified, event-driven coordination framework.

#### Contribution:

- Proposed the idea of extending Conversational Insights with domain-aware OSDU viewers to enable seamless transition from conversational results to visual data exploration.
- Developed a reusable orchestration framework that supports dynamic visualization and conversational context retention across multiple components.
- Positioned the capability as a differentiator at the SLB Forum 2024, demonstrating how LLM insights can be operationalized into actionable visual workflows.
- The design has been filed as a patent – “View Coordinator for a Conversational Interface (IS25.1012)” – reinforcing SLB’s IP leadership in AI-driven visualization and human-AI collaboration.

- Established a foundation framework now reused in Digital Home, enabling multi-agent orchestration demonstrated at ADIPEC 2025, proving scalability and cross-product applicability.

**Impact:**

- Delivered a patented innovation that connects conversational reasoning with domain-aware visualizations for intuitive, data-driven decisions.
- Enhanced user experience and product differentiation, contributing to the strong success of Conversational Insights during the SLB Forum 2024.
- Accelerated decision-making by enabling visual, context-aware interpretation of LLM outputs across OSDU domains.
- Validated framework scalability through Digital Home reuse and ADIPEC 2025 demo, showcasing enterprise-wide impact.
- Strengthened collaboration and visibility across teams, reinforcing SLB's leadership in operationalizing LLM and multi-agent capabilities within digital workflows.

**Evidence:**

[https://slb001-my.sharepoint.com/:f/g/personal/vlad2\\_slb\\_com/Eu7GeSBrrBxLk09pYwb7Qq0BwZHgru1EbUB8mLNhrsO1\\_w?e=NAKcOR](https://slb001-my.sharepoint.com/:f/g/personal/vlad2_slb_com/Eu7GeSBrrBxLk09pYwb7Qq0BwZHgru1EbUB8mLNhrsO1_w?e=NAKcOR)

Context viewer design: <https://wiki.slb.com/x/zwblFw>

**References:**

Prashanth Pillai (Data Scientist - Manager)  
 Akanksha Gaur (Project Manager – Sustainability)  
 Nikhil Vyas (Product Champion for Data Workspace)

#### 14. Drive proof-of-concepts to design authentication workflow for custom screen feature in Data Workspace

**Overview:**

To strengthen Data Workspace as an integration-ready enterprise platform, I drove a proof-of-concept initiative to design a unified authentication workflow enabling secure access for both in-house and third-party applications embedded as custom screens. The research-led approach evaluated SSO and OAuth 2.0 standards, ensuring the framework aligned with SLB's enterprise security posture while offering flexibility for diverse partner ecosystems. A key success was the seamless integration of IVAAP, achieved through close collaboration to resolve iframe and CSP restrictions, enabling compliant and user-friendly embedding.

**Challenge:**

- Fragmented authentication models across internal (SLB-managed) and third-party apps such as SharePoint, Power BI, and IVAAP.
- Inconsistent embedding and security policies (CSP, iframe restrictions) that limited interoperability.
- Need for a single extensible design maintaining secure session persistence, user convenience, and regulatory compliance.

**Solution:**

- Proposed the unified authentication framework to business stakeholders — *Nikhil Vyas* (*Product Champion Data Workspace*), *Swapnil Patel* (*D & I Product Manager*), and *Farouk Fekravar* — highlighting its role in accelerating partner integrations and platform extensibility.
- Designed a configurable, role-based authentication workflow supporting multiple app domains and administrator-defined control levels.
- Implemented popup-based login flows for external apps, ensuring cross-domain security through postMessage communication and session-scoped validity.
- Introduced tenant-specific CSP enforcement to safeguard embedded applications while maintaining flexibility.
- Enabled admin-configurable “Authentication Required” flags for transparency and better governance.
- Collaborated with IVAAP developers to align their application with SLB’s embedding and CSP requirements.

**Business Impact:**

- Accelerated time-to-integration for internal and partner applications, enabling faster rollout of new digital experiences.
- Reduced onboarding effort for new tools, improving operational agility and partner adoption.
- Enhanced user experience through seamless and secure authentication flows across diverse applications.
- Positioned Data Workspace as a secure, integration-ready foundation for multi-tenant ecosystems, directly contributing to SLB’s strategy of scalable digital enablement and controlled commercial growth.

**Evidence:**

Design wiki: <https://wiki.slb.com/x/GF0WFQ>

**Reference:**

Trond Benum (Lumi NDR Project Manager)

Nikhil Vyas (Product Champion for Data Workspace)

## Mentoring and Leadership

### 15. Conversational Insights Architecture Webinar for System Architecture and Design Eureka SIG (Dec 2025)

**Overview:**

In December 2025, I was invited to present the architecture and evolution of *Conversational Insights (CI)* to the System Architecture and Design Eureka SIG. CI has become a key capability within Data Workspace and is widely referenced across SLB for GenAI-assisted insights, subsurface workflows, and enterprise search scenarios. The SIG wanted a detailed walkthrough of how CI is engineered and how its design aligns with SLB’s larger AI Foundation strategy. I delivered a webinar on December 9, 2025, showcasing CI’s end-to-end architecture, the agentic orchestration pattern.

**Description of technical knowledge shared, or mentoring:**

Since I have been leading the architecture and implementation of Conversational Insights—spanning multiple releases, customer PoVs, patents, and integrations—I was well-positioned to present this knowledge at the Eureka SIG. I proposed a structured agenda covering CI's technical foundations, architectural decisions.

My goal was to present CI as a scalable platform that bridges LLMs, OSDU data, and domain workflows.

#### During the webinar, I covered:

I delivered a structured, end-to-end walkthrough of Conversational Insights (CI) to the Eureka SIG, covering its architectural principles, deployment model, and integration within Lumi Data Workspace. I opened with the challenges of enterprise data discovery and demonstrated how CI simplifies this through natural-language interaction, agentic workflows, and schema-aware reasoning.

I then introduced the GenAI fundamentals underlying CI—LLMs, embeddings, prompting patterns, and RAG pipelines—followed by a deep dive into the CI engine's architecture: LangGraph-based orchestration, multi-agent planning, conversational memory, vector search (Milvus), and OSDU entitlements integration.

I showcased how CI unifies structured and unstructured data discovery, demonstrated capabilities such as document summarization, chart generation, multilingual support, and workflow invocation, and walked through its microservices deployment pattern across Data Workspace, AI Foundation, and Dataiku.

The session concluded with real-world learnings from multi-partition deployments and a forward-looking roadmap covering multi-agent collaboration, observability, semantic caching, and extended connectors.

#### Impact:

This webinar significantly strengthened architectural awareness of Conversational Insights across SLB. The session provided a unified and transparent view of CI's architecture, helping teams understand:

- how CI enables natural-language access across enterprise data,
- architectural patterns for scalable agentic workflows,
- how GenAI capabilities align with Lumi Data Workspace,
- how to incorporate schema awareness, OSDU entitlements, and multilingual RAG into enterprise applications.

The knowledge shared is already influencing upcoming designs for AI-assisted discovery, multi-domain agentic systems, and generative AI workflows being planned across several product lines.

#### Evidence:

Announcement: [Due to sanctions, please do not forward this communication to any SLB employees based in or performing work in Russia, nor to any Eureka discussion gr...](#)

Recording: [\[Recording Available\] Q4 AI Webinar Series: Session 2 – Conversational Insights: Rethinking Data Discovery Dear SIG members, Thank you to everyone w...](#)

#### Reference:

Lydia Sun, Ravi Kumar (System Architecture and Design SIG Leaders)

### 16. Knowledge session for Conversational Insights in Network of Architects (Pune) and Data Workspace architects

#### Overview:

In my capacity as a technical mentor and architecture leader, I conducted multiple structured knowledge-sharing and coaching sessions across SLB's Network of Architects (PUTC, PITC, and STSI with approximately 20+ attendees) and Data Workspace architects/managers teams with attendees around 15. These sessions were designed to cultivate architectural maturity, promote consistent design standards, and enable knowledge reuse across regional and product teams.

**Contribution:**

- I led mentoring sessions that emphasized architectural reasoning, design trade-offs, and reusability patterns using Conversational Insights (CI) as a live case study.
- The sessions included:
  - Deep-dive walkthroughs of CI architecture which includes multi-tenancy model, deployment architecture and component interaction patterns.
  - Coaching on metadata synchronization, vectorization pipelines, and entitlement-aware search.
  - Guidance on cost calculation.
  - Deployment process.
- These interactions provided a platform for architects and engineers to discuss challenges, share solutions, and learn from real-world architectural implementations.

**Audience:**

Participants included members from Network of Architects (PUTC, PITC, STSI), and senior architecture leaders Neeraj Kamat and Geeta Ramdas, fostering a culture of peer learning and collaboration.

**Leadership Impact:**

- Enabled cross-hub architectural mentorship, bridging teams across PUTC, PITC, and STSI.
- Developed architectural thinking and decision-making skills among emerging architects. Strengthened SLB's internal architecture community by aligning practices across business units.
- Promoted leadership through knowledge, positioning CI as a teaching model for AI and system architecture excellence.

**Evidence:**

[https://slb001-my.sharepoint.com/:f/g/personal/vlad2\\_slb\\_com/EmwOw-6xYq5LrwvxEil0700BRAxSCzfJIY-RmyvApTogUQ?e=EyotfK](https://slb001-my.sharepoint.com/:f/g/personal/vlad2_slb_com/EmwOw-6xYq5LrwvxEil0700BRAxSCzfJIY-RmyvApTogUQ?e=EyotfK)

**Reference:**

Geeta Ramdas (Data Platforms - Architect)

Neeraj Kamat (Subsurface Data Platform Architect)

Swapnil Dubey (Architect Digital Cost of Service Del)

## 17. Architectural Review Lead for OilSim Application Modernization

**Overview:**

In November 2023, I was engaged by the OilSim 4 project team in Houston to conduct an architectural review and provide modernization guidance for their long-running training simulation platform. OilSim 4, owned by HR and used globally, enables participants to operate a virtual oil company across the full exploration and production lifecycle. The team sought a clear modernization path from their legacy PHP multi-page application to a modular, maintainable, and standards-aligned architecture using Angular as the primary SPA framework.**Challenge:**

The system faced multiple issues that threatened long-term sustainability—an outdated UI, fragmented front-end codebases, race-condition risks in worker processes, and an urgent need to migrate from AWS to Azure for organizational alignment. Without a structured modernization plan, these challenges could lead to escalating maintenance costs, reduced reliability, and slower delivery of future enhancements.

**Contribution:**

I led a focused architecture review over two weeks, working closely with the OilSim technical team, including developers and domain experts. My role covered the full cycle — analyzing the existing system, identifying key issues, and presenting clear recommendations to both technical and business stakeholders. The discussion included:

- Identifying major pain points and improvement areas.
- Recommendations on moving to Angular as the primary SPA framework with best practices and modern tools.
- Proposal to use a Node.js/NestJS backend-for-frontend layer to improve security and enable real-time communication.
- Redesigning the worker queue mechanism to remove race conditions and improve task isolation.
- Suggested containerization with managed services for easier deployment and scaling.
- Outlined a migration plan from AWS to Azure with help from SLB's LightOps team.
- Unify fragmented UI applications into a single, role-based Angular app for a better user experience and simpler maintenance.
- Delivered the final close-out presentation summarizing findings, priorities, and next-step recommendations to business and technical stakeholders, including:

**Audience:**

Technical Review Sessions:

Attendees who participated in the architectural deep-dive discussions and system walkthroughs:

- Paula – Domain Expert
- Dima – Senior Developer with extensive OilSim experience
- Devarsh – Developer
- Kingsley – Developer
- Core OilSim 4 development and technical stakeholders

Close-Out Presentation (Final Recommendations)

Senior business and technology leaders who reviewed and approved the final modernization roadmap:

- Richard Falconar – Learning Innovation Team Lead
- Steve Uren – Business Owner (HR)
- Susan Spark – Learning Technology Manager

**Result:**

The review resulted in a standards-compliant architecture blueprint that strengthened business-technology alignment, reduced risks, and established a scalable, future-ready foundation.

This engagement significantly elevated my professional visibility within SLB by demonstrating my ability to lead complex technical initiatives and collaborate effectively with senior stakeholders.

The resulting roadmap positioned the OilSim 4 project for successful delivery of future enhancements with clear business value, reinforcing leadership confidence in my strategic foresight and execution capabilities.

**Evidence:**

[https://slb001-my.sharepoint.com/:f/g/personal/vlad2\\_slb\\_com/Em2x30jTgGxDptCg\\_bhULIsBwCiVJ2SKkoE2pJ31OlVxdw?e=FeC6wv](https://slb001-my.sharepoint.com/:f/g/personal/vlad2_slb_com/Em2x30jTgGxDptCg_bhULIsBwCiVJ2SKkoE2pJ31OlVxdw?e=FeC6wv)

**Reference:**

Trond Benum (Lumi NDR Project Manager)  
Richard Falconer (Learning Innovation Team Lead)  
Geeta Ramdas (Data Platforms - Architect)

## 18. Mentoring Data Science team during development of Conversational Insights

**Overview:**

The Conversational Insights (CI) program was a collaborative effort between the Data Workspace and Data Science teams. To ensure successful delivery, the Data Science team required guidance on software engineering best practices, Data Workspace workflows, and adherence to OSDU data standards. I played an active mentoring role throughout this journey, enabling cross-disciplinary collaboration and strengthening CI's technical foundation.

**Contributions:**

- Mentored Avinash Lokhande to understand various OSDU schemas and their inter-relationships. Provided hands-on guidance on the Index Augmentation feature, which proved essential for designing efficient and scalable Lucene queries.
- Guided Ritwik Singhai in building multiple proof-of-concepts on Milvus DB, including metadata modelling and type handling. This mentorship directly contributed to enabling access-controlled responses in CI.
- Mentored Ritwik and Pranav on implementing synchronization of metadata between OSDU and Milvus, ensuring consistency during relationship updates — a critical enhancement for improving search accuracy.
- Mentored Pranav to architect and implement a multi-tenant design for the CI Engine, making it adaptable across clients and environments.
- Collaborated with Akshay Gupta to design markdown-based responses with contextual references, improving readability and user experience within conversational workflows.
- Mentored Saood on developing the plotting feature, a standout component showcased at SLB Forum 2024. Later, this feature was scaled to support multiple chart types rendered dynamically on the UI, further enriching the CI visualization capabilities.

**Impact:**

Through this continuous mentoring engagement, I not only accelerated the learning curve of new engineers but also fostered a culture of technical excellence and collaboration. The outcome was a stronger, well-aligned team capable of independently extending CI's architecture and features — significantly enhancing its quality, scalability, and business impact.

Prashanth Pillai (Data Scientist - Manager)

Akanksha Gaur (Project Manager – Sustainability)

Shrikant Jadhav (Project Manager – Conversational Insights and Discovery)

## 19. Mentoring engineers of Data Workspace for implementing core workflows

**Overview:**

As part of the Data Workspace organization, I have mentored multiple engineers to enhance their architectural understanding, design thinking, and implementation quality across the Conversational Insights and Data Workspace workflows. The focus was on enabling engineers to

independently deliver scalable, maintainable, and production-ready components aligned with enterprise standards.

**Contribution:**

- Abhinav Samala – Guided in designing and implementing the View Coordinator Framework, enabling seamless coordination of multiple domain viewers and charting capabilities.
- Nayan Mane – Mentored in building a robust error-handling framework and developing ProSource document workflows within Conversational Insights.
- Abhishek Nanda – Provided architectural mentorship for designing the multi-tenant Conversational Insights architecture on Dataiku, including conversation history management.
- Kishley Raj – Guided in developing a RAG-enabled structured search service, improving the contextual accuracy of search and retrieval.
- Gaurav Raghuvanshi – Supported his transition to the Agile Customer Success team, mentoring on handover of ACS workflows to core teams and implementing the authentication framework for IVAAP integration.
- Manjil Khambe and Snehal Nikam – Mentored in delivering data ingestion and image viewer workflows to support visualization of TIFF, JPEG, and PNG formats within Data Workspace.

**Impact:**

This mentoring initiative strengthened the engineering maturity within the Data Workspace team, accelerated delivery of Conversational Insights features, and ensured continuity of architectural best practices. It also fostered stronger collaboration between Data Workspace, AI Foundation, and Conversational Insights teams, improving overall delivery velocity and technical excellence.

**Reference:**

Akanksha Gaur (Project Manager – Sustainability)

Shrikant Jadhav (Project Manager – Conversational Insights and Discovery)

Trond Benum (Lumi NDR Project Manager)

## 20. Providing Mentorship and Leadership to Strengthen the IP Culture at PuTC

### Overview

As a member of the Intellectual Property (IP) Committee at the Pune Technology Center, I played a leadership role in strengthening our innovation culture. My focus was on mentoring teams, demystifying the patenting process, and enabling more engineers to confidently contribute to SLB's IP pipeline.

**Contribution**

- Took a mentorship-first approach by guiding participants on how to identify strong patentable ideas, refine their narratives, and structure them into clear, defensible patent documents.
- Led hands-on coaching sessions that walked innovators through the complete IP workflow—problem framing, claim articulation, drafting, and filing through the IP portal.
- Provided one-on-one advisory support to help individuals strengthen the novelty and technical depth of their submissions.
- Played a key leadership role in organizing and driving the IP Day event, ensuring high-quality content, engagement, and an encouraging environment for idea generation.
- Advocated for innovation across teams and acted as a visible point of support for anyone exploring new ideas.

**Impact**

- Enabled 40+ participants to confidently engage in the innovation and patenting process.

- Helped 24 ideas successfully progress to the Memotech portal—demonstrating strong conversion from participation to actionable IP.
- Built greater awareness, clarity, and confidence around the patenting process, lowering the barrier for teams to contribute IP in future cycles.
- Strengthened the innovation culture at PuTC by creating a supportive, mentorship-driven ecosystem for idea development.

## 21. Strengthening Technical Excellence and Professional Visibility through PSE Reviews and Mentorship

### Overview:

As part of SLB's knowledge and talent development cycle, I actively contributed to the Personal Self Evaluation (PSE) process by serving as a technical reviewer, mentor, and approver. My focus was on ensuring alignment between individual goals, technical impact, and organizational outcomes through constructive feedback and coaching.

### Contributions:

- Reviewed 4 PSEs across multiple domains, providing detailed technical and strategic feedback to help articulate measurable impact and clarity of outcomes.
- Mentored 1 individual in drafting and structuring their PSE, guiding them on framing technical depth, scope of influence, and alignment to organizational objectives.
- Approved 1 PSE, ensuring quality, accuracy, and consistency in evaluation.
- Enabled better articulation of technical achievements and professional growth through structured guidance and review templates.
- Promoted a culture of transparent and meaningful self-evaluation, encouraging peers to highlight both innovation and collaboration dimensions in their submissions.

### Description of professional visibility:

This engagement significantly enhanced my professional visibility across teams and leadership circles. By collaborating with multiple reviewers, approvers, and contributors, I gained recognition as a trusted technical mentor and evaluator within the organization. It also deepened my understanding of diverse technical portfolios, strengthened my leadership presence, and positioned me as a go-to resource for guiding high-quality PSE submissions in Pune tech centers..

### Evidence:

[https://slb001-my.sharepoint.com/:f/g/personal/vlad2\\_slb\\_com/Ehcc7Z7m0J5Bgw3BaL0FMjoB8uc5vcmlUesazUDCiduBdA?e=T3p66w](https://slb001-my.sharepoint.com/:f/g/personal/vlad2_slb_com/Ehcc7Z7m0J5Bgw3BaL0FMjoB8uc5vcmlUesazUDCiduBdA?e=T3p66w)

## Professional Visibility

### 22. Proof-of value engagement for Conversational Insights for various clients CVX, Petronas, Ecopetrol and Northern Oil Corporation

#### Overview:

Led and supported Proof-of-Value (PoV) engagements for Conversational Insights (CI) across multiple global clients to demonstrate the value of AI-driven knowledge retrieval, intelligent search, and conversational data discovery on SLB's Data Workspace platform. The initiative

showcased how domain-specific large language models (LLMs) can enable faster access to insights from both structured OSDU data and unstructured document repositories.

**Contribution:**

- Defined and implemented scalable CI architecture tailored to client datasets and use cases (e.g., well data search, operational report Q&A, and brownfield document retrieval).
- Collaborated with AI Foundation and Cloud DnD teams to design and enable scalable, secure, and cost-optimized infrastructure for PoV environments.
- Partnered with Geo Unit teams to drive architectural understanding, resolve technical issues, and ensure smooth PoV execution.
- Provided enablement and troubleshooting support for index augmentation for CVX, improving retrieval accuracy and PoV reliability.
- Presented the CI architecture for Northern Oil Corporation (NOC) to the Architecture Review Board, securing alignment and formal architectural approval.
- Supported cost estimation and pricing model design to help Portfolios and GeoUnits define commercially viable CI deployment strategies.

**Impact:**

- Significantly enhanced my professional visibility across SLB by leading architectural discussions that bridged AI Foundation, Cloud DnD, Portfolios, and Geo Unit teams.
- Strengthened cross-functional collaboration and positioned myself as a go-to architect for GenAI and Conversational Insights initiatives.
- Contributed to standardizing CI architectural patterns and cost frameworks now referenced in subsequent client engagements.
- Elevated SLB's positioning as a leader in enterprise-scale GenAI adoption for the energy sector through architect-driven client enablement and governance leadership.
- 

**Evidence:**

<https://slb001->

my.sharepoint.com/:f/g/personal/vlad2\_slb\_com/EqOBScOcBmhNsc8A8rvPACQB8QRTx4hKJRzMJIQ16D4apg?e=H4sDmE

**Reference:**

Neeraj Kamat (Subsurface Data Platform Architect)

Prashanth Pillai (Data Scientist - Manager)

Akanksha Gaur (Project Manager – Sustainability)

Shrikant Jadhav (Project Manager – Conversational Insights and Discovery)

Nikhil Vyas (Product Champion for Data Workspace)

**23. Cross-program collaboration with Unified Data Services (UDS) and Document Insights to enable Prosource on Conversational Insights**

**Overview:**

As part of enhancing Conversational Insights (CI) with richer document understanding and true cross-domain search, I led the integration of ProSource standard Domain Object Views (DOVs) alongside Document Insights DOVs within CI.

In ProSource, a Domain Object View represents a business-ready, consolidated view of a subsurface entity—such as a well, log, or interpretation—created by harmonizing data from multiple systems into a single standardized schema. These DOVs act as the authoritative, MDM-governed representation of domain objects.

By bringing these structured ProSource DOVs together with CI's unstructured, semantic document-level insights, we enabled a unified and more intelligent conversational discovery experience in Data Workspace. This joint MDM initiative seamlessly merged ProSource's curated domain metadata with CI's contextual understanding, allowing users to navigate both structured and unstructured subsurface knowledge through a single conversational interface.

**Contribution:**

- Collaborated with Shrikant Haridas Sonone and the Prosource team to embed the Prosource connector UI within Data Workspace as a custom screen configuration using secure iframe integration.
- Partnered with the Document Insights and Data Science teams to bridge knowledge gaps and enable semantic search on unstructured data through the combined use of Prosource and Document DOVs.
- Led architectural discussions to align Prosource ingestion workflows and metadata models with Document Insights, ensuring interoperability and accessibility of both DOVs within Conversational Insights.
- Performed a feasibility assessment to evaluate the UX implications of integrating Prosource workflows, maintaining design consistency and seamless navigation within CI.
- Formulated strategies for managing relationships among Prosource DOVs as metadata to enhance result precision and search relevance.

**Impact:**

- Successfully enabled dual DOV integration (Prosource and Document DOVs), strengthening the interoperability between Prosource, Document Insights, and Conversational Insights.
- Enhanced semantic search accuracy and contextual document retrieval by enriching metadata relationships across multiple DOVs.
- Increased cross-domain collaboration and visibility by driving alignment between engineering, data science, and product teams across multiple business units.
- Positioned *Conversational Insights* as a central entry point for document-centric workflows, reinforcing SLB's strategy of unified, GenAI-driven enterprise search and discovery.

**Evidence:**

[https://slb001-my.sharepoint.com/:f/g/personal/vlad2\\_slb\\_com/EiWgdQftpVZErdWBQX6lmd8BdRxbEiNX0bxKPR-gIWibA?e=MIx3yY](https://slb001-my.sharepoint.com/:f/g/personal/vlad2_slb_com/EiWgdQftpVZErdWBQX6lmd8BdRxbEiNX0bxKPR-gIWibA?e=MIx3yY)

Relationship management as metadata for Prosource documents:

<https://wiki.slb.com/x/MWe3Gw>

UI Impact analysis: <https://wiki.slb.com/x/oQGKGw>

**Reference:**

Neeraj Kamat (Subsurface Data Platform Architect)

Mayur Deshpande (Operations Data Platform Architect)

Shrikant Jadhav (Project Manager – Conversational Insights and Discovery)

Nikhil Vyas (Product Champion for Data Workspace)

## 24. Giving feature demos to stakeholder's conversation insights for feedback for SLB Forum 2024

**Overview:**

As part of advancing the Conversational Insights (CI) platform toward enterprise readiness, I

played a key role in preparing and demonstrating its capabilities to various stakeholders in alignment with the SLB Forum 2024. The objective was to showcase the maturity, technical depth, and business value of the CI solution as a strategic AI initiative under SLB's digital transformation roadmap.

**Contributions:**

I was instrumental in the overall design and development of the Conversational Insights architecture — covering data integration, retrieval workflows, and orchestration of AI-driven insights. I also led the creation of focused demo scenarios that illustrated how CI enables domain-aware conversations using structured and unstructured data.

As part of the Forum preparations, I conducted detailed demonstrations and walkthroughs for key stakeholders, including Hemant Arora (VP AI and Data Platform), Jamie Cruise(Business Line Director Data), and Preetika Shedde (D & I Strategy Manager), helping them understand the system's architecture, potential business applications, and alignment with SLB's broader AI vision. This involved deep technical discussions, live demos, and iterative feedback sessions to refine the platform narrative for wider visibility.

**Description of professional visibility:**

This initiative significantly enhanced my professional visibility across Data Workspace, and domain leadership teams. It positioned me as a key technical architect driving the Conversational Insights vision within SLB.

My ability to bridge technical depth with business impact was recognized through positive feedback from senior stakeholders and the O2 Recognition Award (Q3 2024), acknowledging my contributions toward making the CI platform demonstrable and strategically visible at the SLB Forum 2024.

**Evidence:**

[https://slb001-my.sharepoint.com/:g/personal/vlad2\\_slb\\_com/EslVCfENADJlvBYEAkSHEQBefwGqccuVoArmaEeOhdXig?e=omv1Hs](https://slb001-my.sharepoint.com/:g/personal/vlad2_slb_com/EslVCfENADJlvBYEAkSHEQBefwGqccuVoArmaEeOhdXig?e=omv1Hs)

O2 Award : <https://slb001.sharepoint.com/sites/MH-Digital-Development/SitePages/Out-of-the-Ordinary-Program-Recognition-Q3-2024.aspx>

**Reference:**

Akanksha Gaur (Project Manager – Sustainability)

Nikhil Vyas (Product Champion for Data Workspace)

**25. Building professional visibility by showcasing secure integration of IVAAP within Data Workspace**

**Overview:**

Collaborated closely with the INT (IVAAP) engineering team and INT leadership to enable the secure integration of the IVAAP visualization platform within SLB's Data Workspace. The engagement involved sustained architectural alignment across organizations, working with INT engineers and managers including Steven Reynolds (INT), Yichong Qin (INT), Michael Arneson (INT), and Diana Chauveau (INT), alongside SLB stakeholders such as Faroukh Fekravar (Solutions Architect) and Sachin Sudhakar Kulkarni (Product Champion).

The objective was to ensure interoperability while meeting SLB's enterprise security, authentication, and compliance standards.

**Contribution:**

- Led architectural discussions with INT engineers and managers to align IVAAP's integration approach with SLB's authentication and security framework.
- Guided the INT team on implementing Content Security Policy (CSP) updates and iframe security configurations required for secure embedding within Data Workspace.
- Provided reference architectures, design guidance, and proof-of-concept validations to help INT adapt their authentication model to SLB's standards.
- Acted as the primary technical bridge between INT engineering, SLB Cloud, and Security teams to resolve design concerns related to session handling, role-based access control, and secure cross-application communication.

**Impact:**

This engagement significantly increased my professional visibility across multiple teams — INT, Cloud, and Security — establishing me as a key technical contact for third-party integration and authentication strategy within Data Workspace. The success of the IVAAP integration demonstrated the scalability and flexibility of the authentication framework, reinforcing confidence in the platform's enterprise-grade security and integration readiness.

**Evidence:**

<https://slb001->

[my.sharepoint.com/:f/g/personal/vlad2\\_slb\\_com/EvLhwW2RP2pAg2jCv7Zm8NQB9ryjAMsqF2sdg0ze7K3MDA?e=rZXcmh](my.sharepoint.com/:f/g/personal/vlad2_slb_com/EvLhwW2RP2pAg2jCv7Zm8NQB9ryjAMsqF2sdg0ze7K3MDA?e=rZXcmh)

**Reference:**

Trond Benum (Lumi NDR Project Manager)

Nikhil Vyas (Product Champion for Data Workspace)

## 26. Professional Visibility through Collaboration with AI Foundation for Conversational Insights enablement

**Overview:**

AI Foundation is SLB's Center of Excellence responsible for providing core AI capabilities such as the Milvus vector database, foundation model (FM Hub) endpoints, and the AI Workspace (Dataiku) platform. During the development of Conversational Insights (CI), I played a key role in coordinating with the AI Foundation team to align CI's architecture with SLB's enterprise AI roadmap and foundational components.

**Contribution:**

- Actively partnered with AI Foundation leads — including Abhinav Kohar (AI Foundation Manager), Charu Hans (Data Science Architect), Sampath Reddy (previously AI foundation Product Champion), and Suresh Punugupti (Product Champion)— to bridge requirements between the CI platform and foundational AI services.
- Contributed to multiple strategic and technical discussions covering:
  - Integration of Milvus as the vector database for unstructured document search.
  - Multi-tenancy design models for Milvus and the AI Vector Service to support CI's scalable and isolated deployments.
  - Introduced KEDA-based auto-scaling for the CI Engine to dynamically manage workloads — a capability not natively supported in standard Dataiku API Node deployments.
  - Evaluation of AI Vector Service limitations and feature recommendations to meet CI's retrieval-augmented generation (RAG) requirements.

- Dataiku deployment strategy, introducing a proxy partition-based model to achieve efficient multi-tenancy and cost optimization.
- Cost modelling inputs for Milvus infrastructure, LLM token usage, and Dataiku workloads, with suggestions for improved telemetry and application-level cost visibility.
- Collaborating on Proof of Value (PoV) deployments for key clients including Petronas, Ecopetrol, and NOC Qatar, ensuring smooth platform readiness and alignment of AI Foundation services with CI architecture.
- Shared actionable feedback on platform gaps, including API node streaming, cold-start latency in Code Agents, and the need for unified session memory management.

**Description of professional visibility:**

- Strengthened professional visibility across the AI Foundation organization as a trusted architectural representative of Conversational Insights, recognized for technical depth and solution-oriented collaboration.
- Enhanced CI's alignment with SLB's AI platform vision, directly influencing product roadmap discussions and infrastructure strategy.
- Built cross-team credibility through consistent engagement and technical thought leadership in areas of cost optimization, scalability, and platform interoperability.
- Positioned myself as a key point of contact for future AI-driven architectural initiatives by demonstrating deep understanding of both business and technical dimensions of SLB's AI ecosystem.

**Evidence:**

[https://slb001-my.sharepoint.com/:f/g/personal/vlad2\\_slb\\_com/Eskdbh7\\_rqxLIAGo57sPa08BlufNA5cvmZk\\_gusqUHAVng?e=jzTCDr](https://slb001-my.sharepoint.com/:f/g/personal/vlad2_slb_com/Eskdbh7_rqxLIAGo57sPa08BlufNA5cvmZk_gusqUHAVng?e=jzTCDr)

**Reference:**

Geeta Ramdas (Data Platforms - Architect)

Neeraj Kamat (Subsurface Data Platform Architect)

Prashanth Pillai (Data Scientist - Manager)

Akanksha Gaur (Project Manager – Sustainability)

Shrikant Jadhav (Project Manager – Conversational Insights and Discovery)