

KGNN

Equitus KGNN

Automated Knowledge Engine
for Enhanced AI Reasoning

Equitus KGNN™ (Knowledge Graph Neural Network) is a next-generation AI data platform that automates the ingestion, cleaning, contextualization, and structuring of data at scale. It replaces traditional ETL and eliminates manual pipelines through intelligent data fusion and autonomous semantic enrichment. The result is a unified, enriched knowledge graph that delivers AI-ready, structured data, enhancing business intelligence, improving reasoning, and powering more accurate and explainable AI outcomes.



Key Capabilities

Automated Data Aggregation at Scale

Ingests and unifies vast volumes of structured and unstructured data at high-speed using advanced knowledge graph technology for maximum computational efficiency.

Unified Data View

Seamlessly integrates disparate data sources into a single, enriched knowledge graph, providing a holistic and coherent view of the information landscape.

Automated Entity Correlation

Automatically discovers and links individuals, entities, topics, and patterns across multiple intelligence and information sources.

Advanced Link Analysis

Maps complex relationships between people, organizations, events, and actions to uncover hidden connections and networks of interest.

Graph Analytics & Pattern Discovery

Utilizes powerful graph algorithms to identify clusters, associations, influence pathways, and evolving behavioral patterns.

Predictive Modeling

Leverages AI-driven predictive analytics to detect early indicators of behavior, risk, or intent—enabling proactive decision-making.

Anomaly Detection

Identifies subtle and obscured outliers that traditional analytics often miss—spotting emerging threats, fraud, or critical deviations in real time.

High-dimensional Contextual analysis

Provides a rich, multi-dimensional understanding of your data by combining semantic relationships, temporal patterns, and contextual cues.

Platform Architecture & Core Technologies

Kubernetes-Native Stack

KGNN is fully containerized for rapid deployment, scalability, and edge-readiness. Compatible with Red Hat OCP, it scales horizontally across enterprise and tactical environments.

Multi-Modal Data Ingestion Engine

Accepts structured, semi-structured, and unstructured data from APIs, files, databases, and real-time streams. Includes plugin-based ingestion for extensibility.

Auto-ETL with Semantic Contextualization

NLP, ML, and heuristic models automate the parsing and cleaning of source data. Advanced pipelines extract entities, attributes, and relationships, then disambiguate them using internal and external knowledge sources (e.g., Wikidata).

Self-Constructing RDF Knowledge Graph

The semantic core generates and maintains an RDF Triple Store dynamically. It supports OWL ontologies, SPARQL querying, and ergonomic abstraction layers for non-technical users.

Real-Time Vectorization and AI Readiness

All structured outputs are automatically vectorized, enabling integration with vector search tools (like Milvus) and optimized feeding into LLM pipelines (RAG/CAG). Built-in models improve grounding and reduce hallucinations.

Built-In Provenance and Governance Layer

Tracks data lineage, user interaction, transformation steps, and policy enforcement (RBAC/ABAC). Integrates with enterprise auth (Active Directory, SAML, Keycloak).

No-Code/Low-Code UI: Fusion

A web-based interface enables drag-and-drop ingestion, validation, exploration, and export. Designed for non-experts to deploy and exploit knowledge graphs with minimal training.

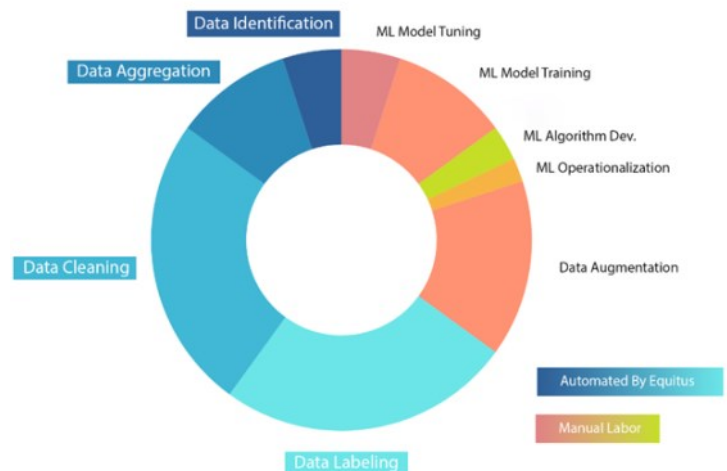
What makes KGNN different?

Traditional Pipelines	KGNN Approach
Manual ETL scripting	Auto-ETL + semantic mapping
Schema-bound data models	Schema-less, dynamic graphs
Centralized data lakes	Zero-copy semantic fabric
Slow model deployment	Real-time ingestion and vectorization
Disconnected data silos	Federated querying with full provenance tracking

What KGNN Delivers

- **Automated ETL:** Replaces manual pipelines, reduces prep time by 80%.
- **Semantic Knowledge Graphs:** Transforms raw data into interconnected, queryable networks.
- **RAG/CAG Optimization:** Provides context-rich input for grounded LLM reasoning.
- **Federated Query Engine:** Access distributed sources without moving data.
- **Scalable Vector Store:** Enables similarity search across semantically enriched knowledge.

KGNN Automates 50-70% of Data-Related Tasks in Machine Learning.



Automatically handles data aggregation, data identification, data labeling, and data cleaning, significantly reducing the time, effort, and costs required for AI projects.

Key Metrics

- ✓ **5x faster** data prep vs manual ETL
- ✓ **80% less manual labor**
- ✓ **50% less energy use** on Power10 vs comparable GPU servers
- ✓ Operates in **air-gapped environments** (DoD-grade secure)

Where KGNN Can Deliver Impact

Financial Services

Equitus KGNN helps financial institutions connect siloed customers and transaction data across legacy and cloud systems. By automating threat intelligence, fraud detection, and claims processing, it enables real-time insights while enhancing compliance, personalization, and operational efficiency.

Healthcare & Life Sciences

From enriching EMR records to streamlining clinical trials and drug discovery, KGNN contextualizes and structures data across the healthcare and pharma ecosystem. It empowers data-driven decisions, enhances AI model training, and improves patient outcomes through smarter data integration.

Defense & Government Intelligence

Equitus fuses data from intelligence systems, sensor feeds, investigations, and text sources to generate mission-critical insights. With automated entity correlation and graph analytics, defense and public sector agencies gain faster situational awareness, anomaly detection, and predictive capabilities.

Manufacturing

By integrating IoT data with operational systems, KGNN supports predictive maintenance, digital twin simulations, and logistics optimization. This real-time data fusion enhances process efficiency, reduces downtime, and accelerates innovation in smart manufacturing environments.

Government & Compliance

KGNN streamlines data integration for audit, reporting, and service delivery functions across public sector organizations. Its automated provenance tracking, unified data views, and semantic enrichment support transparency, faster decision-making, and regulatory compliance.

Insurance

Equitus enables insurers to automate claims, detect financial crime, and personalize advisory services through graph-powered data contextualization. It simplifies integration of disparate systems, improves customer insight, and supports real-time analytics for smarter risk management.

Education

In the education sector, KGNN enhances adaptive learning, student engagement tracking, and financial aid compliance. By unifying data across platforms, it empowers institutions to tailor learning experiences, ensure data integrity, and improve administrative decision-making.



AI Use Cases Unlocked by KGNN

- **LLM Grounding:** Reduce hallucinations and improve reasoning accuracy.
- **Enterprise BI & Dashboards:** Deliver unified, contextualized data across silos.
- **Edge AI:** Deploy on IBM Power10 for GPU-free, energy-efficient, private compute.
- **Legacy System Unlock:** Extract and contextualize data from SAP, DB2, Oracle, mainframes.

Performance Highlights

- **>1M documents/hour** throughput in production use cases
- **<90 days** to full deployment in air-gapped or enterprise settings
- **50% energy reduction** on IBM Power10 (MMA vs GPU-based systems)
- **Schema-less onboarding** for rapid ingestion of new data types
- **Supports disconnected and edge environments** (low power, offline inference)

Minimum Specifications

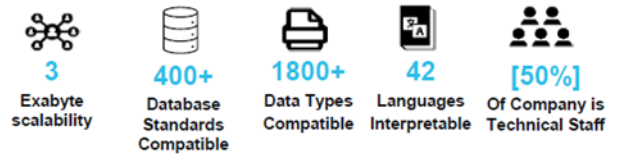
IBM Power10/11
 40 Cores
 512GB Ram
 4TB SSD (usable)
 RedHat OpenShift 4.18



X86/GPU
 24 Cores
 256GB Ram
 Nvidia GPU w/ 24GB+
 4TB SSD (usable)
 RedHat OpenShift 4.18.

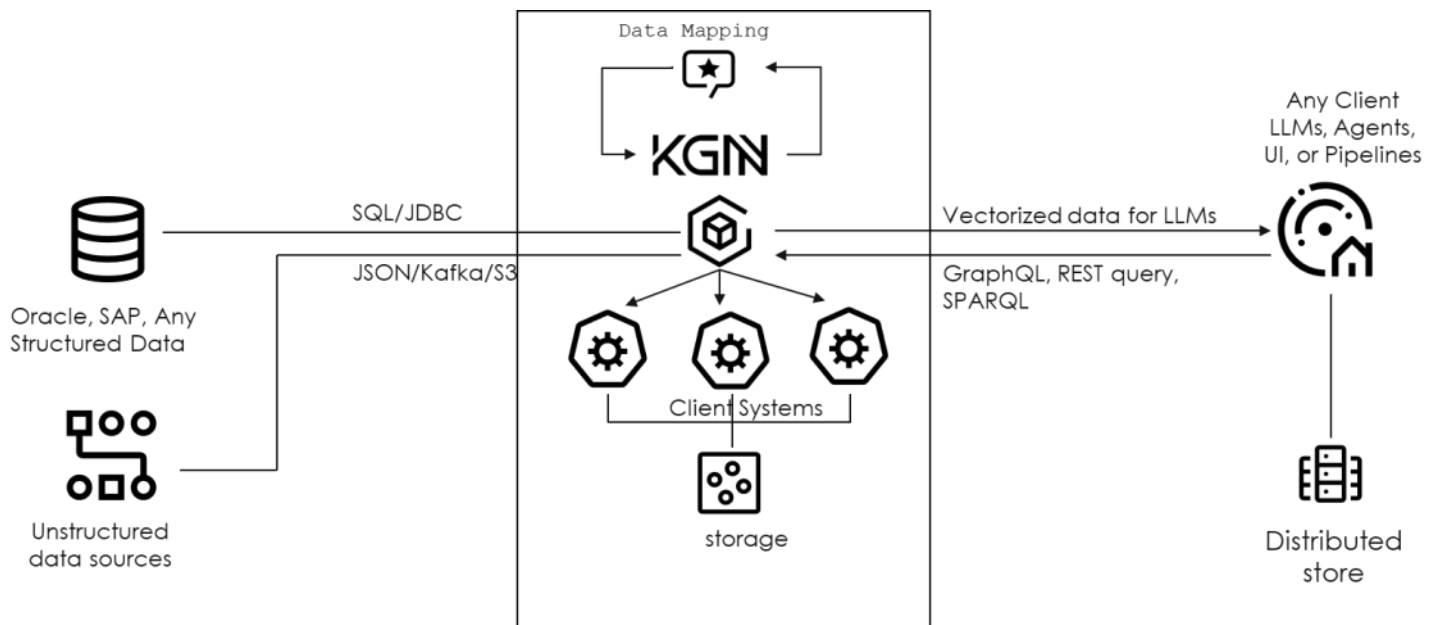
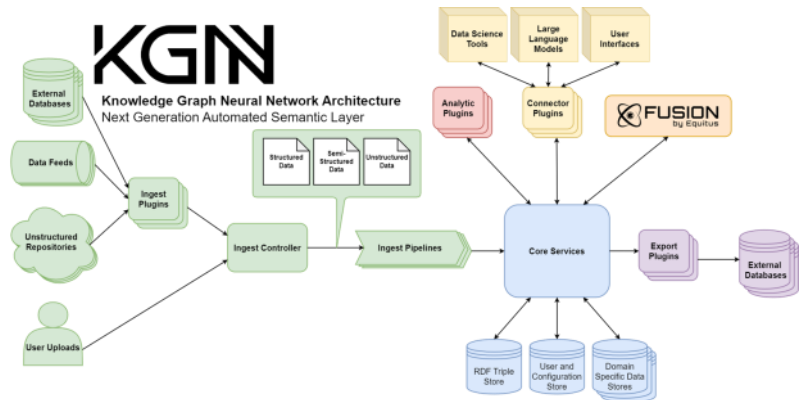


Key Stats and Figures



Interoperability

- **Plugin Support:** Easily integrate with external tools (Power BI, Tableau, ANB, Jupyter)
- **Open Ontologies:** Ships with Wikidata; supports domain-specific ontologies
- **Secure Deployment:** Certified components for classified and regulated environments



Why Choose Equitus KGNN?

Break Down Data Silos Through Data Fusion

Unify and fuse multiple data sources into a cohesive, accessible format that multiplies the value of your data.

Simplify On-Prem Data Consolidation and Enrichment:

Easily manage data preprocessing and enhancement within your own infrastructure.

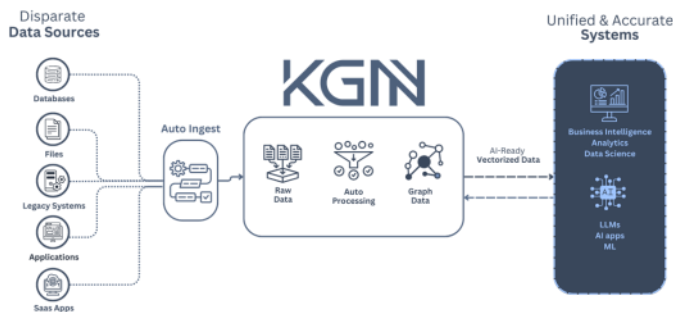
Enhance AI Applications with Contextualized Graph Data

Boost advanced AI initiatives with rich, fused data that improves accuracy and explainability.

Unlock Exponential Insights:

Leverage powerful federated querying and built-in analytics to discover hidden patterns and opportunities that drive growth.

Instant Access to Clean, Structured Data



Equitus instantly delivers clean, structured data serving as superior "AI fuel" for AI Applications ensuring that AI and machine learning applications operate at peak efficiency, leading to accurate predictions and better decision-making.

“KGNN turns raw, disconnected data into real-time, actionable intelligence. Uncover hidden patterns, gain the full picture, and put your data to work for faster, smarter decisions.”

About Equitus

Equitus specializes in intelligent data unification and ML-driven video analytics, delivering advanced solutions that transform operational intelligence and surveillance. Equitus provides comprehensive intelligence platforms that empower organizations to detect threats, correlate critical information, and respond with precision across security, defense, industrial and enterprise environments.

Our solutions have been actively deployed in defense, federal agencies, and highly secure environments requiring clearance, adhering to the highest security and reliability standards. Additionally, some deployments remain confidential due to security and operational sensitivities.

Contact us

Phone: +1 (888) 722-8755

Email: info@equitus.us

Website: www.equitus.us