

Using Knowledge Graphs and LLMs for Deep Entity Exploration – EDW 2024

Using Knowledge Graphs and LLMs for Deep Entity Exploration
Wednesday, March 27, 2024

Gartner and Forrester emphasize the importance of constructing knowledge graphs to connect data silos. By doing so, companies can achieve a comprehensive enterprise data fabric solution that enables deeper analytics but also optimizes AI investments. Usually, too much emphasis is placed on structured data but the reality is that in many enterprises there is even more information and knowledge hidden in unstructured data. So the ultimate goal is to provide non-technical end users with the additional ability to query across the business knowledge contained in unstructured data, business correspondence, financial files, and contracts.

Recent advancements, like LLMs and vector-enabled knowledge graphs, permit a blend of natural language and structured queries to retrieve data from documents putting the goal one step closer to delivering queries that span your data fabric.

During our demonstration, we will compare and contrast three approaches data architects should consider in developing a knowledge graph-based approach to connecting valuable enterprise and industry data. For demonstration purposes we will use a collection of legal documents that pertain to the financial industry, in our case we take the entire collection of FINRA rules that are publicly available on the web.

1. Standard LLM Interaction: We demonstrate best practices for querying a legal contract via an LLM website. Are the answers sufficient and do they provide the depth and references necessary for users? Could a better answer have been in

another document?

2. LLM combined with web search: Combining web search with an LLM greatly improves answer quality for more complex questions and in some cases, rule references are provided. But are the references specific enough to point back into our local documents?

3, Contract Knowledge Graph as the Source of Truth for LLMs: By storing the example FINRA contracts along with vector embeddings in a knowledge graph, we yield accurate answers directly linked to specific rule passages in the documents that provide evidence for the answers. In addition, we show the deep entity connections exposed in the graph as a result of all the cross references.

This presentation will show users how to efficiently link siloed knowledge and query across documents with natural language techniques for richer insights on entities of interest.

PitchFest 2023: Unlocking the Vision of the Financial Data Transparency Act

Franz Inc. has been selected to participate in the Data Foundation's PitchFest, Unlocking the Vision of the Financial Data Transparency Act.

Franz will be presenting **"A Visual Time Machine for Influence Networks in a National Legal Entity Knowledge Graph"**

Once implemented, the FDTA will improve efficiency and

government operations, reduce compliance burden, and improve data accessibility, searchability, and comparability to the benefit of regulators, investors, companies, and society. The FDTA encourages financial regulators to harmonize data collections and standards on information already collected – moving to machine-readable forms, reduce filers’ compliance burden, increase analytical capabilities, and enhance transparency and accountability. The new law amends securities and banking laws to make the information reported to financial regulators including the Securities and Exchange Commission, Consumer Financial Protection Bureau, and Financial Deposit Insurance Commision, among others, electronically searchable and to further enable the development of regulatory technologies and artificial intelligence applications.

Recording of the presentation:

AllegroGraph Named “2023 Best Knowledge Graph” by KMWorld Readers’ Choice

Franz Inc., is proud to announce it has been named the “Best Knowledge Graph” in the 2023 KMWorld Readers’ Choice Award voting.

According to KMWorld, Technologies such as knowledge graphs, cloud computing and storage, data mesh and data fabric, chatbots, natural language processing, machine learning, and, most recently, generative AI (GenAI) have come to the forefront in our attempts to manage the myriad formats and knowledge silos rampant within organizations.

Business practices are changing fast, and so are knowledge management offerings. To put the spotlight on the innovative and dependable products and services that KMWorld readers depend on, the publication presents the KMWorld Readers' Choice Award winners. After all, who best to know what products serve them best as they wrestle with so many changes happening so quickly?

In the November 2023 issue, KMWorld magazine announces the winners of the 2023 KMWorld Readers' Choice Awards. The categories for competition were wide-ranging. In all, there were 13 areas in which products and technologies could be nominated and ultimately voted upon. They include business process management, cognitive computing and AI, customer service and support, e-discovery, knowledge graphs, text analytics, and NLP.


With the diverse array of knowledge management products, services, and technologies to consider, and the stakes getting higher for information-driven success, it can be challenging to make the right choices. There are many ways to learn more about what is available, including white papers, research reports, and webinars, as well as consulting with experts and peers. We hope the KMWorld Readers' Choice Awards list provides an additional resource to help make the job of identifying solutions to investigate easier.

Enterprise AI World – Using

Knowledge Graphs & Data Fabric as a Pillar for AI



Hype or no hype, organizations have seen a significant spike in capabilities around advanced knowledge engineering and AI abilities thanks to advancements in higher computing and abundance of open source solutions such as OpenAI (ChatGPT), and other large language models (LLMs). Data fabrics are emerging as the most effective means of integrating knowledge throughout the enterprise, and experts agree these fabrics are the future of enterprise analytics and AI. However, many organizations continue to face challenges in realizing the promise of AI. For many organizations, one of the top reasons why AI projects get stalled, despite leadership support, is the lack of clear strategies for sourcing the right knowledge and data that AI requires, ultimately resulting in their inability to explain how AI arrived at a certain decision. Using real-world examples, our speakers share their experiences, ideas, and applications of knowledge graphs and semantics in AI, as well as the benefits they offer to organizations seeking to leverage the power of enterprise AI. Join this fast-paced session for lots of tips and ideas.


Dr. Jans Aasman will be presenting at Enterprise AI World.




**ENTERPRISE
AI World**
NOVEMBER 6–9, 2023
JW MARRIOTT
Washington, D.C.

**Enterprise AI: Using
Knowledge Graphs & Data
Fabric as a Pillar for AI**

 **NOVEMBER 9, 2023**  **11:15 A.M. –12:00 P.M.**



JANS AASMAN
Franz Inc.



LULIT TEFAYE
Enterprise Knowledge, LLC

AI 100 Top Company – Franz Inc.

Franz Inc. is proud to announce it has been named an “AI 100 Top Company.”

AllegroGraph provides organizations with essential Knowledge Graph solutions, including Large Language Models (LLMs), Graph Neural Networks, Graph Virtualization, GraphQL, Apache Spark graph analytics, and Kafka streaming graph pipelines. These capabilities exemplify AllegroGraph’s leadership in empowering data analytics professionals to derive business value out of Knowledge Graphs.

“Today, AI has the potential to impact almost every part of an organization’s structure and operations, including their customer-facing presence,” remarked Tom Hogan Jr., publisher of KMWorld. “We see AI reaching into marketing, customer

service, legal, finance, human resources, compliance, fleet maintenance, manufacturing, sales, and many other business units.”

“Franz Inc. is continually innovating and we are honored to receive this acknowledgement for our efforts to deliver leading AI solutions in Data management,” said Dr. Jans Aasman, CEO, Franz Inc. “Organizations across a range of industries are realizing the critical role that Knowledge Graphs play in creating rich, yet flexible AI-driven applications. AllegroGraph with its patented FedShard™ technology uniquely provides companies with the foundational environment for delivering Graph based AI solutions with the ability to continually enrich and contextualize the understanding of data.”

Enterprise Data World Conference 2023

Why an Event-Native Mindset is Now Essential for Data Architecture

Dr. Jans Aasman – Tuesday, September 19, 2023

Enterprise Data World Conference

Gartner has noted that it is not enough for businesses today to be “ready to change;” instead, companies need to be “ready to act” in real-time and understand the context of the action. Simply being prepared to respond to change is not sufficient in today’s fast-paced and constantly evolving business environment. Organizations need to be able to anticipate and

proactively respond to changes in order to stay competitive.

But how can a business create a data architecture that supports “ready to act” applications and systems? Gartner suggests embracing an Event–Native Mindset, and with an Event-Driven Architecture, organizations can create an enterprise nervous system that delivers continuous intelligence and keeps the business always ready.

Applying an Event–Native Mindset to Data Modeling

Consider for a moment that everything that happens within a business environment is an event, and every event impacts an entity or is carried out by an entity. An entity in this context is a core business concept like a customer, patient, or product. Everything a patient does – getting diagnosed, visiting a specialist, being discharged, or receiving a prescription – is an event. Anything that happens to a business’s customer, from making purchases, returns, or calling for support, is an event. When products are created, tested, and updated, these activities are also events.

By adopting an Event–Native Mindset in data modeling, organizations can develop more agile and responsive data architectures that are better suited to handle complex and rapidly changing data environments. This approach can help organizations to more quickly identify and respond to changes in data patterns and to more effectively leverage the insights and value that can be derived from event-driven data models.

During this presentation, we will discuss the necessary steps to building your Event-Driven Knowledge Architecture to enable event prediction with machine learning, so your organization can understand the next-best actions and recommendations and prepare for the future. We will cover how Event-based data models also minimize the complexities of processing real-time data, which is why many streaming data platforms and services

are predicated on an event-driven architecture.

AllegroGraph Semantic Layer for Databricks (Delta Lake)

This AllegroGraph tutorial is available on our Github Examples page.

Databricks is a popular choice for hosting lakehouses – a new architecture that unifies data storage, analytics, and AI on one platform. On the other hand, as an enterprise knowledge graph platform, AllegroGraph provides quick semantic layer integration with Databricks transparently through our advanced VKG (virtual knowledge graph) interface.

In this tutorial, we will show you how to load RDF triples directly from your Delta Tables that are hosted in Databricks, and we assume the readers have prior experience with AllegroGraph and our agtool facility.

For users starting with the open-source Delta Lake but not hosted on Databricks, this tutorial may still apply, as long as your platform exposes a JDBC connection and enables SQL as (one of) its query interface.

Requirements

Obviously, you will need to have a running cluster or a SQL warehouse in your Databricks workspace as well as an AllegroGraph server. This tutorial uses a cluster to

demonstrate.

Note that Databricks provides trial clusters and one can start from here. If all is successfully set up, the cluster's dashboard should look similar to this:

The screenshot shows the Databricks cluster configuration interface for a cluster named 'FranzInc's Demo Cluster'. The interface is divided into several sections:

- Configuration:** Includes tabs for Policy, Notebooks (0), Libraries, Event log, Spark UI, Driver logs, Metrics, Apps, and Spark cluster UI - Master. The Policy is set to 'Unrestricted'. The cluster type is 'Multi node'. The Access mode is 'Single user access' with the user 'Tianyu Gu (gty@franz.com)'. The Performance section shows 'Databricks Runtime Version' as '12.2 LTS (includes Apache Spark 3.3.2, Scala 2.12)'. The 'Worker type' is 'i3.xlarge' with '30.5 GB Memory, 4 Cores'. The 'Driver type' is also 'i3.xlarge' with '30.5 GB Memory, 4 Cores'. The 'Instance profile' is set to 'None'. The 'Tags' section shows 'No custom tags' and 'Automatically added tags'. The 'Advanced options' section is expanded.
- Summary:** A summary box on the right shows the cluster configuration: '2-8 Workers' with '61-244 GB Memory' and '8-32 Cores'. The 'Runtime' is '12.2.x-scala2.12'. The 'Photon' engine is selected. The 'i3.xlarge' instance type is highlighted, showing '6-18 DBU/h'.
- Buttons:** At the top right, there are buttons for 'More', 'Terminate', and 'Edit'.

Create a table and load a sample dataset

We use a sample dataset called *people10m* for this tutorial. As documented by Databricks, we can load it into a table by executing this SQL query:

```
CREATE TABLE default.people10m OPTIONS (PATH 'dbfs:/databricks-datasets/learning-spark-v2/people/people-10m.delta')
```

After being successfully loaded, you can find the table in the Data Explorer:

D

+

A

Data Explorer

hive_metastore > default

Filter tables...

people10m

default >

default.people10m

Table Delta Not set 21MiB, 8 files Add comment Create

Columns Sample Data Details Permissions History

Filter columns...

Column	Type	Comment
id	int	
firstName	string	
middleName	string	
lastName	string	
gender	string	
birthDate	timestamp	
ssn	string	
salary	int	

as well as a few sample data rows:

default >

default.people10m

Table

Delta

Not set

211MiB, 8 files

Add comment

Create

Columns

Sample Data

Details

Permissions

History

id	firstName	middleName	lastName	gender	birthDate	ssn	salary
3766824	Hisako	Isabella	Malitrott	F	1961-02-12T05:00:00.000+0000	938-80-1874	58862
3766825	Daisy	Merissa	Fibben	F	1998-05-19T04:00:00.000+0000	971-14-3755	66221
3766826	Caren	Blossom	Henner	F	1962-08-06T04:00:00.000+0000	954-19-8973	54376
3766827	Darleen	Gertie	Goodinson	F	1980-03-12T05:00:00.000+0000	981-65-5269	69954
3766828	Kyle	Lu	Habben	F	1974-02-15T04:00:00.000+0000	936-95-3240	56681
3766829	Melia	Kristy	Bonhill	F	1970-09-13T04:00:00.000+0000	960-91-9232	73995
3766830	Yvette	Faye	Bebbell	F	1972-09-07T04:00:00.000+0000	987-72-3701	92888
3766831	Delpha	Kenisha	Gillison	F	1979-06-25T04:00:00.000+0000	962-66-5404	51206
3766832	Mikaela	Jenifer	Hallan	F	1973-05-23T04:00:00.000+0000	911-38-3114	98887
3766833	Cindi	Renita	Cousin	F	1979-03-19T05:00:00.000+0000	666-50-3216	63646
3766834	Rosana	Sari	Griston	F	1956-10-25T04:00:00.000+0000	998-70-9023	19255
3766835	Leena	Vanita	Cajkler	F	1971-08-15T04:00:00.000+0000	954-81-8367	74760
3766836	Eleonore	Stephany	Goldhill	F	1987-12-15T05:00:00.000+0000	978-64-1528	67942
3766837	Olga	Jona	Klos	F	1978-05-26T04:00:00.000+0000	961-27-8570	52484
3766838	Chandra	Sherrill	Kelsey	F	1962-11-18T05:00:00.000+0000	910-53-2697	65929
3766839	Vania	Lashon	Clixby	F	1975-10-31T05:00:00.000+0000	985-43-1411	73756
3766840	Dagmar	Misti	Poole	F	1962-05-30T04:00:00.000+0000	916-94-8252	85176
3766841	Marta	Joel	Copelli	F	1953-01-23T05:00:00.000+0000	929-52-3074	82347
3766842	Danae	Darline	Mithun	F	1993-08-07T04:00:00.000+0000	957-79-3027	62469
3766843	Fredda	Shawn	Denness	F	1956-06-03T04:00:00.000+0000	946-20-3144	92998

1

2

3

4

5

>

20 / page

Prepare Databricks JDBC Connection

```
jdbc:databricks://dbc-0bf1f204-2226.cloud.databricks.com:443/default;transportMode=http;ssl=1;httpPath=sql/protocolv1/o/326754737859861/0405-070225-tumf7a9c;AuthMech=3;UID=token;PWD=<personal-access-token>
```

A personal access token is needed, see [here](#) for how to generate one.

Last but not least, we will need to download the Databricks JDBC driver from [here](#). This tutorial uses version 2.6.32. Both the URL and the driver are needed by AllegroGraph's virtual knowledge graph interface, as we will see later.

vload – Load RDF triples from Databricks

The vload facility of agtool is able to load data from relational databases as RDF triples. For a tutorial for vload itself, please refer to [this page](#).

To configure vload, we need 2 files:

demo.properties

This file contains information about the Databricks JDBC connection details as what we have shown in the previous section:

```
jdbc.url=<your-JDBC-url>  
jdbc.driver=com.databricks.client.jdbc.Driver
```

Note that the downloaded Databricks JDBC driver also needs to be properly installed. See more details [here](#).

demo.mapping.obda

This file defines the rules of how to map the columns from the people10m table between our expected RDF triples. As the target and source sections indicate, we will map id, firstName, lastName, gender, and salary into RDF triples by executing a SQL query.

```
[PrefixDeclaration]  
:  
rdf:      http://www.w3.org/1999/02/22-rdf-syntax-ns#  
rdfs:     http://www.w3.org/2000/01/rdf-schema#
```

owl: http://www.w3.org/2002/07/owl#
xsd: http://www.w3.org/2001/XMLSchema#
obda: https://w3id.org/obda/vocabulary#

```
[MappingDeclaration] @collection [[
```

```
mappingId      people10m
target         :{id} a :Person ; rdfs:label "{firstName}
{lastName}" ; :gender "{gender}"; :salary "{salary}"^^xsd:int
.
source                                     SELECT      *      FROM
`hive_metastore`.`default`.`people10m` LIMIT 1000

]]
```

By using this mapping, a row of such data:

id	firstName	middleName	lastName	gender	birthDate	ssn	salary
3766824	Hisako	Isabella	Malitrott	F	1961-02-12T05:00:00.000+0000	938-80-1874	58863

will be mapped to these RDF triples (in Turtle syntax):

```
@prefix :      <http://example.org/> .
@prefix rdf:    <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix xsd:    <http://www.w3.org/2001/XMLSchema#> .
@prefix rdfs:   <http://www.w3.org/2000/01/rdf-schema#> .

:3766824 a      :Person ;
        rdfs:label "Hisako Malitrott" ;
        :gender   "F" ;
        :salary   "58863"^^xsd:int .
```

For more details on creating mappings, please refer to this page.

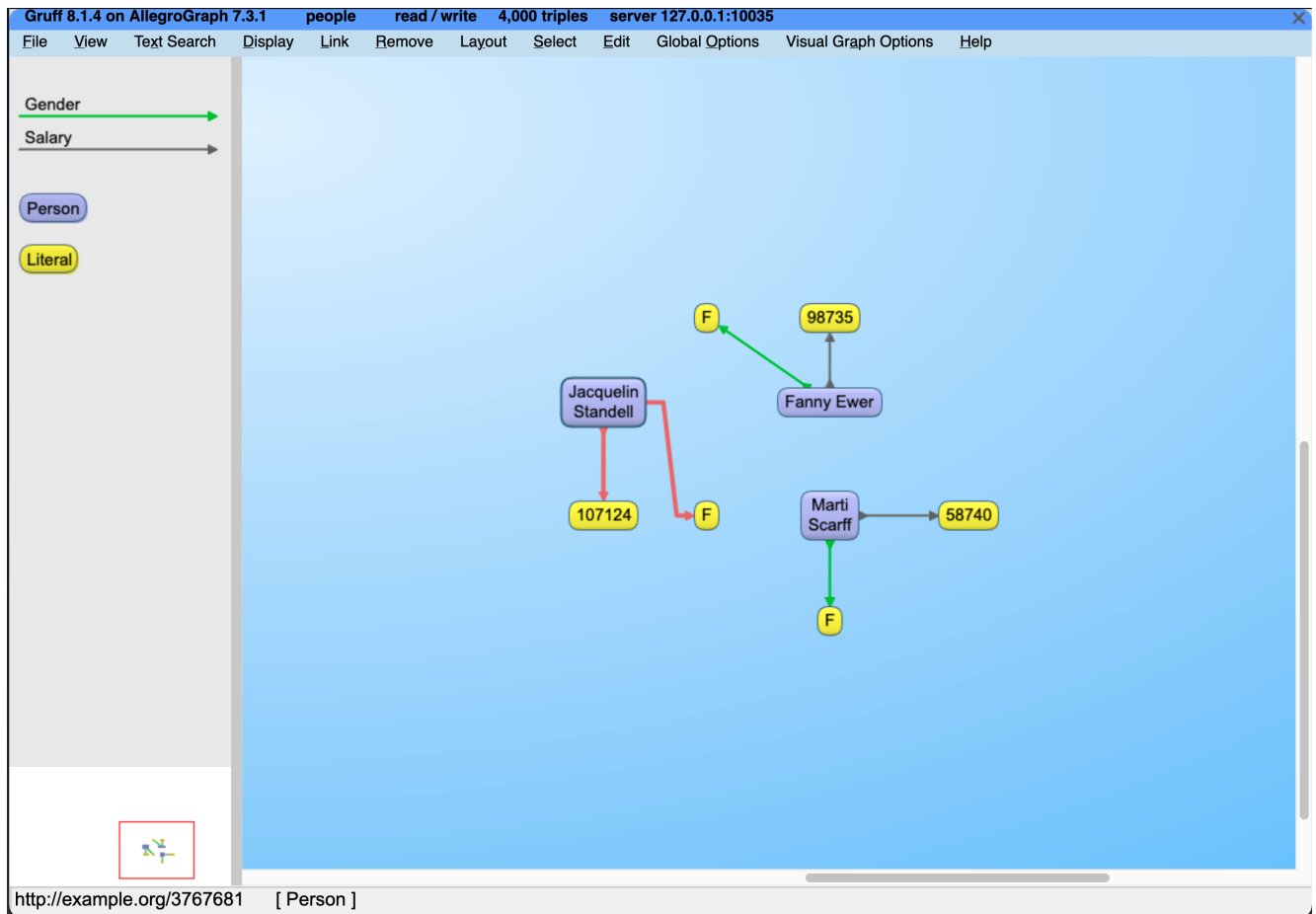
Finally, we can start vloading by running this command:

```
agtool vload --ontop-home /path/to/ontop --properties
/path/to/your/demo.properties --mapping
/path/to/your/demo.mapping.obda people
```

2023-04-12T19:04:13| Creating a temporary workspace

2023-04-12T19:04:13| Temporary workspace successfully created:
"/tmp/agtool-vload-1dfd731d-4862-e844-fde6-0242164d5260/"
2023-04-12T19:04:13| Mapping file is given, skip bootstrapping
2023-04-12T19:04:13| Starting materialization
2023-04-12T19:04:16| Materialization - OBTAINED FROM SPARK
JDBC DRIVER: hive_metastore, default
2023-04-12T19:04:18| Materialization - 19:04:18.398 |-INFO in
i.u.i.o.a.r.impl.QuestQueryProcessor - Ontop has completed the
setup and it is ready for query answering!
2023-04-12T19:04:30| Materialization - WARNING:
sun.reflect.Reflection.getCallerClass is not supported. This
will impact performance.
2023-04-12T19:04:31| Materialization - NR of TRIPLES: 1000
2023-04-12T19:04:31| Materialization - Elapsed time to
materialize: 13218 {ms}
2023-04-12T19:04:34| Materialization - NR of TRIPLES: 1000
2023-04-12T19:04:34| Materialization - Elapsed time to
materialize: 2786 {ms}
2023-04-12T19:04:35| Materialization - NR of TRIPLES: 1000
2023-04-12T19:04:35| Materialization - Elapsed time to
materialize: 1339 {ms}
2023-04-12T19:04:36| Materialization - NR of TRIPLES: 1000
2023-04-12T19:04:36| Materialization - Elapsed time to
materialize: 1210 {ms}
2023-04-12T19:05:36| Materialization successfully exited
2023-04-12T19:05:36| Start loading triples
2023-04-12T19:05:37| Load finished 4 sources in 78ms (0.08
seconds). Triples added: 4,000, Average Rate:
51,282 tps.

It will load the RDF triples into the people repository. You
may display a few sample instances through Gruff:



Now let's try to query all the information of 10 top-paid people:

```
agtool query --output-format table people - <<EOF
PREFIX : <http://example.org/>
SELECT ?person ?name ?gender ?salary {
  ?person a :Person ;
    rdfs:label ?name ;
    :gender ?gender ;
    :salary ?salary .
}
ORDER BY DESC(?salary)
LIMIT 10
EOF
```

```
-----
| person      | name                | gender | salary |
=====
| :3767538    | Shameka Mitcham    | F      | 135931 |
| :3767690    | Adelia Salters     | F      | 134145 |
```


:3767101 Eldora Welbeck F 134099
:3767137 Rosalie Challenger F 129091
:3767409 Hassie Sides F 127972
:3767659 Bridget Inwood F 126424
:3767771 Lovie Dorn F 124903
:3767631 Latoya Stogill F 120098
:3766922 Dot Murkus F 119509
:3767736 Ima Adnam F 119195

Query information:

time : output: 0.001829, overall: 0.045899, parse: 0.000000, plan: 0.020477, query: 0.005075, system: 0.000072, total: 0.027381, user: 0.042787

memory : consCells: 5829080, majorPageFaults: 0, maximumChunk: 5200000, maximumMap: 10131448, minorPageFaults: 2787

other : generation: 2, info: "bindings-set", rowCount: 10

Summary

This tutorial has shown AllegroGraph's capability of creating a Semantic Layer for the Databricks lakehouse platform.

Adding a semantic layer, via AllegroGraph, ascribes business meaning to data so end users can better understand their data and associated metadata. A semantic layer provides a number of advantages in terms of Enterprise-wide data management. Users can define business concepts and connections which add meaning to their desired use-case. Some specific advantages of a semantic layer include: improved data integration, enhanced data accessibility, improved data governance, enhanced data quality, and enhanced data security.

Franz Inc. Named to KMWorld's – 100 Companies That Matter in Knowledge Management

Companies have been bought, sold, and merged, and some have disappeared altogether. Others have moved from startups to established leaders. Still more have shown great resilience, changing with the times and remaining as companies that continue to matter in KM.

Technologies that affect knowledge sharing have changed as well, some dramatically. The increasing power of augmented and artificial intelligence, machine learning, natural language processing (NLP), semantic layering, vectorization, knowledge graphs, cloud computing and storage, chatbots, text analytics, and a host of others has revolutionized many aspects of KM.

Some have moved from bright, shiny, and brand-new to mundane, accepted, and pretty much table stakes in the technology game. Newer tools inspire us with their innovative approaches to KM. The impact of generative AI tools, such as ChatGPT, with the ability to draw on an enormous knowledgebase to produce relevant responses to human prompts and have human-like conversations, has jolted not only the KM world but also a plethora of other professions and industries as well.

Putting together the list of 100 companies that matter in KM causes us to look at organizations with pioneering solutions and notable modifications to existing products, and those that are just plain interesting. We applaud innovation, agility, and a focus on the customer. We are excited about the future.

Franz is proud to be named to KMWorld's "100 Companies That Matter in Knowledge Management." Which follows closely on the heels of AllegroGraph being recently named "Best Knowledge Graph" by KMWorld Readers' Choice Award aware voting.

Overlaying of a Knowledge Graph onto a Lakehouse architecture

Dr. Jans Aasman presented to the Estes Park Group.

The Estes Park Group is a monthly online presentation and discussion forum on knowledge graph and data-centric architecture (DCA) trends. SA President Dave McComb first brought the Group together in person in 2017 for a weekend retreat in Estes Park, Colorado, thus the name. This is designed for open discussion among enthusiasts and practitioners, not a vendor sales pitch.

What is a Semantic Layer?

There are several reasons why the notion of semantic layers has reached the forefront of today's data management conversations. The analyst community is championing the data fabric tenet. The data mesh and data lake house architectures are gaining traction. Data lakes are widely deployed. Even architectural-agnostic business intelligence tooling seeks to harmonize data across sources.

Each of these frameworks requires a semantic layer to ascribe business meaning to data – via metadata – so end users can understand data for their purposes and streamline data

integration. This layer sits between users and sources, so the former can comprehend data without knowing the underlying data formats.

What are the advantages of a semantic layer in your data infrastructure?

A semantic layer is an intermediate layer in an Enterprise architecture that sits between the data sources and the applications that use the data. It provides a number of advantages in terms of data management, integration, and accessibility. Some specific advantages of a semantic layer include:

- 1. Improved data integration:** A semantic layer can help to integrate data from multiple sources by providing a common data model and set of APIs that can be used to access the data. This makes it easier to build applications that work with data from multiple sources.
- 2. Enhanced data accessibility:** A semantic layer can provide a higher level of abstraction over the data sources, making it easier for users to access and work with the data. This can be particularly useful for users who are not technical experts or who do not have in-depth knowledge of the underlying data sources.
- 3. Better data governance:** A semantic layer can help to enforce data governance policies by providing a centralized point of control for data access and management. This can help to ensure that data is used in a consistent and controlled manner.
- 4. Upgraded data quality:** A semantic layer can help to improve the quality of the data by providing tools and processes for data cleansing, validation, and transformation. This can help to ensure that the data is accurate and consistent.

5. Advanced data security: A semantic layer can provide an additional layer of security by controlling access to the data sources and enforcing security policies. This can help to protect sensitive data and ensure that it is only accessed by authorized users.

Overall, a semantic layer can provide a number of benefits in terms of data integration, accessibility, governance, quality, and security, making it a valuable component of a data infrastructure.

Semantic Layers with W3C's Semantic Technologies

Semantic Technology refers to a set of tools and technologies that are used to represent, store, and manipulate data in a way that allows it to be understood and interpreted by computers. Some examples of semantic technology include graph databases, ontologies, and semantic web standards such as RDF and OWL.

While semantic technology is the preferred way to implement a semantic layer, some other players have tried other technologies including traditional relational databases, data warehousing tools, or even flat files. The key is to provide a common data model and set of APIs that can be used to access the data in a consistent and predictable manner.

That being said, Standards based W3C Semantic Technology, like that offered by AllegroGraph, has a huge advantage when it comes to implementing a semantic layer. In particular, Semantic Technology is well-suited for representing complex, interconnected data relationships, and it can provide a high level of flexibility and adaptability when it comes to working with different data sources and structures. As such, semantic technology can be a particularly useful choice for organizations that need to integrate and work with large volumes of complex data.

There are rare cases where a proprietary semantic layer may

work and the organization might not mind getting locked into the ecosystem of a vendor for their metadata management needs. But for the majority of use cases, the best way to future-proof the enterprise is to adopt a standardized semantic layer with semantic technologies. This method provides a seamless business understanding of data that complements any current or future IT needs, while reinforcing data integration, analytics, and data governance.