

Unified Analytics

Using VerticaDB, VerticaML, and VerticaPy

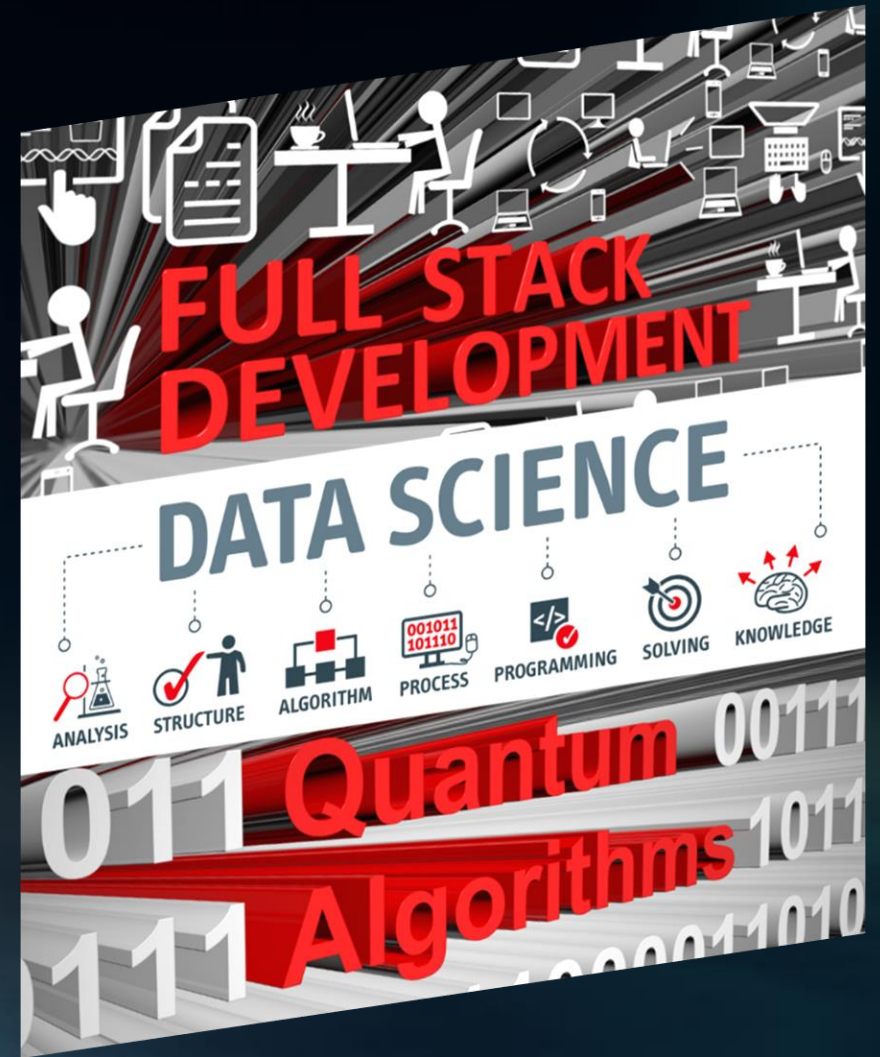
Theresa Melvin, JD

Chief Data Scientist, Vertica Americas



Hello!

- Bio
 - Work
 - Job
 - Education



Agenda

1. Brief overview of AIOps & Pipelining
2. Quick Intro to Open-Source Projects and Partner Tools
3. Vertica's Unified Analytics Platform at a High-level
4. Analytics for Industry Use Cases
5. No-Code Text-to-SQL Solutions using Vertica and Chata
6. Summary

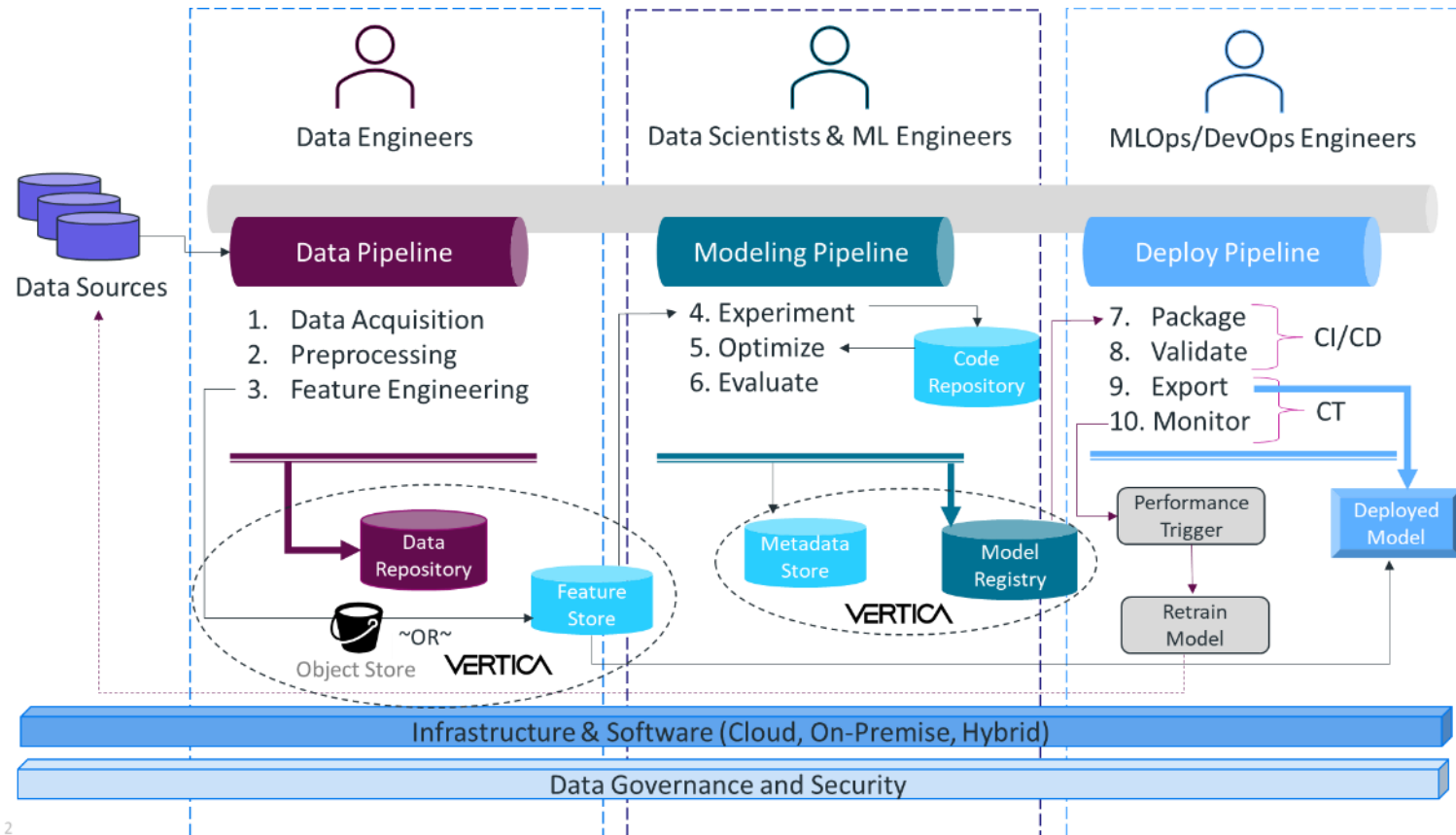




Operationalized AI Pipelines (AIOps)

“AI First” Data Management Strategies

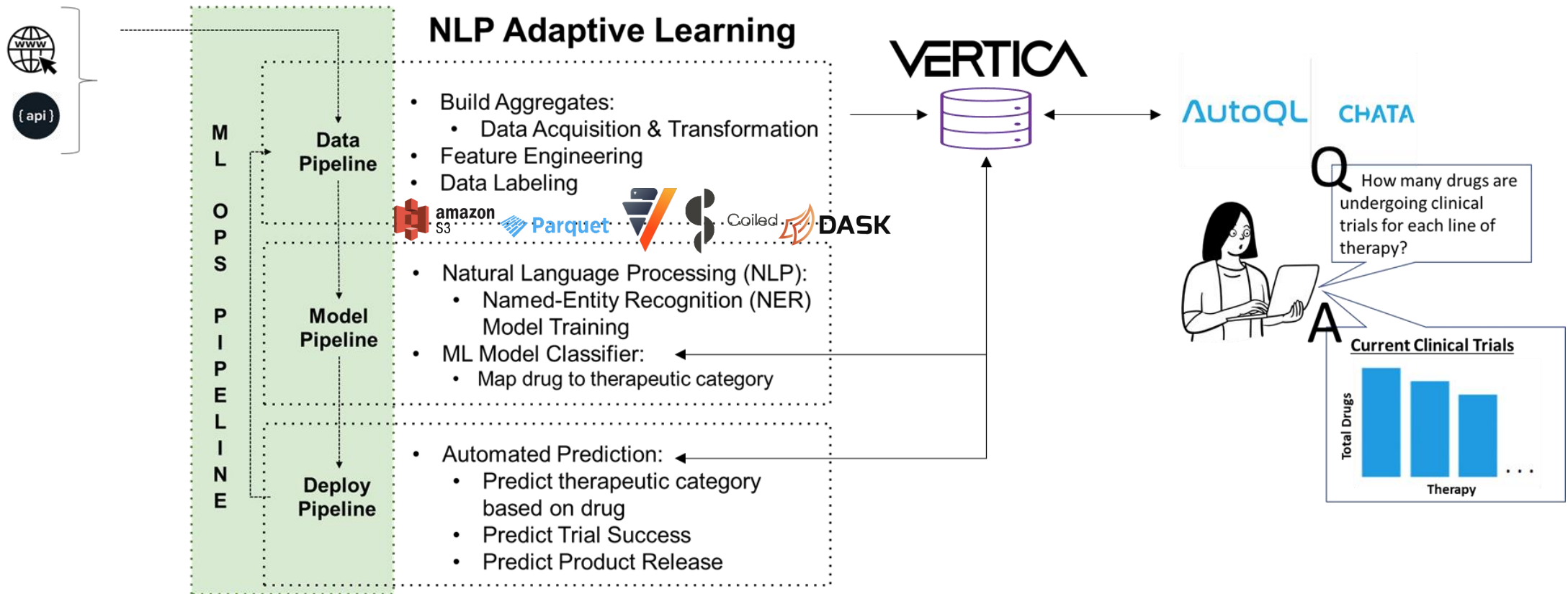
One Framework Supports AI and Governance




2

AI Ops Deployment

For a Natural Language Processing Use Case





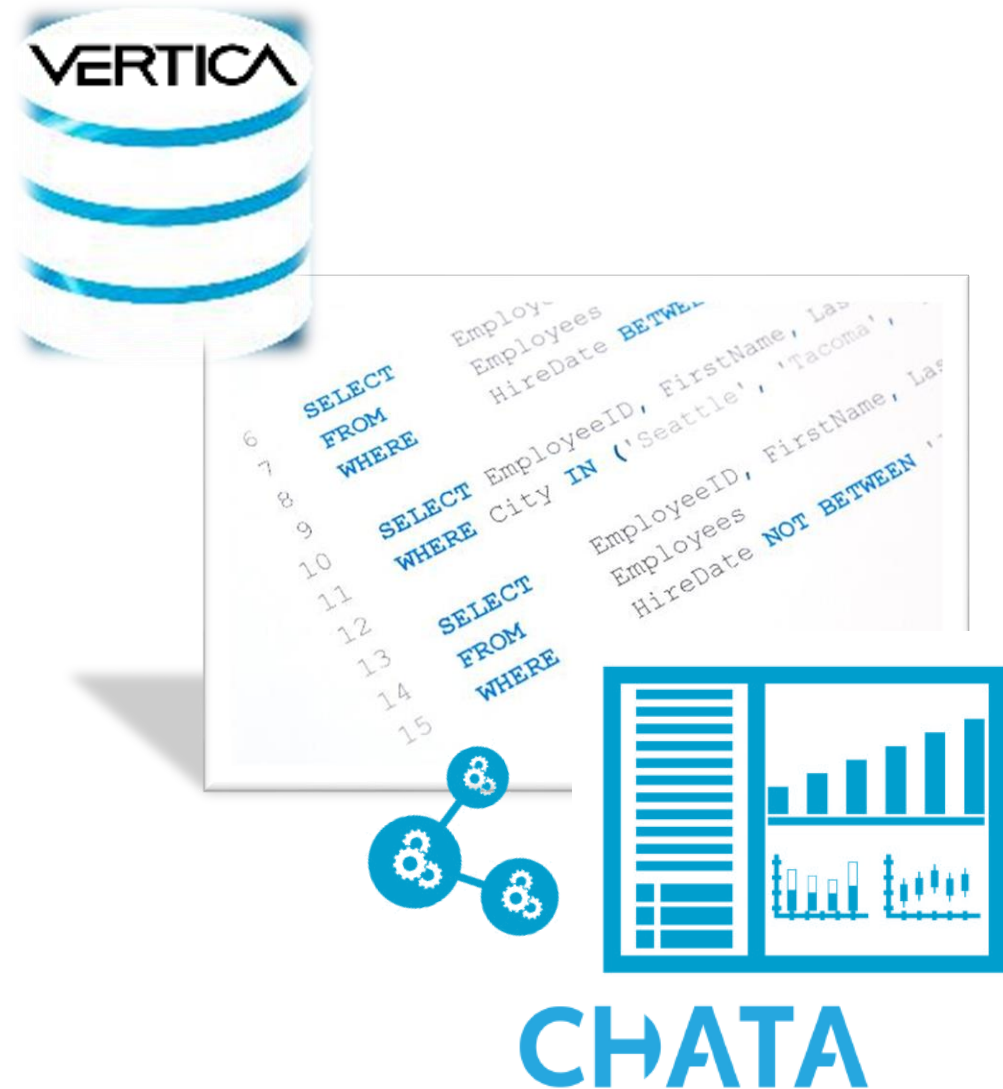
Open Source and Partner Integrations

Chata AutoQL

<https://chata.ai/>

AutoQL:

- Is a powerful API-first solution that leverages AI and Natural Language Understanding to:
 - Provide any user (executives, directors, managers or team members) the ability to:
 - Access data
 - Make short-term
 - In-the-moment decisions
 - Drive the enterprise's strategic imperatives

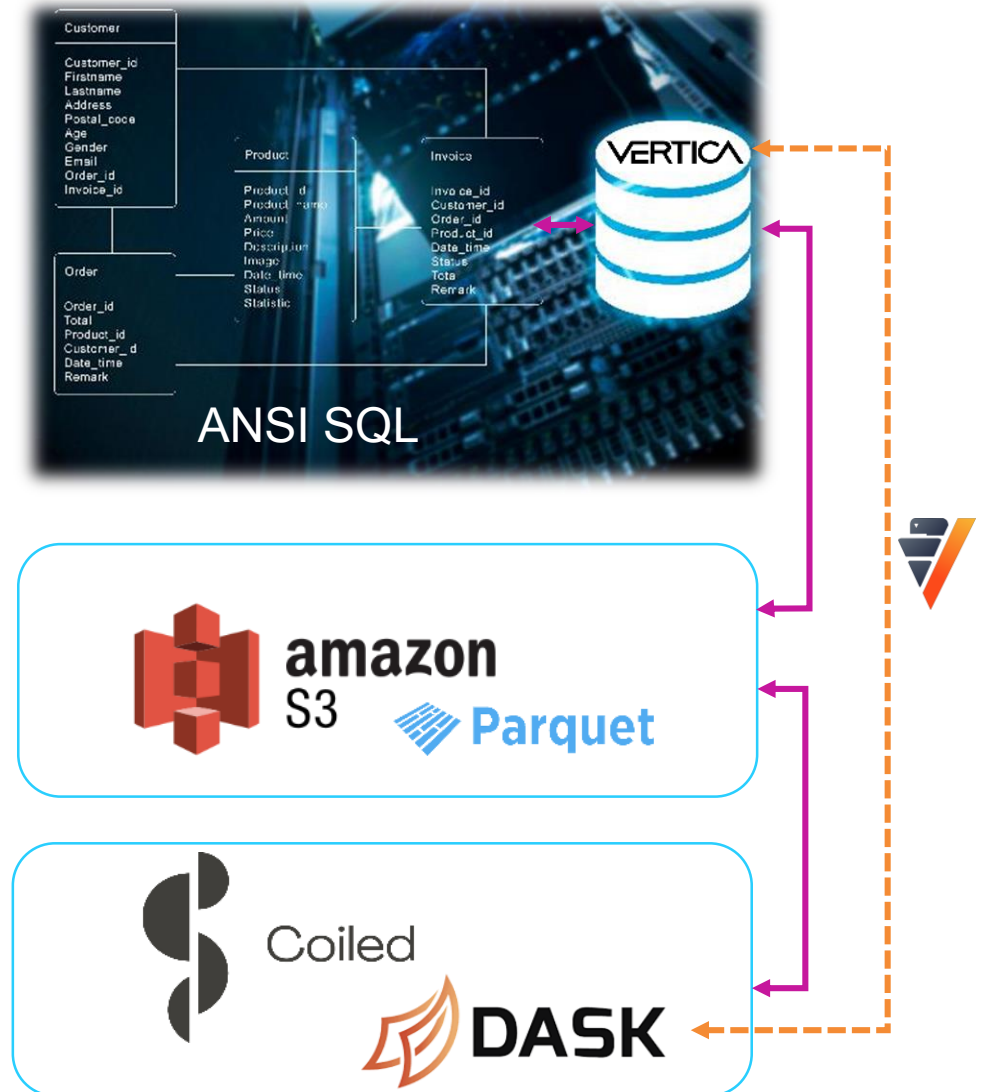


Coiled | Dask

<https://coiled.io/>

Coiled

- Facilitates enterprise-grade data science for python (ie., **Dask**)
- Delivers fast processing and scalability with distributed computations in the cloud
- Accommodates parallel code execution without the development overhead:
 - Write one unit of python code and then use **Dask** to parallelize over all units

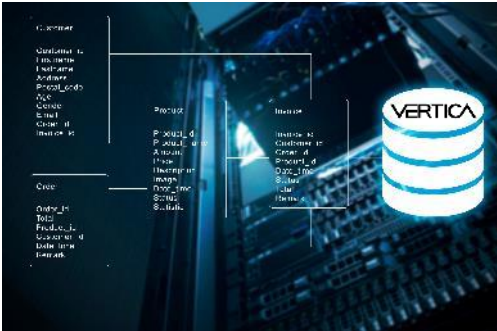




Vertica

Vertica's Unified Analytics Platform

Massively Parallel Processing Database



- Columnar
- No Single Point of Failure
- Petabyte-scale
- Extreme speed
- Proprietary compression

Advanced SQL Analytics



- Timeseries
- Regression
- Geospatial
- Clustering
- Pattern matching
- Imputation
- Many more ...

In-Database Machine Learning



- Linear & Logistic Regression
- k-Means
- Naïve Bayes
- Support Vector Machines
- Random Forest

Connectors & Integrations



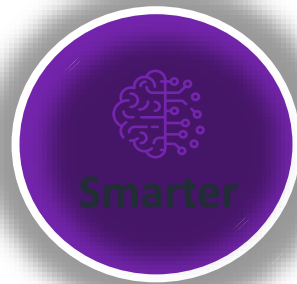
- VerticaPy
 - Additional ML Algorithms
- Python, Java, C++, R
- Kafka, Spark, Flink, etc.
- AWS S3
- Many more ...

The Value of Vertica

Vertica combines the power of aggregated compute with cloud flexibility while ensuring enterprise-grade governance and security



Machine Learning & Advanced Analytics at **speed and scale**



Proprietary logic affords a **low-code** solution



Enterprise-grade security for **protects** data in-flight and at rest



Integrated AI Governance Framework **compliance**

The background of the slide is a vibrant blue color. It features a dynamic pattern of white, glowing particles and light trails that appear to be moving from the bottom right towards the top left, creating a sense of depth and motion. The particles are of varying sizes and brightness, some appearing as sharp points of light while others form soft, ethereal clouds.

Analytics for Industry Use Cases

Supply Chain Use Case

Historical Data Sources

Shipments

Points of Sale

Orders

Distribution Centers

Data Science



python
Deep Learning



Machine Learning



VERTICA
ANSI SQL



Business Outcomes

Reduce Waste Disposal Costs

Reduce Energy Consumption

Predict Raw Material Arrival

Enhance Competitive Edge

Manufacturing Use Case

Data Sources

Connected/IoT Devices (OT)

Operations (SCADA)

Order Management (MES)

Enterprise Resource Planning (ERP)

Data Science



python
Deep Learning



Machine Learning



VERTICA
ANSI SQL



Business Outcomes

Predict Remaining Useful Life

Predict Mean Time to Failure

Reduce Energy Costs

Boost Production

Logistics Use Case

Data Sources

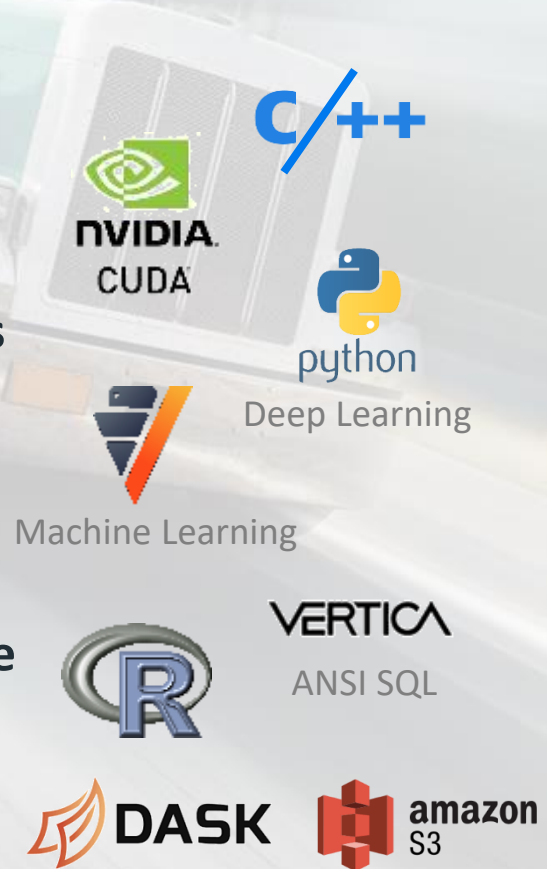
Connected/IoT Devices

Historical Order & Inventory Systems

Fleet Management & Maintenance

Delivery Routes & Road Maintenance

Data Science



Business Outcomes

JIT Inventory Optimization

Anticipatory Shipping

Route Optimization

Predictive Maintenance

Automotive Use Case

Data Sources

Connected/IoT Car Data

Local Airbnb Data

Smartphone Movement Data

Social Sentiment Analysis

Data Science

C/C++



Deep Learning



Machine Learning



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ANSI SQL



Business Outcomes

360-degree Tourism Insights

Data Monetization
Revenue \$stream

Public Health Use Case

Data Sources

Hospital Admissions Data

Local Weather Data

Smartphone Movement Data

Wastewater Data

Data Science



C/++



python
Deep Learning



Machine Learning



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ANSI SQL



Business Outcomes

Predict Drug Usage Patterns

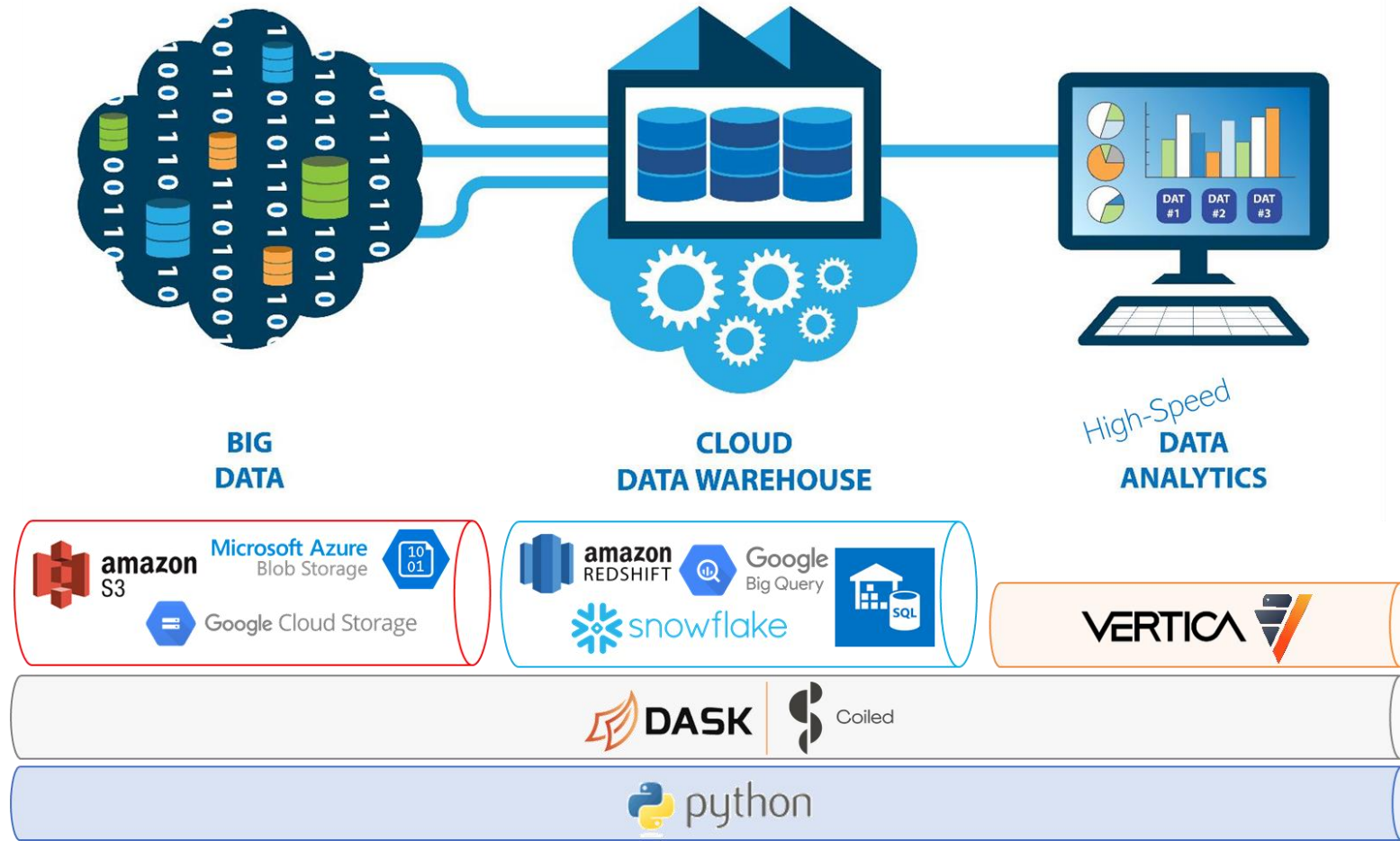
Identify Seasonality Trends

Location Planning for Drug Awareness Programs



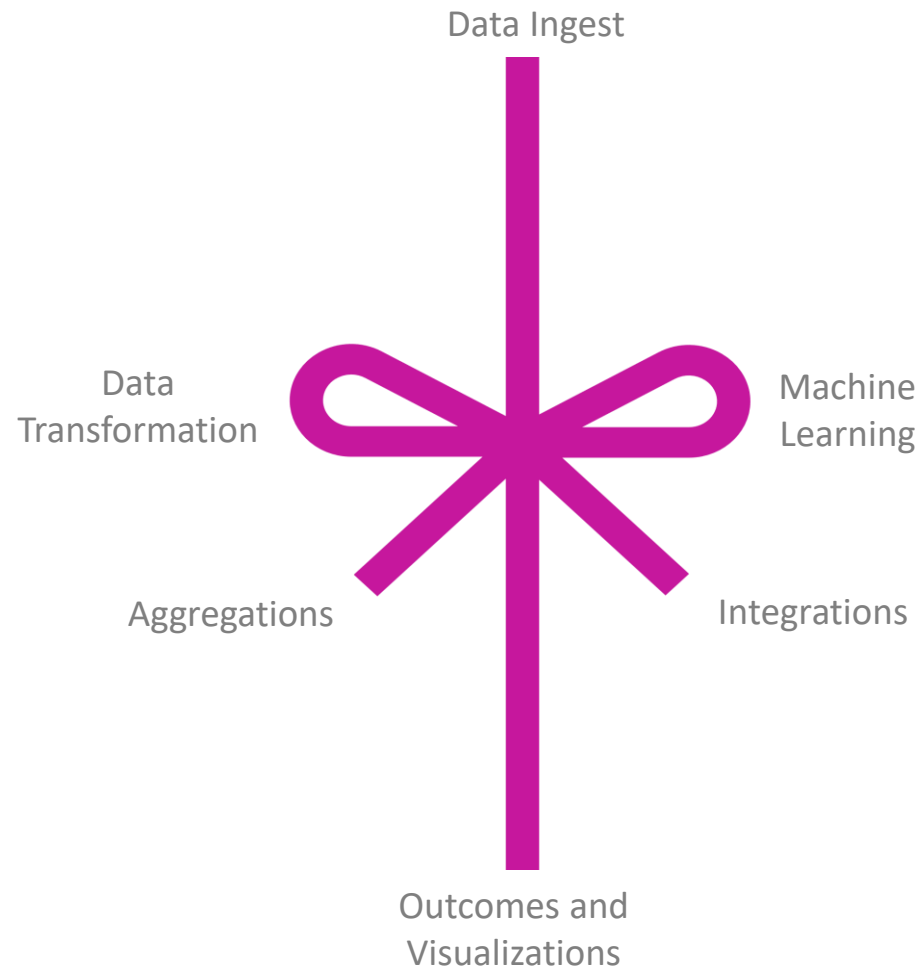
Predictive Analytics using VerticaML and VerticaPy


Backend: The Real-Time Data Mining Pipeline



Data Analytics Pipeline Demo

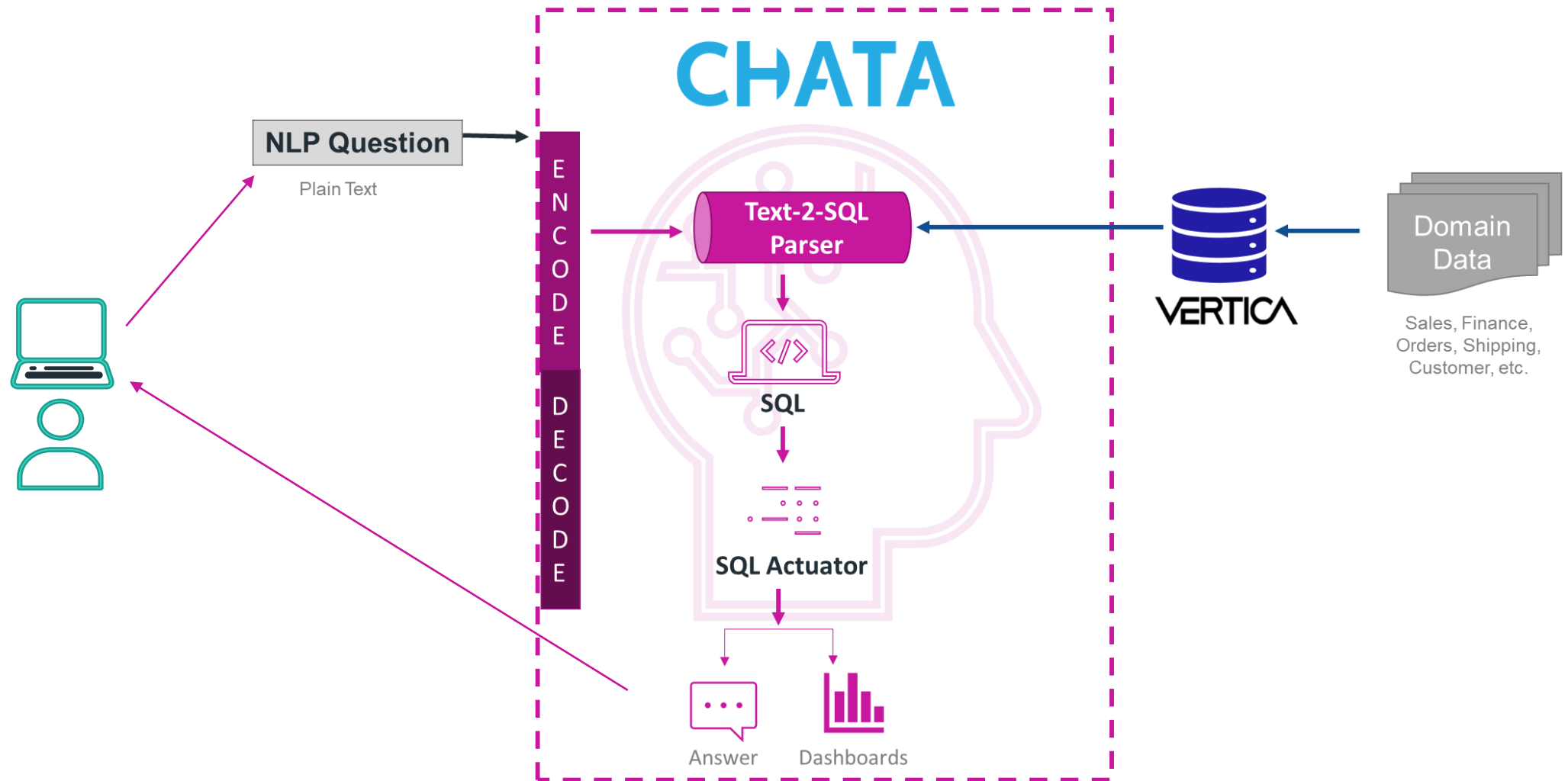
using VerticaDB, VerticaML, and VerticaPy



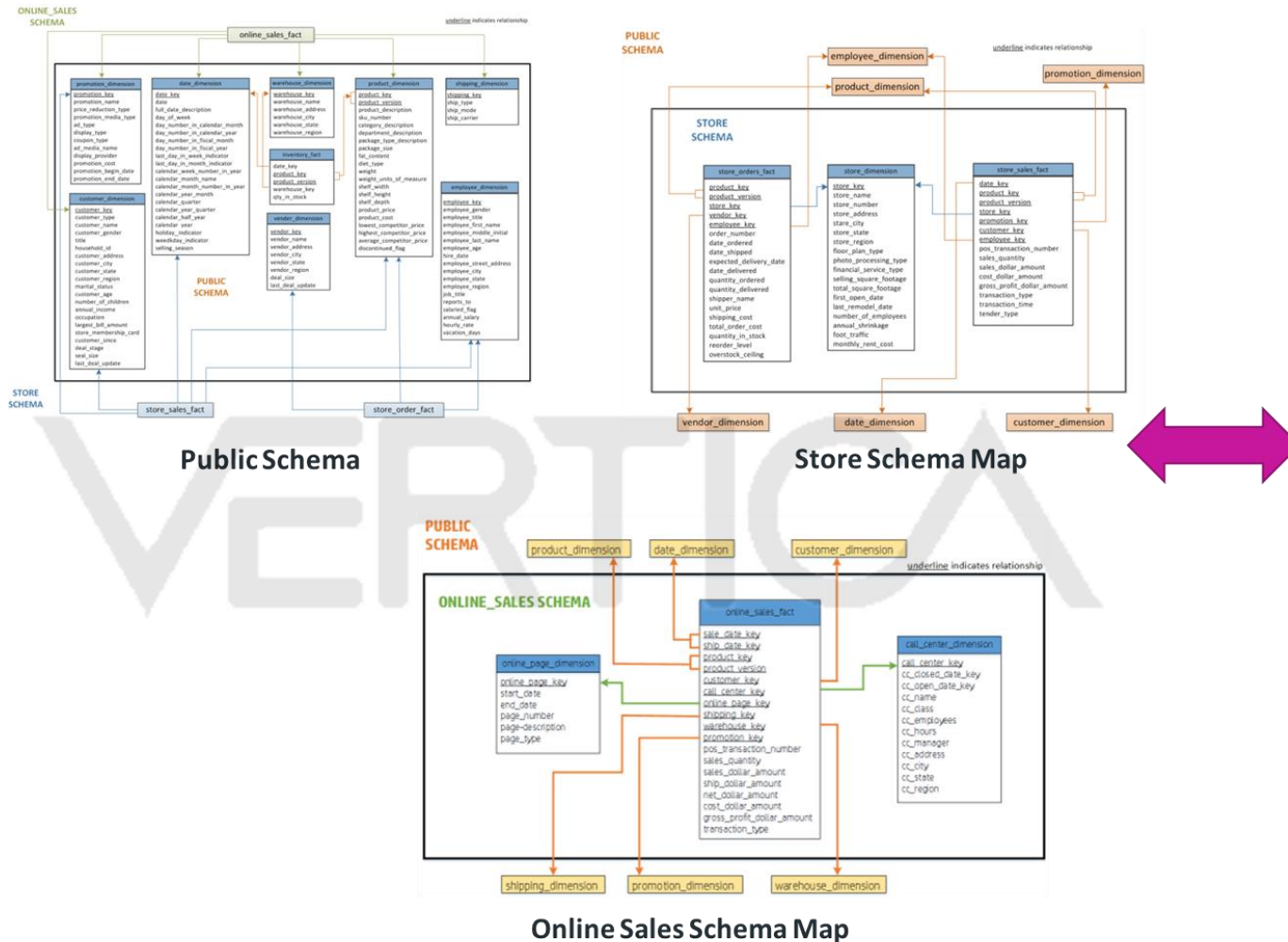


**No-Code
“Text-to-SQL” Solutions
using Vertica and Chata**

Frontend: Chata Interface using VerticaDB



Retail Demo for a Large Supermarket "VMART"



CHATA



Self-Service Business Analytics



Show last quarter's liquor (Category) revenue for Brandy (Product) Sales

Natural Language Processing (Comprehension)

Natural Language Response

Response Formation

Natural Language Processing **CHATA**

Database & Custom Dictionary **VERTICA**

MICRO FOCUS

Demo

Chata & Vertica

The screenshot shows a chat window titled "Data Messenger" with a blue header bar. The chat content includes a greeting, a list of suggested topics, and a footer with a query input field and a microphone icon.


Hi Kelly! Let's dive into your data. What can I help you discover today?

Some things you can ask me:

- Customers ▶
- Promotions ▶
- Online Profits ▶
- Online Sales ▶
- Online Costs ▶

Use [Explore Queries](#) to further explore the possibilities.

We run on AutoQL by Chata

Type your queries here 

In the Moment Decisions

Can I take meloxicam and ibuprofen at the same time?

Yes, but taking meloxicam and ibuprofen together is only appropriate in unique circumstances. Consult your physician to see if your medical condition qualifies.

Natural Language Processing
(Comprehension)

Natural Language Response

Response Formation



Natural Language Processing **CHATA**

Database & Custom Dictionary **VERTICA**

MICRO
FOCUS

Real-Time Fleet Updates

Which delivery trucks are on-time today, and which are behind schedule?

 On-Time	 Running Late
Truck-201 Truck-1106	Truck-1316 Truck-3444
Truck-1444 Truck-654	Truck-24 Truck-743

Natural Language Processing (Comprehension)

Response Formation

Natural Language Response

Natural Language Processing **CHATA**

Database & Custom Dictionary **VERTICA**



Summary: What did you learn today?

AI Pipelines & No Code Solutions



- Complex AIOps Pipeline Capabilities
 - Data Pipelines
 - ML Pipelines
 - Deploy Pipelines

Open Source & Partner Integrations



- Deep Open-Source Support
- Chata.ai
- Coiled “The Dask Company”

Vertica Unified Analytics



- Vertica Unified Analytics
 - Vertica Database
 - Vertica ML
 - VerticaPy

Analytics for Industry Use Cases



- The Big Four
 - Telecom
 - Oil & Gas
 - Supply Chain
 - Utilities



Thank you!

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