

fractal



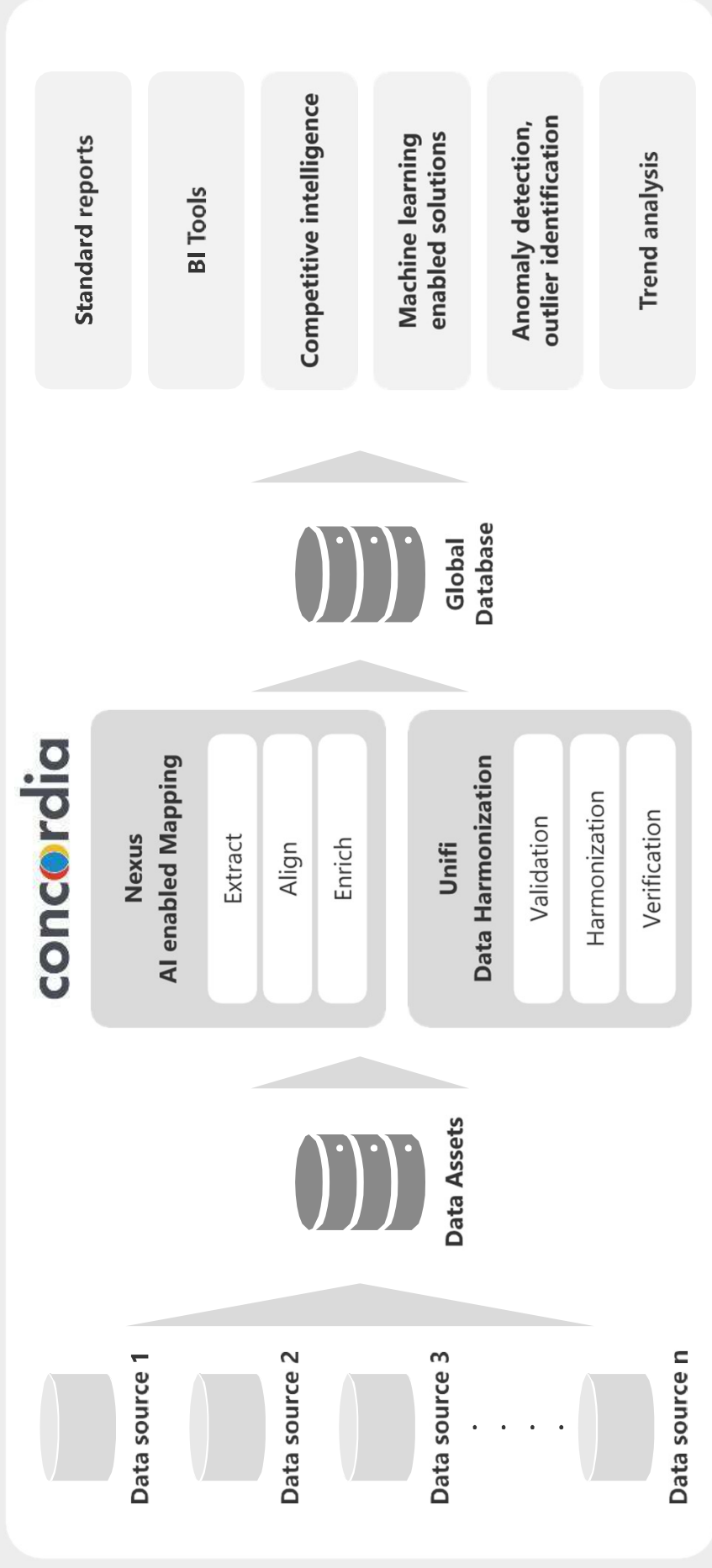
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Fractal's Data-to-Decision Platform

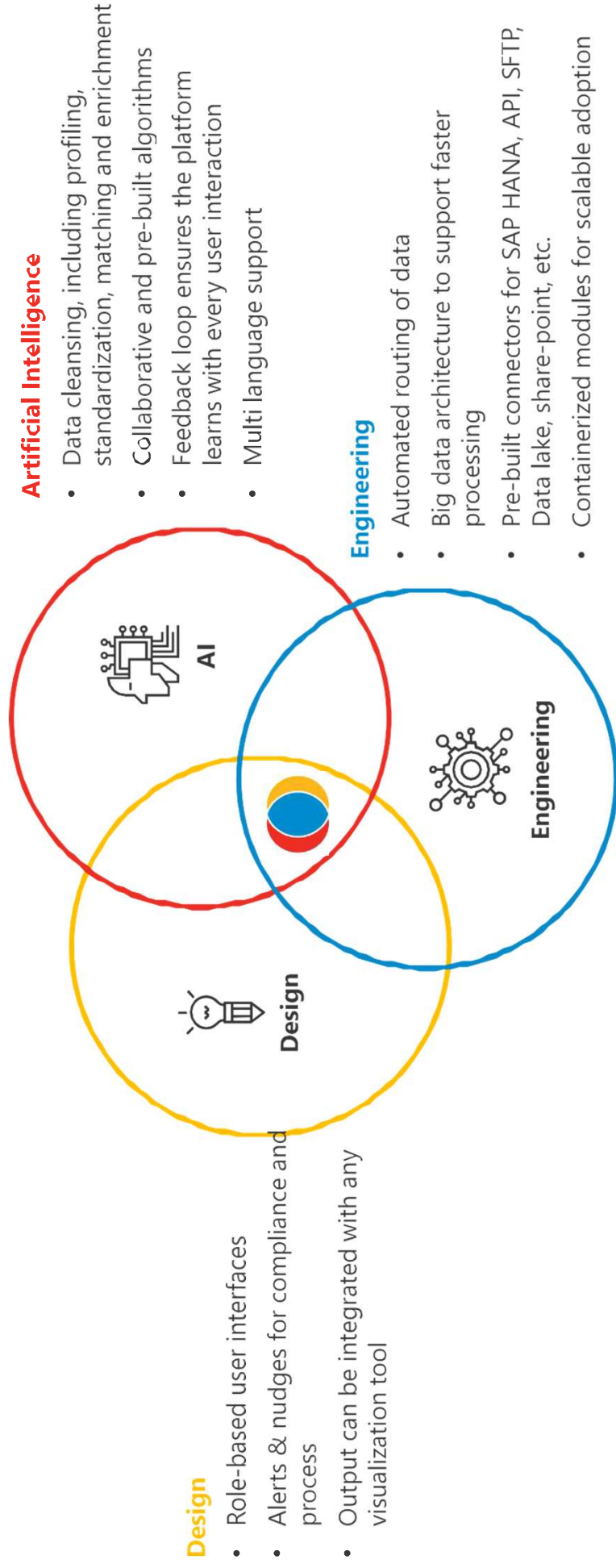
Raj Nigam

01 Introduction to Concordia

Components of Concordia: Nexus & Unifi



Concordia: Data to decision platform enable by AED Trifecta



Data & business services – Powered by Concordia (Selective)

Master data management

Validate, enrich and report on updates to master data through a collaborative, team-based cloud UI powered by advanced AI algorithms

Accelerated analytics

Clean, map, transform & harmonize data from multiple data sources quickly to enable 360° analytics & visualization

Self-serve analytics

Democratize data lake by creating self-service analytics ecosystems, accelerating digital transformation and data harmonization by reducing the turnaround time by 50%

Data quality check

Manage data for consistency, completeness and accuracy through outlier detection & identification of anomaly & automated cleaning of past records using AI

Order-to-cash management

Always-on recommendation system for creating & maintaining master data related to order, shipment, invoices & payment records for seamless payments process

Image & video data management

Data lake enabled by Fractal's Image & Video Analytics services to store, merge and unify structured & unstructured data for complete view of business

Few typical data mastering problems handled by Concordia

Illustrative

1) Classifying products into different Manufacturer, Brand, Package, Form Etc to create a Global hierarchy (Nielsen hierarchy can be used)

INPUTS

PRODLID
Corp. Nestle BenNaNa Original Impulse Stick Mix Single Small Pack
UNILEVER WALLS BIG MILK WALLS BIG MILK Take Home Bar STRAWBERRY Single Bulk Pack
Allied Faxi Food Baxi 50Z Impulse Cup Green Tea Single Small Pack

Attribute extracted through
text Mining



OUTPUTS

PROD Flavour	PROD Sub Brand
Mix	BenNaNa Original
STRAWBERRY	WALLS BIG MILK
Green Tea	50Z

2) Creating attributes from product description based on the requirement

INPUTS

Product Title
ROYAL CANIN FELINE HEALTH NUTRITION SENSITIVE DIGESTION dry adult cat food
ROYAL CANIN HEALTH NUTRITION MEDIUM Adult 7+ dry dog food, 6-Pound
ROYAL CANIN Canine Mobility Support Dry - Large Breed (7.7 lb)
ROYAL CANIN SIZE HEALTH NUTRITION MEDIUM Adult 7+ dry dog food, 30-Pound

Attribute created through
text Mining



OUTPUTS

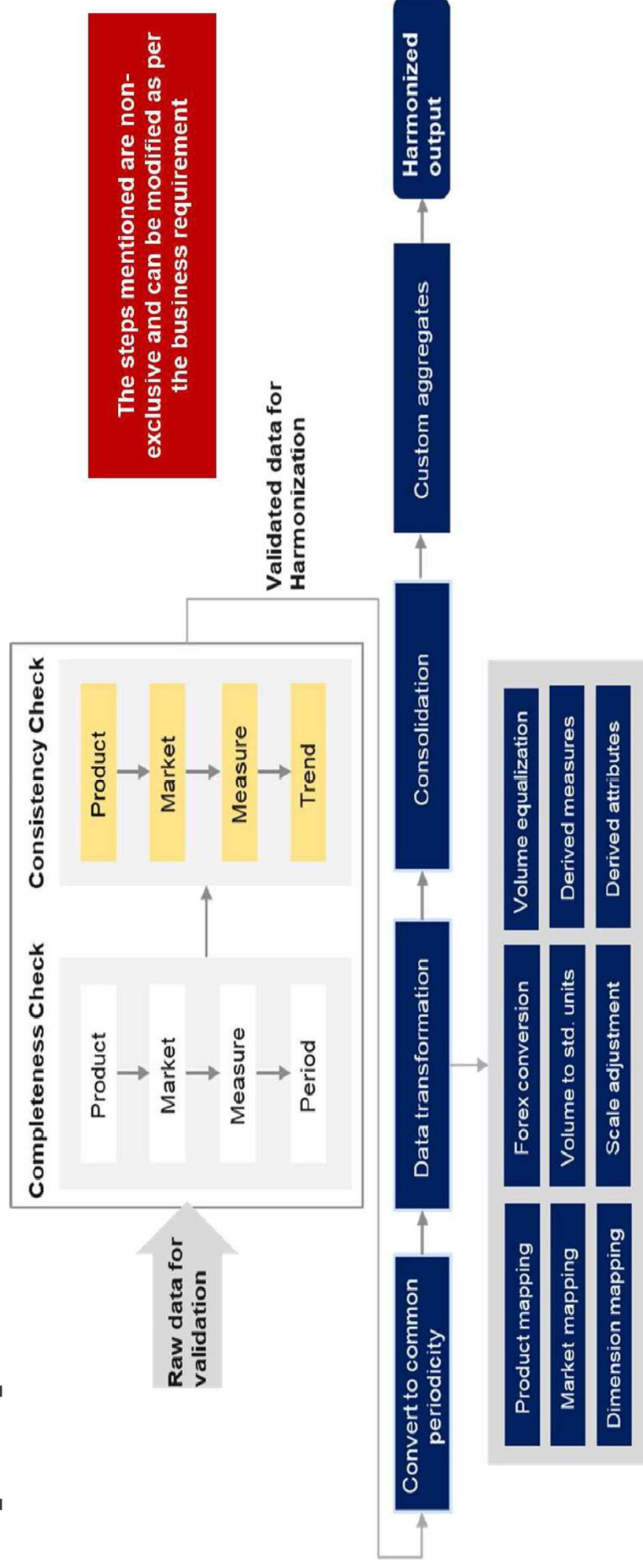
Bag size
Small Bag
Large Bag
Extra-Large Bag
Extra-Large Bag

3) Standardizing the attributes from multiple data sources to create the Global item masters

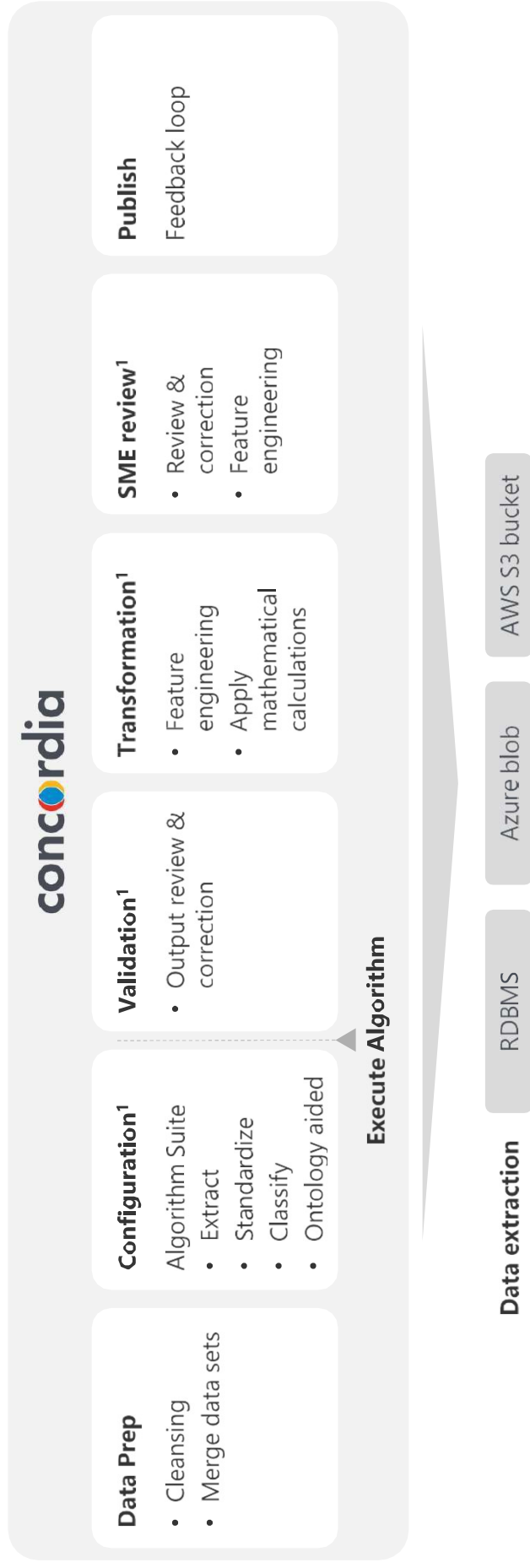
BEFORE	AFTER
Corp. Nestle, Nestle Inc, Nestle Corp	Standardize to Nestle
Cini Mini, Mini Cini	Standardize to same flavour
Walls, Walls Mini Milk, Walls Big Milk	Standardize to walls

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Pre-built workflows for data cleaning & preparation



Machine learning driven data-to-decision



1. Manual intervention

Comprehensive process flow to feed visualization platforms or warehouse



Multiple algorithm suite for handling disparate data sources

- Suite of algorithms for pattern recognition in which features are extracted from statements. The algorithms extract attributes based on position and label of the current word, label of previous word and other customized features. The features are given a weight and are assigned probabilities which aide the extraction process.

▪ Extract

▪ Unify

- Supervised approach to find distance on the basis of different matrix (Euclidian, Manhattan) which finds out rows with minimum distance basis the initial test data provided.

- Suite of algorithms which unify/deduplicate entities that have similar naming convention for a given attribute
- The algorithms standardize the text on the basis of cleansing, distance matrix and domain understanding

- Supervised learning approach works on suite of algorithms to independently find a decision boundary to separate different classes.

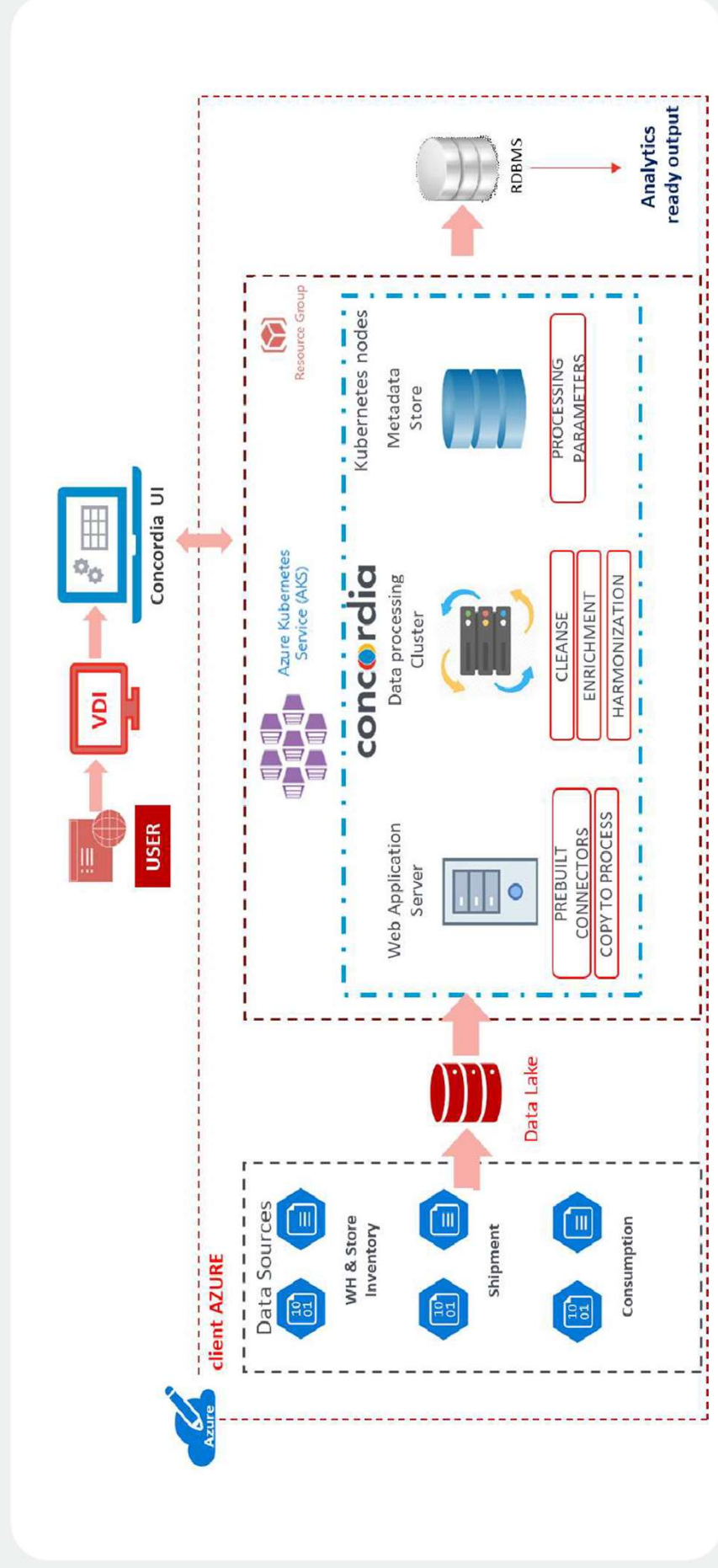
- The decision boundary are formed by maximizing the distance between the margins by finding the linear or non-linear hyperplane (kernels trick) or on the basis of conditional probabilities

▪ Classify

▪ Enhance

- The suite of algorithm allows models to take suitable action to learn from previous prediction and reduce error in subsequent iterations. The user input are used as a feedback loop to ensure the accuracy improves with every iteration.

High level technical architecture (Azure)*



*can be deployed on AWS, GCP too

02 Features that enable the agile delivery by Concordia

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Any source and format

Features that enable Concordia
to deliver at scale with efficiency
& faster turn-around time



Amazon Dynamo DB



FTP



SQLite



Amazon S3



Microsoft OneDrive



Snowflake



MongoDB



Azure Table



PostgreSQL



Oracle



Access



Hive



SAP HANA



Spark



MySQL



CSV

...and many more

CSV, TSV, Excel, JSON, NoSQL, RDBMS

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Any data
and granularity

nielsen
.....

amazon

Walmart

TESCO

salesforce



NABCA

IBV
BRANDVIEW



SAP

EUROMONITOR
INTERNATIONAL



Any scale millions of records with ease	Any number and type of fields	Any model and deployment
• Large scale engagement for 900 country-category combinations • Upto 2 million rows can be processed • Upto 100 GBs of data can be processed	• Name, address, description, size, variant, flavors, organization, lat/long etc. • Upto 100 attributes handled & processed with ease • Structured and unstructured text, Number, Date, Hyperlink, Yes/No	• Ability to move the capability in-house and remove dependency on partners • Flexible engagement models (License, Managed service) • Multiple deployment options (on premise, private cloud, Fractal managed, etc.)

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Key Logos:

MARS



Campbell's



Kellogg's

ABInBev

Key partnerships:

- Part of Nielsen-Fractal connected partnership program
- Partner with AWS – Marketplace listing

How Nexus fairs against its closest competitor in terms of accuracy of product mapping

The comparison was done for ~2,00,000 rows of e-commerce data

Training data	Level	Iteration1		Iteration 2	
		Nexus	Closest competitor	Nexus	Closest competitor
14,000 rows (7% of total data)	Manufacturer	99.1%	95.3%	99.4%	97.3%
	Brand	97.6%	92.2%	98.3%	95.7%
	Usage	99.9%	99.8%	99.9%	99.8%
	Life Stage	64.1%	60.6%	70.9%	66.5%
	Species Form	94.8%	76.9%	95.4%	83.4%
	Bag Size	62.2%	55.9%	69.5%	62.4%
4,000 rows (2% of total data)	Manufacturer	97.5%	90.1%	98.5%	95.0%
	Brand	91.0%	80.5%	96.0%	90.1%
	Usage	99.8%	99.5%	99.8%	99.7%
	Life Stage	49.5%	42.6%	64.6%	59.2%
	Species Form	91.9%	60.4%	93.7%	71.0%
	Bag Size	44.7%	39.2%	62.6%	57.2%

Accuracy of product mapping across non-English data sources

Training Data	Language	Markets	Level	Iteration 1	Iteration 2
100 Records	German	Austria, Switzerland	Manufacturer	95%	100%
			Brand	84%	90%
			Sub Brand/Flavour	81%	94%
			Type	78%	90%
150 Records	Spanish	Mexico, Chile	Manufacturer	89%	98%
			Brand	78%	87%
			Sub Brand/Flavour	71%	82%
			Type	75%	88%
100 Records	Russian	Russia, Kazakhstan	Manufacturer	81%	94%
			Brand	76%	85%
			Sub Brand/Flavour	70%	78%
			Type	76%	86%

03 Case studies

Customer master creation for enabling effective order-to-cash cycle for a HealthTech major (1/2)



Problem Statement

- Sales advisors enter key addresses (sell to, ship to and bill to) manually into the multiple systems in leading to inconsistencies in customer information across all kernels
- Significant manual effort in ensuring compliance and traceability of sales becomes a painful exercise
- Multiple platforms recording different customer information leads to incorrect invoicing (multiple issues) with large impacts on delayed payment

Objective

- Need of the hour is to improve the current data management process by leveraging an AI enabled expert system to:
- Improve the quality of current Master Data Management Process
- Identify, Prevent and Cleanse data quality defects while effectively measuring data quality
- Bring in efficiency to current process by reducing manual dependencies

Customer master creation for enabling effective order-to-cash cycle for a HealthTech major (2/2)

Solution approach

- Concordia enabled always-on recommendation system for creating & maintaining Global customer masters
- Flexibility to incorporate business inputs at various stages of MDM process
- Alert and recommendation in case of anomaly and outliers

Features

- Alert mechanism to check for
 - Inclusion of new customer
 - Exclusion of old customers
- Outlier detection and trend check from historical data and creating alerts in case of any anomaly
- Automated data rule generated components to support any kind of data transformation , alignment and conversion
- Recommendation system in multiple user level setting to provide consistency for global reporting
- Intelligent alerts to prevent incorrect data during data migration or other transactions

Enabled effective S&OP planning by bringing together Point of Sales data

Multiple challenges encountered due to granularity & disparity of data

Check level data from bars and restaurants

Multiple data sources –
Disparate structures & formats

Augmentation

Misaligned products & location attributes

Transformation

Inconsistent fact values &
Misaligned reporting periods

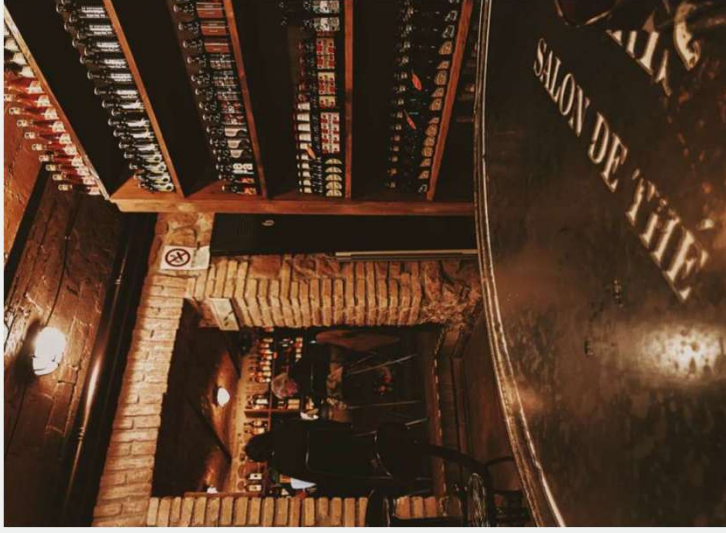
Integration

No central process for data governance- no integration

Feed sales and management dashboards

Difficult to consume for decision making

And creating data harmonization platform for efficient sales strategy decisions (1/2)



Problem Statement

- What kind of beer is preferred in a region and at what time of the day/season
- What is the percentage of beer v/s food and alcohol consumed in bars and restaurant's on weekday v/s weekend
- Understanding baseline sales and trends in bars and restaurant's
- Improve quality of sales and promotional plans to ensure sales growth

Objective

- On premise data from individual outlets is a great source for insights and enables better decisions .
- Client team wanted to bring in POC data across North America to a central data mart in order to power weekly reviews for sales and management teams

And creating data harmonization platform for efficient sales strategy decisions (2/2)

Difficult to consume

- Multiple data source with different structures and formats
- Lack of right set of attributes and dimensions in data
- Product and location masters unavailable
- Inconsistent product descriptions and product/ location attributes
- Inconsistent definitions and varying metrics across data sources

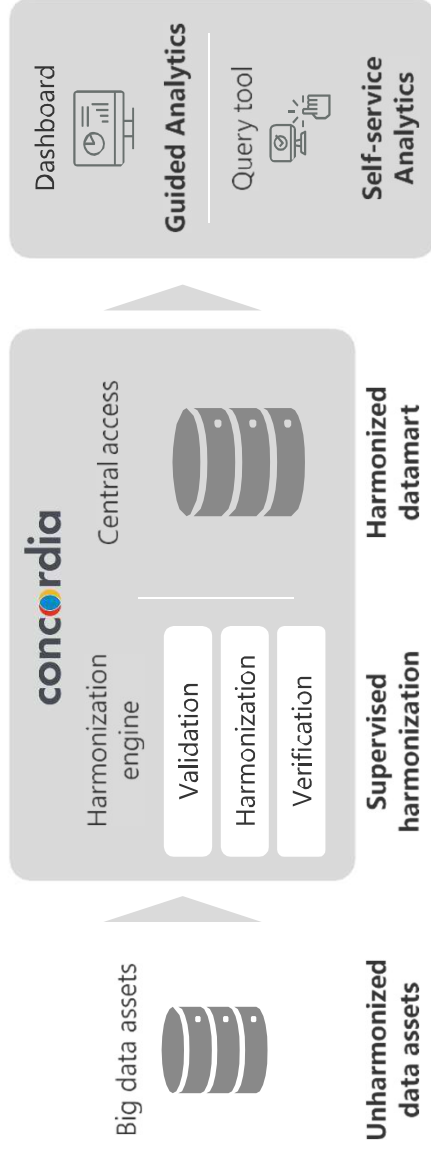
Solution

- Created master by augmenting product attributes at SKU level & standardized data sets across KPIs
- Synchronized data points across products, time periods and geographies
- Streamlined the data integration and validation process & increased the accuracy of data
- Created single source of truth feeding the visualization platform and semantic layer
- Enabled market analysis by types, sales channels, packaging, demographics, regions & Competitive Landscape

CASE STUDY

High impact delivered through global harmonization

- Quarterly Street Guidance
- Replaced a 25-team vendor for exec reporting on market performance through automated Qlik dashboard
- Delivered 40% efficiency replacing Nielsen ad-hoc reports with business health fact packs
- Freed 2500+ person days with automating budget reviews
- Reduced latency from 65 to 5 days



- Consistent view across 900+ country categories
- 1 product hierarchy for external and internal data
- 99%+ accuracy and 100% on-time delivery
- Single source of truth across the company for market share

Global dashboard for CPG major on e-commerce data (1/2)

Analytics with a focus on understanding landscape of business focusing on sales, share, search and conversion

Category and Competitor

- Share and sales trend/gap analysis
- Category and competitor insights.
- Search – Category and branded insights
- Traffic analysis
- Customer reviews and ratings analysis
- Product views and conversion
- Subscription/Autoship insights
- Price and Promotions deep dive

Rakuten/Clavis/Brandview Pro
Stackline

Sales and Traffic

- Sales trend/gap analysis
- Retailer insights
- Promotions deep dive
- Subscription/Autoship insights

Amazon Retail Analytics
Premium (ARAP)

Consumer Behaviour

- Search – Top key words
- Product views and conversion
- Reviews and Ratings analysis
- Market basket analysis
- Unique and repeat purchasers

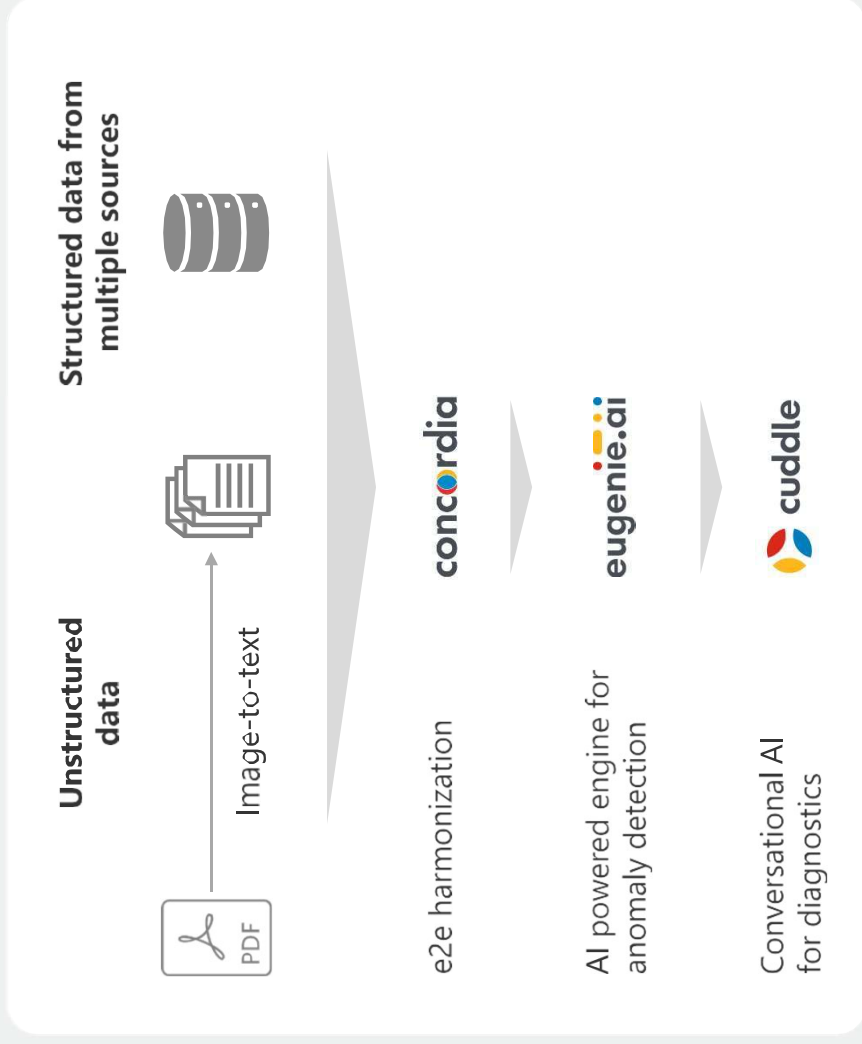
Amazon Retail Analytics
Premium (ARAP)/Stackline

Global dashboard for CPG major on e-commerce data (2/2)



CASE STUDY

Transformation for a defense major



Thank You.



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