

## Modern Data Management in the era of Al

**Jonathon Bowring** 

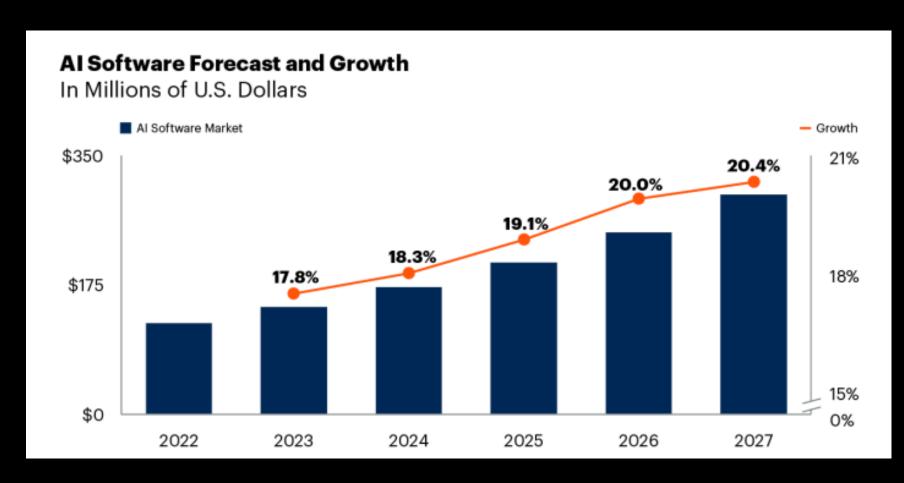






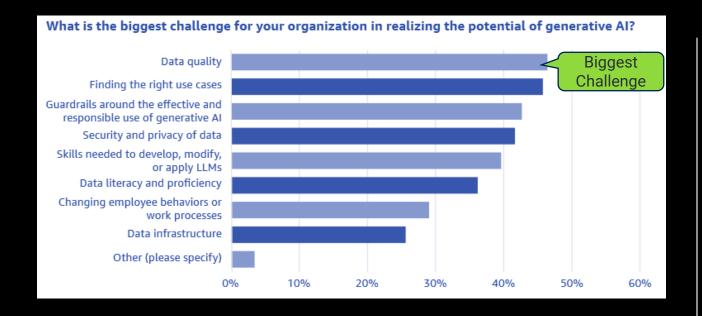
## Al Market

#### According to Gartner

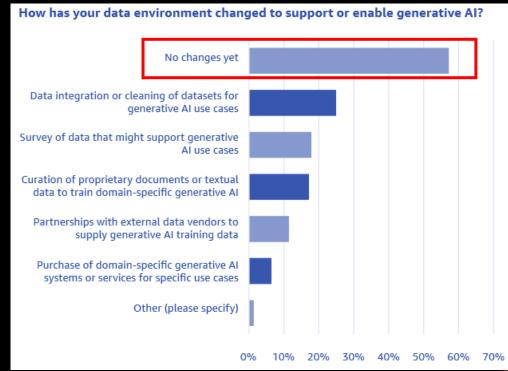


- By 2027, spending on AI software will grow to \$297.9 billion with a CAGR of 19.1%.
- Over the next five years, the market growth will accelerate from 17.8% to reach 20.4% in 2027.
- Generative AI software spend will rise from 8% of AI software in 2023 to 35% by 2027.

## Generative Al Opportunities 93% of CDOs Feel Data Strategy is Crucial to Generative Al Value



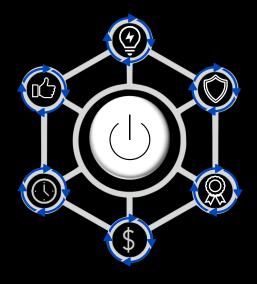
The global generative AI market size is projected to grow from \$43.87 billion in 2023 to \$667.96 billion by 2030, at a CAGR of 47.5% during the forecast period<sup>1</sup>



SOURCE: "CDO Agenda 2024: Navigating Data and Generative Al Frontiers." (2023), AWSstatic.com

## Enterprise Use Cases

#### Generative AI Examples by Industry



#### Retail

- + Personalised Product Recommendations
- + Inventory Management
- + Customer Experience Enhancement
- + Price Optimisation
- + Supply Chain Optimisation

#### **Financial Services**

- + Fraud Detection and Prevention
- + Personalised Financial Advice
- + Credit Scoring Models
- + Risk Management
- + Automated Document Processing

#### **Consumer Goods**

- + Product Design and Development
- + Market Trend Analysis
- Quality Control
- + Demand Forecasting
- + Targeted Marketing

#### Healthcare

- + Drug Discovery and Development
- + Personalised Medicine
- + Medical Imaging Analysis
- + Predictive Analytics for Patient Care
- + Synthetic Data Generation for Research

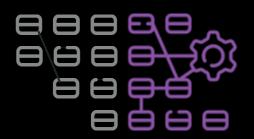
#### Oil and Gas

- + Exploration and Reservoir Simulation
- + Predictive Maintenance
- + Supply and Demand Forecasting
- + Safety and Risk Assessment
- + Energy Efficiency Optimisation

## Common AI Challenges

Key points to consider







#### Regulatory and Legal Challenges

74% surveyed listed Data Privacy as their top concern.<sup>1</sup>

- The evolving nature of generative AI raises regulatory and legal challenges.
- Businesses must stay abreast of relevant laws and regulations, such as intellectual property rights and data protection, to ensure compliance and mitigate legal risks.

#### Data Availability and Complexity

68% surveyed listed Misinformation as their next highest concern.<sup>1</sup>

- Implementing and maintaining generative AI systems requires vast amounts of highquality, holistic, and governed data to effectively train the data models
- Businesses cannot afford to invest in training their staff, collaborating with external experts, or hiring a village to ensure effective AI outcomes

#### **Data Quality & Reputation**

- Al relies on vast amounts of data, raising concerns about data quality.
- Businesses must implement robust measures to ensure data is accurately observed information to maintain customer trust and safeguard their reputation.

NOTE: [1] "Who's Afraid of AI?." (2023), WPROMOTEcom

## There is NO AI without Trusted Data

Al is at risk of bias and poor outcomes unless the data is of high quality

### **WHY AI FAILS?**

#### POOR QUALITY DATA

- Data is critical when it comes to securing successful Al outcomes.
- Trusted data helps AI learn to make a recommendation or perform a task.
- The more fit for use data sourced, the better the outcomes

#### DO YOU WANT TO PREVENT AI FAILURE?

#### **Data and AI bias**

- 86% of Australian business and IT decision makers believe data bias will become a bigger concern as AI/ML use increases
- Yet over a third (34%) have not looked at technology and tools to help in tackling it.

#### MS Chatbot Spew Racist Tweets<sup>2</sup>

- Used uncleansed Twitter interactions for training ML models
- Within 16 hours, more than 95,000 tweets posted, and rapidly turned overtly racist, misogynist, and anti-Semitic

#### Cost of Poor Data Management<sup>1</sup>

- "Average cost of poor data quality at \$12.8 million per year"
- "AI models depends entirely on the accessibility, quality, granularity, and latency of your organisation's data"

#### **Bad AI Leads to Attorney Sanctions<sup>2</sup>**

- Used generative AI to find prior cases to support a case
- At least 6 of the AI findings did NOT exist
- As of June 2023, Schwartz was facing possible sanctions by the court.

#### Misdiagnosis due to Errant Al<sup>2</sup>

- Hospitals used AI to diagnose & triage COVID-19 patients faster
- Al model was flawed because it was trained on the wrong data set
- Mislabeled data or data from unknown sources was a common culprit.



#### The Great Data Divide

- Unequal data access
- Low use of data to inform decision-making; 77% cite data intelligence is a challenge
- CDOs rank poor data literacy as one of the top internal roadblocks

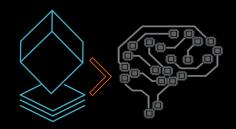
#### Decentralised Data Products Dilemma

- Decentralised teams expected to produce datasets without relevant skills or tools
- · Distributed data creation leading to declining data quality
- Dark data proliferation; 50% of useful data is not analysed

#### Overwhelmed Data Teams

- Slow data supply chains due to overwhelming demand for data engineering resources
- Data Engineers spend 40% of their time in documentation, requirements gathering and maintaining pipelines

## 3 Key Al Themes



## Data Management for Al

## Your own Artificial Intelligence (AI) solutions

 Need holistic, high-quality, governed data management (DM) to deliver trusted Al insights to fuel your competitive advantage.



## Al-Powered Data Management

## Al Powered Data Management Solutions

- Al-powered insights to data management
- Dramatically accelerates data discovery, integration, quality, governance, and master data management.



## GenAl Data Management

#### **Data to All**

- Dramatically simplifies how organisations access and manage data
- Turbocharges data democratisation
- Exponentially increases the productivity of data teams



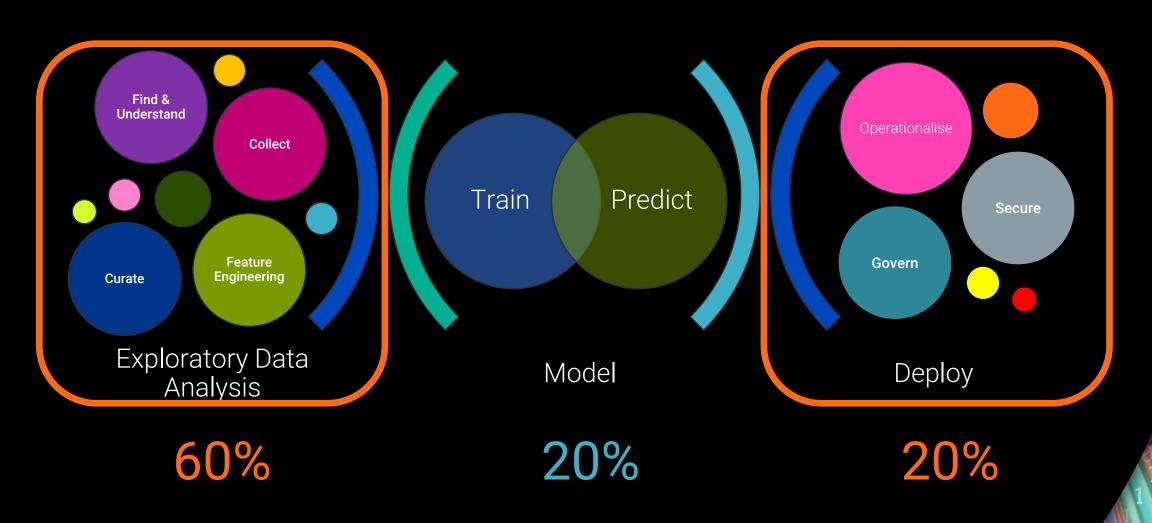
First Al Theme

## Data Management for Al



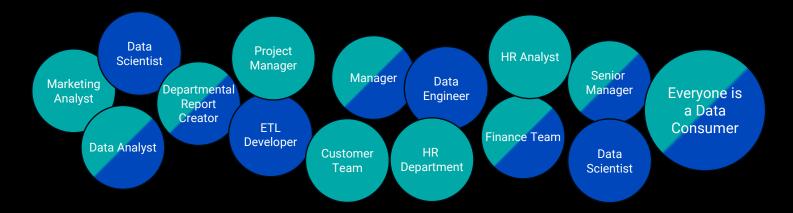
## The Data Science Workflow

Streamlined Data Management is the Data Science Supercharger



## Discovering and Understanding Data

Data Consumers



Technical skillset

Non-technical skillset

Hybrid skillset

Many methods of finding data, always shifting, progressively risky

**Finding Data** 



Data Catalog

Data Operations System owners

Word of mouth

Peer to peer sharing

Google

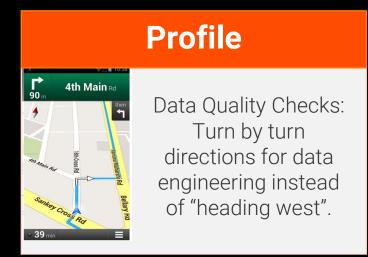
Cannot find Cannot find 'Right' Data data at all

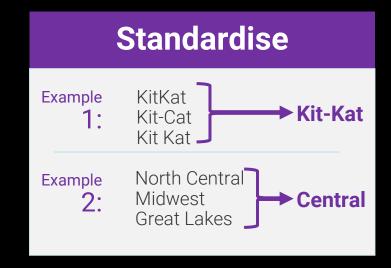
Demand and usage tracking is patchy, as access requests are broadly distributed across the data estate

Can't **find** the right data?

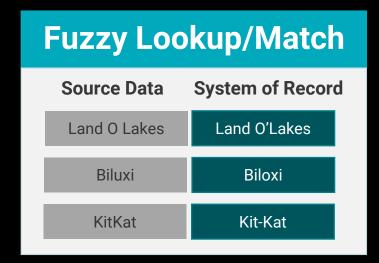


## Ensuring that Data is Fit for Business Use









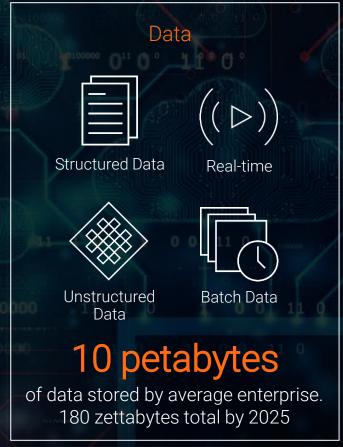




## Ability to Source Data

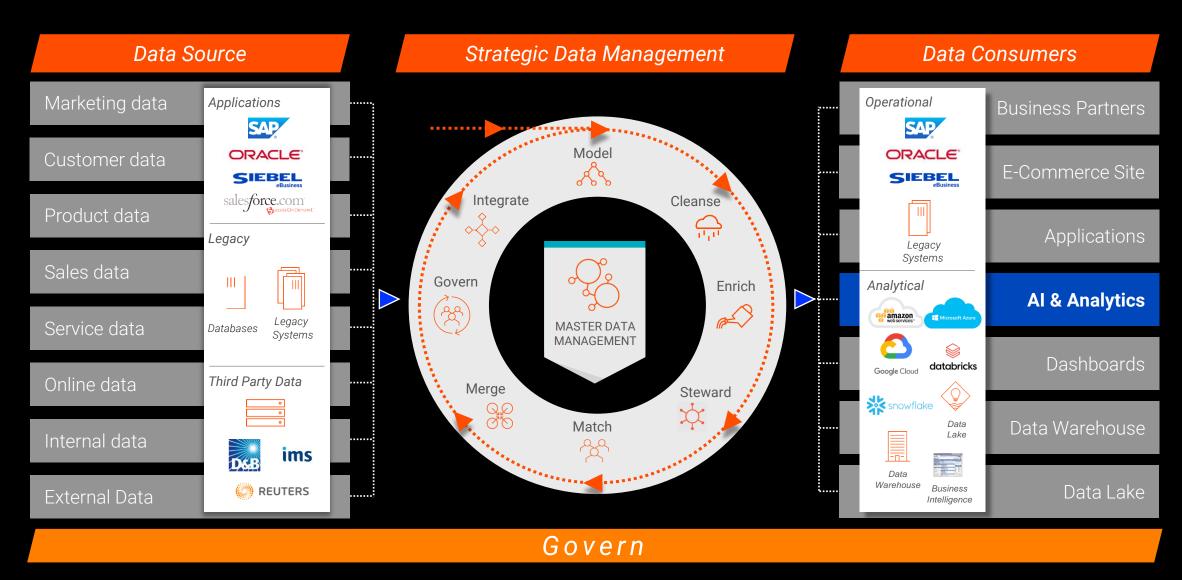
Fragmented Landscape of Applications, Data, People...







## Consolidate Data into a Single Source of Truth



## Trusted and Timely Data with Data Governance

# Governance

Simplify trusted data delivery and end to end data governance, including Al Models governance Democratisation



Accelerate time to value for data-driven outcomes, connecting data producers and consumers

Observability



Achieve reliable analytics insights by monitoring pipelines, data science models, and improving data accuracy

## Data Management Capabilities to drive Al Initiatives

#### **Data Quality**

- Automatic quality monitoring
- Made-to-order data cleansing
- Data curation

## Data Integration & Data Engineering

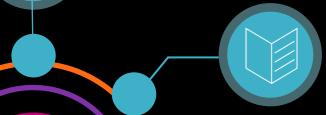
- Automate data delivery
- Ensure continuous delivery at scale
- Any pattern data integration
- Feature engineering

#### Master Data Management

- Ensure reliability of key data domains
- Data domain consolidation and enrichment

#### Data Governance and Data Marketplace

- Shared Business Context
- Ownership, Policy, and Rules
- Improve Data Literacy and Data Sharing



#### Data Catalog

- Technical Metadata Inventory
- "Map of the Enterprise" Data
- Impact Analysis and Data Lineage
- Data Classifications

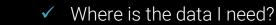


#### **Data Preparation**

- "Fire and forget" data provisioning
- Reduce cost of fulfillment

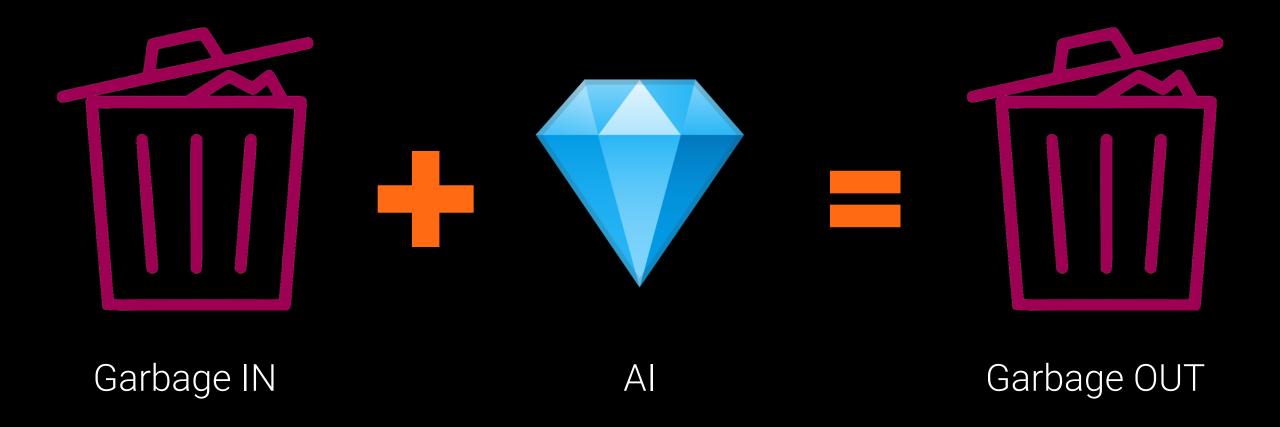
#### Data Access Management

- "Trust but Verify" Policy
- Monitor and manage data proliferation risk
- Role-based or Policy-based Data Access Management



- ✓ What's in it?
- ✓ Is it any good?
- ✓ How can I clean it?
- Can I use it?
- ✓ Should I use it?
- ✓ Who owns it?
- ✓ How do I get it?
- Can I access it securely?









Second Al Theme

## Al for Data Management



# Challenges that AI paired with Data Management will address

**Scale & Agility** 



**Policy & Trust** 



**Skills & Literacy** 



## Al Generated Classifications

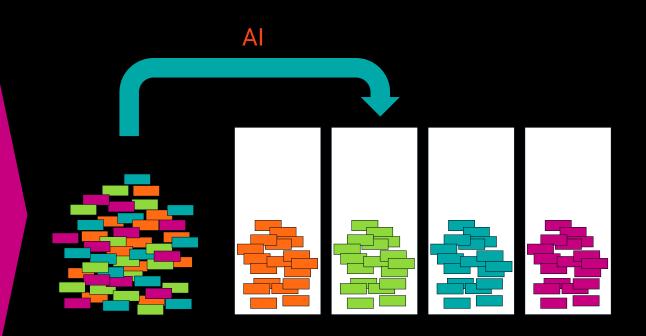


#### Key Highlights

- Conventional classification methods based on Regex, algorithmic pattern recognition and reference data requires a lot of manual development work initially to create organization specific classifications
- Al Generated Classifications can work without any access to data, using only metadata to generate classifications



- Al Generated Classifications will automate the process of classification creation by using organization's metadata and data patterns
  - This is expected to reduce time to curate and create classifications by 70%, saving each organization by upwards of \$100K per year





## Al Inferred Data Lineage



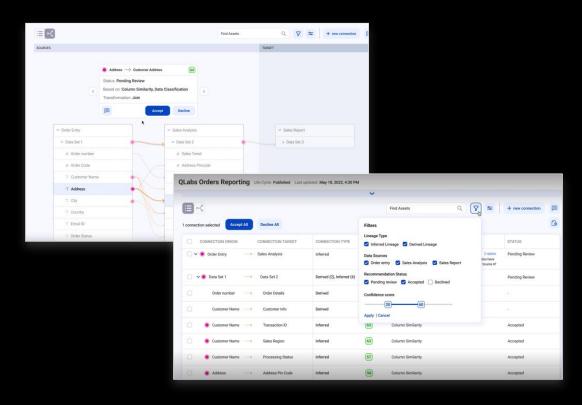
#### Key Highlights

- Complement existing derived lineage from autoconnection assignment and code logic parsing
- Fill the gaps and extend derived data lineage with inferred lineage
- Curation Inferred Lineage by subject matter experts



- Enhance productivity of experienced data management professionals with fully automated workflows
- Democratize data and data management by enabling non-technical users create specifications and perform basic data management tasks on their own

- Visual curation on lineage diagram
- Bulk curation on tabular format
- Filtering
- Collaboration and Comments





## Al Powered Data Access Management

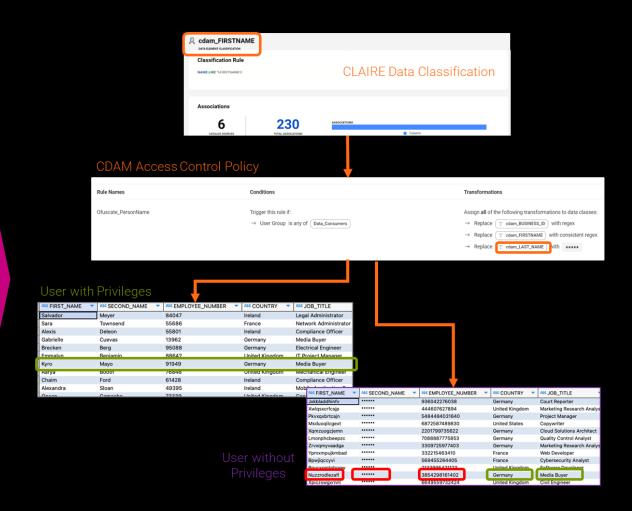


#### Key Highlights

- Al Generated Classifications allow to identify which fields are sensitive
- Access Control Policies are defined against Data Classifications
- CDAM applies policies dynamically on read or at runtime on write (based on context)



- Minimize the potential for human error in manual classification processes
- Robust risk mitigation measures against unauthorized access to data
- Enhance efficiency with faster time-to-value and lower TCO, avoiding multi-party solution





## Al Generated Data Observability

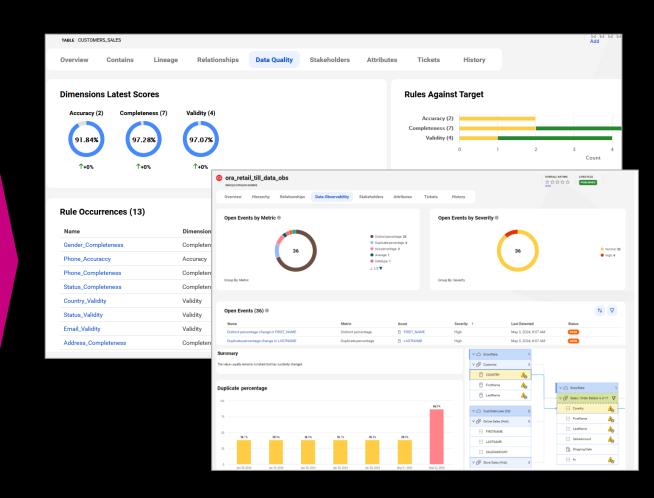


#### Key Highlights

- Automation of data quality rules application per governance policies
- Data quality execution and monitoring across all instances of the business entity



- Data Quality Automation takes away mundane work and saves 100s of hours of work thus reducing the manual work by as much as 80%
- Provides a more complete Data Quality view by automatically increasing coverage to over 60%





## Al Data Parsing and Structure Discovery

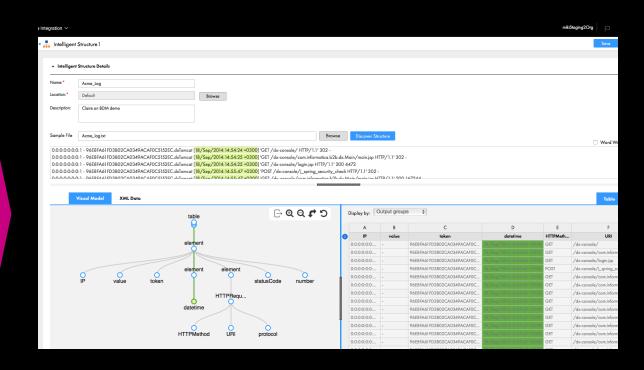


#### Key Highlights

- File pattern recognition and structure derivation
- Usage of custom ML-powered NER (named entity recognition) and NLU (natural language understanding) mechanisms to identify fields and field types
- Data and schema drift



- Automatic file ingestion and onboarding processes to extract and use information out of complex files (machine data, application data, logs, non-relational formats...)
- Reduce errors to detect PII information, mitigating risk and improving security





## Al Self Integrating Systems



#### Key Highlights

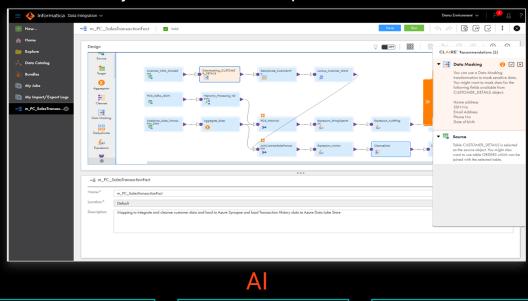
- Fully automated data pipeline generation
- Support for unstructured, semi-structured and hierarchical data sources
- Automated creation data masking, cleansing and standardization rules
- Support for join, union, normalization and denormalization of data sources



#### Benefits

- Automate, accelerate and simplify all data management activities
- Democratize data and improve productivity for all Personas
- Fully autonomous DI experience

#### Fully Automated Data Pipeline Generation

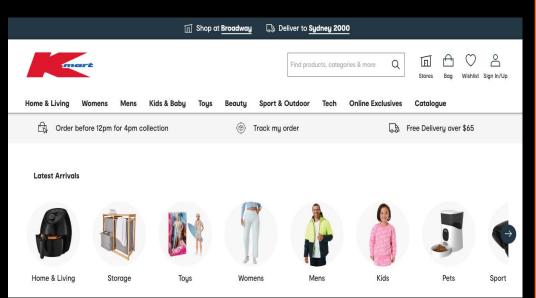


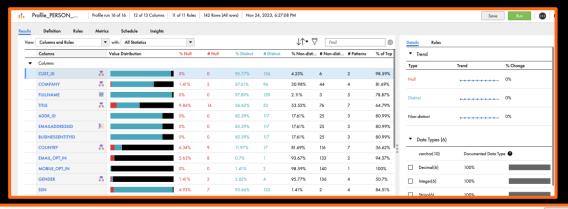
Design Time		Run Time			Operations
Туре	Manual vs. Automated				Avg Time
Manual	Manual				Months/Weeks
Augmented	Manual		Automation		Days
Autonomous	Manua	al Automat	Automation		Mins/Hours

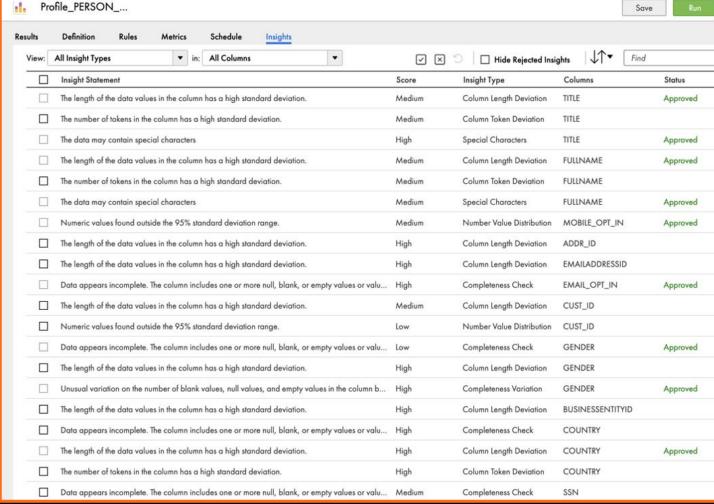


# mert

- Kmart has more than 30,000 employees and operates 234 stores across Australia and New Zealand, with its head office located in Mulgrave, Melbourne.
- Improved data quality; quadrupled online sales by introducing products 4X faster









## Latrobe University

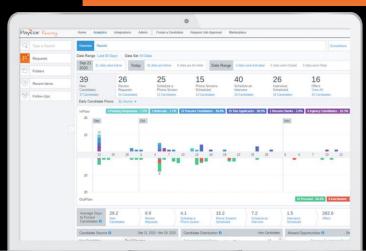
#### **Latrobe University**

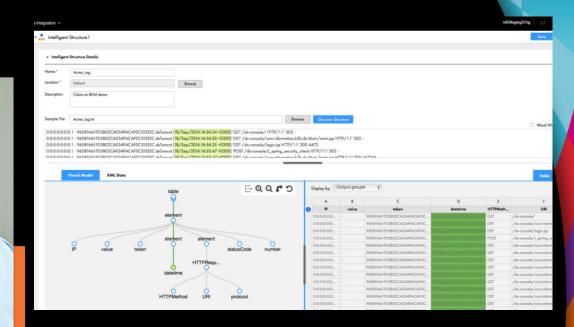
- Leverages AI to automate data classification as part of its governance program.
- Uses AI to automate onboarding & mastering of students.
- Utilises AI to automate data quality rule creation



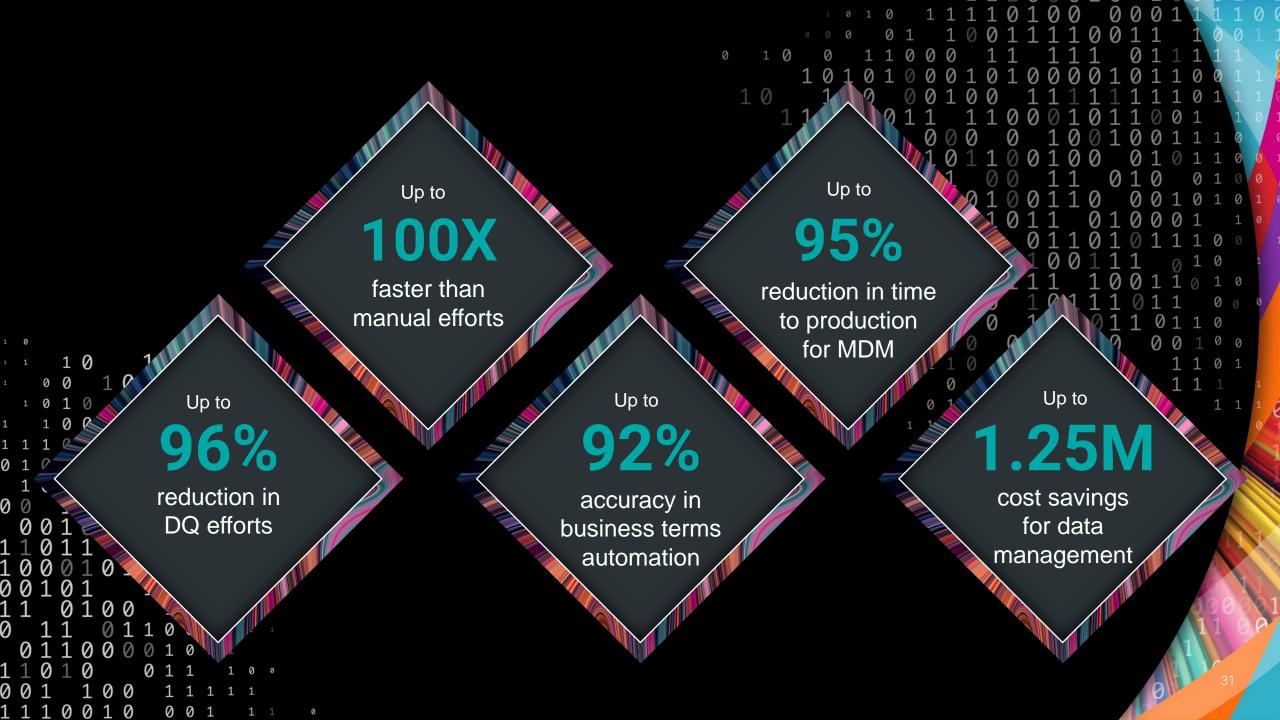








- Recognized a 512% ROI moving to an Al-assisted low code/no-code service from Informatica.
- Witnessed a 75% performance improvement in pipeline development with the help of Informatica's CLAIRE engine





Third Al Theme

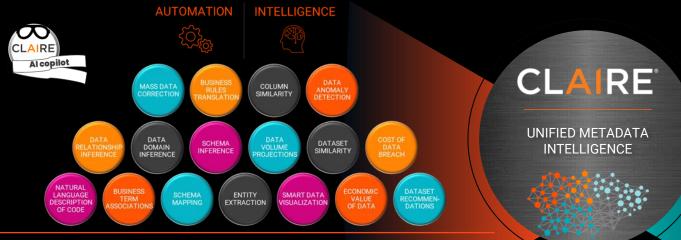
## Gen Al Data Management



# CLAIRE®: Al-Powered Data Management

CLAIRE AI copilot

IN PRODUCT AI-POWERED METADATA INTELLIGENCE AND AUTOMATION



#### **Data Management Automation**

Activated Metadata to provide automated data management capabilities

Reduced manual effort and improved operational efficiency across data management tasks

Proactive recommendations and alerts for potential issues

INTELLIGENT GLOSSARY

SMART DOMAINS

COLUMN SIMILARITY

ENTITY MATCHING

SCHEMA MATCHING

DATA QUALITY INSIGHTS

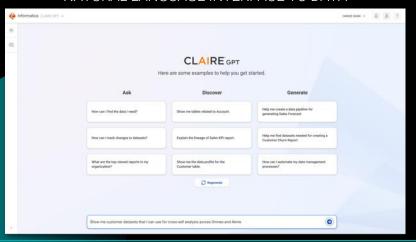
JOIN RECOMMENDATIONS

NEXT TX RECOMMENDATIONS

DATASET RECOMMENDATIONS

#### **CLAIRE GPT**

NATURAL LANGUAGE INTERFACE TO DATA



#### Generative Al-powered Data Management

Enhance productivity of experienced data management professionals with fully automated workflows Democratise data and data management by enabling nontechnical users to create specifications and perform basic data management tasks on their own

Reduce data management costs

NL TO ETL/ELT

**NL-BASED DISCOVERY** 

CROSS PRODUCT EXP.

NL TO DQ

AI COPILOT

NL-BASED EXPLORATION

NL-BASED TESTING AND DOCUMENTATION

NL TO PREP

IN-CONTEXT DATA

NL TO GOVERNANCE

> AUTOMATED FINOPS

OPEN, POLYGLOT





Need help getting started? Try one of these sample prompts.

Discover	Explore	Ask
----------	---------	-----

Show me the assets controlled by @claire GPT\_DEMO Show data preview of @CMI\_SPECIALTY\_CODES How do you create a custom workflow in CDGC?

Find catalog sources of type Snowflake, Databricks, and Oracle

Show data preview of @CMI\_PHYSICAN

Can mass ingestion cause any restrictions when using SQL Server?

Show me the assets which are profiled in last 30 days

Create a mapping for @CMI\_SPECIALTY\_CODES What API can be used to get the details of an asset in CDGC?

What is CLAIRE GPT?





#### Show me retail customer datasets



Searching for retail customer datasets

Here are the retail customer datasets available across different resources.

- 1. RETAIL\_CUSTOMER: This table is part of the sandbox\_CDW\_Snowflake resource in Snowflake. It resides under the CDW\_DEMO\_DB database in the SANDBOX\_PUBLIC schema.
- 2. **RETAIL\_CUSTOMERS**: This table does not have a description provided. It is part of the **cpg\_snowflake\_retail** resource in Snowflake. It resides under the RETAIL\_CPG database in the PUBLIC schema.
- 3. retail\_customers\_202405100903.csv: This is a flat file present in the cpg\_adlsg2\_retail resource in Adls Gen2. It resides under the **cdpadlsgen2** storage account in the **retailcpg** container.

Found 6 of the available 10 records.

Here are the retail customer datasets found in different resources.

- 1. Datasets under the sandbox\_CDW\_Snowflake Snowflake resource in CDW\_DEMO\_DB database under the SANDBOX\_PUBLIC schema:
  - **CUSTOMERS**: This is a table dataset.
  - DM\_CUSTOMERS\_SALES: This is another table dataset.
  - **CUSTOMERS\_SALES**: This is also a table dataset.
- 2. Dataset under the cpg\_adlsg2\_retail Adls Gen2 resource in cdpadlsgen2 storage account under the retailcpg container:
  - o retail\_products\_202405100903.csv: This is a flat file dataset.
- 3. Datasets under the cpg\_snowflake\_retail Snowflake resource in RETAIL\_CPG database under the PUBLIC schema:

Show me data preview for CUSTOMERS

Show me data preview for RETAIL\_CUSTOMER

Get an overview of RETAIL\_CUSTOMER

Ask CLAIRE...







#### What Kind of Data Quality does @RETAIL\_CUSTOMERS



Finding out the kind of data quality does RETAIL\_CUSTOMERS

The RETAIL\_CUSTOMERS data quality analysis reveals the following:

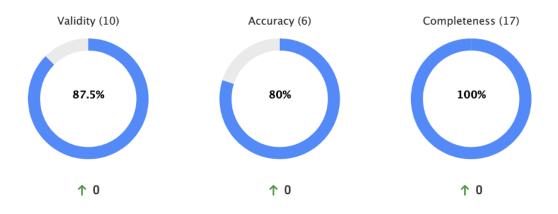
Validity (87.5): The data shows high adherence to predefined formats or rules, indicating that the data meets the established criteria for validity, enhancing its reliability for analysis.

Accuracy (80.0): This score suggests that the data accurately reflects the real-world objects or events they are intended to represent, indicating that the data is reliable for representing customer information.

Completeness (100.0): The data is completely present and accounted for, with no missing entries, ensuring a comprehensive understanding of the customer data.

Overall Data Quality (122.5): This high score encapsulates the overall data quality, reflecting minor deficiencies across the measured dimensions. It underscores the high quality of the RETAIL\_CUSTOMERS data, making it trustworthy and valuable for business operations and decision-making.

#### **Data Quality Scores:**



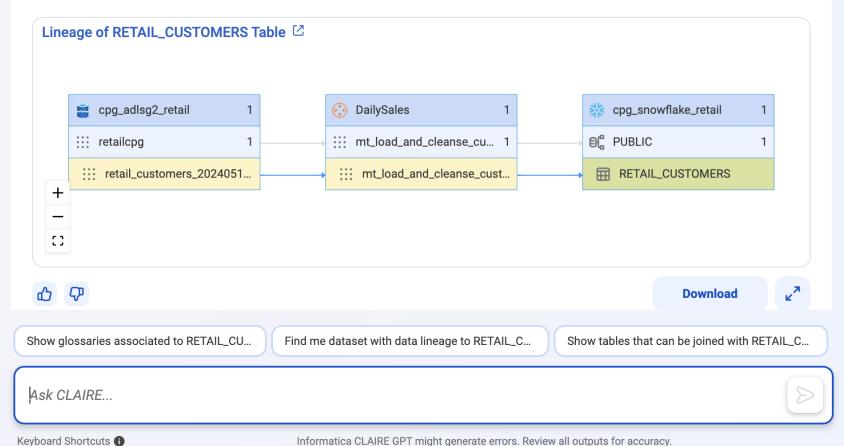


### Show the lineage for @RETAIL\_CUSTOMERS



Showing the lineage for retail\_customers

- The lineage of RETAIL\_CUSTOMERS involves a total of 2 catalog sources.
- The data flow begins from the source cpg\_adlsg2\_retail, which includes the asset retail\_customers\_202405100903.csv.
- This data then flows into RETAIL\_CUSTOMERS and proceeds towards the target resource cpg\_snowflake\_retail, which contains the asset RETAIL\_CUSTOMERS.





### Show me a data preview of @RETAIL\_CUSTOMERS



Showing a data preview of retail\_customers



TABLE | RETAIL\_CUSTOMERS

cpg\_snowflake\_retail / RETAIL\_CPG / PUBLIC Columns: 16

1 Privacy guidelines prevent us from storing sample data, but you can download the data for your reference.

×

A AREA	A City	A Country	□ Date_Of_Birth	A EMAIL	A First_Name
Main	Catania	Italy	21 Dec 1985	bgretham5y@g	Maite
Main	Venlo	Netherlands	08 Jul 1949	gkarle52@csm	Adelie
North	Paris	France	25 Feb 1948	cburganemn@b	Maelyss
Main	Best	Netherlands	18 Oct 1954	Icowlesk4@ute	Frederique
Main	Padova	Italy	09 Jan 1965	mlampskb@joo	Clea
Main	Den Haag	Netherlands	21 Jul 1970	rthurlbornnx@fl	Publicite
Main	Mestre	Italy	22 Jan 1985	goneilna@amaz	Marta
North	Paris	France	24 Jan 2000	bmartyntsevlz	Yu
North	Paris	France	23 Sept 1954	ccarletonei@ac	Ма
North	Paris	France	04 Feb 2001	rskinner5d@im	Personnalisee

Viewing sample data: 100 rows and 4 data types

Combine RETAIL\_CUSTOMERS with RETAIL\_ORDERS

Create a mapping for the above

Ask CLAIRE...





Showing customers that live in the countryfrance or italy with the number of orders, average order amount, and number of products, and product title purchased with the revenue generated in for each product in retail\_products



TABLE | RETAIL\_PRODUCTS

cpg\_snowflake\_retail / RETAIL\_CPG / PUBLIC Columns: 5

1 Privacy guidelines prevent us from storing sample data, but you can download the data for your reference.

X

A TITLE	# Number_of_orde	# Average_order	# Number_of_prod	# Revenue
Enormous Steel Wa	18	107.105990944444	18	1927.907837
Mediocre Cotton T	17	43.729770705882	17	743.406102
Small Granite Gloves	22	112.191645454545	22	2468.216200
Aerodynamic Grani	25	42.465341640000	25	1061.633541
Fantastic Steel Knife	16	54.840186687500	16	877.442987
Aerodynamic Linen	14	144.119922785714	14	2017.678919
Heavy-Duty Steel	11	54.255236818182	11	596.807605
Incredible Concret	14	116.435405500000	14	1630.095677
Intelligent Paper Car	13	107.110623384615	13	1392.438104
Ergonomic Silk Key	17	105.208409647059	17	1788.542964
Enormous Marble	19	55.667306947368	19	1057.678832

Viewing sample data: 100 rows and 3 data types





**Show Code** 

**Download** 

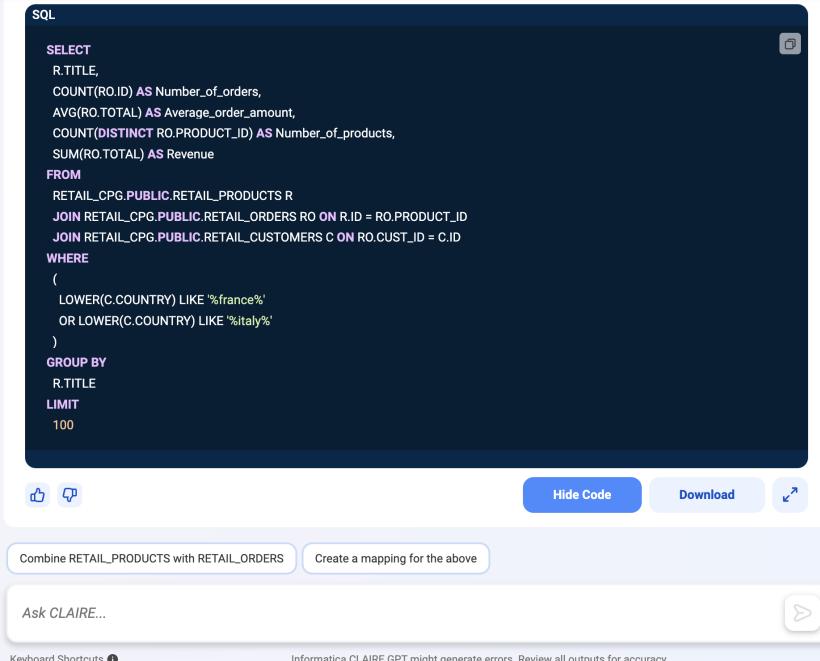


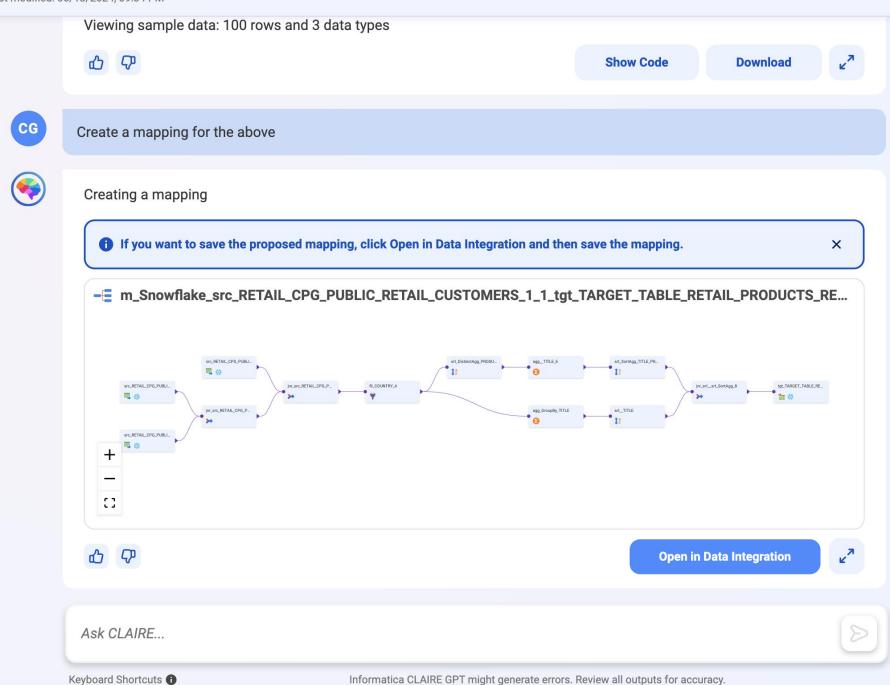
Combine RETAIL\_PRODUCTS with RETAIL\_ORDERS

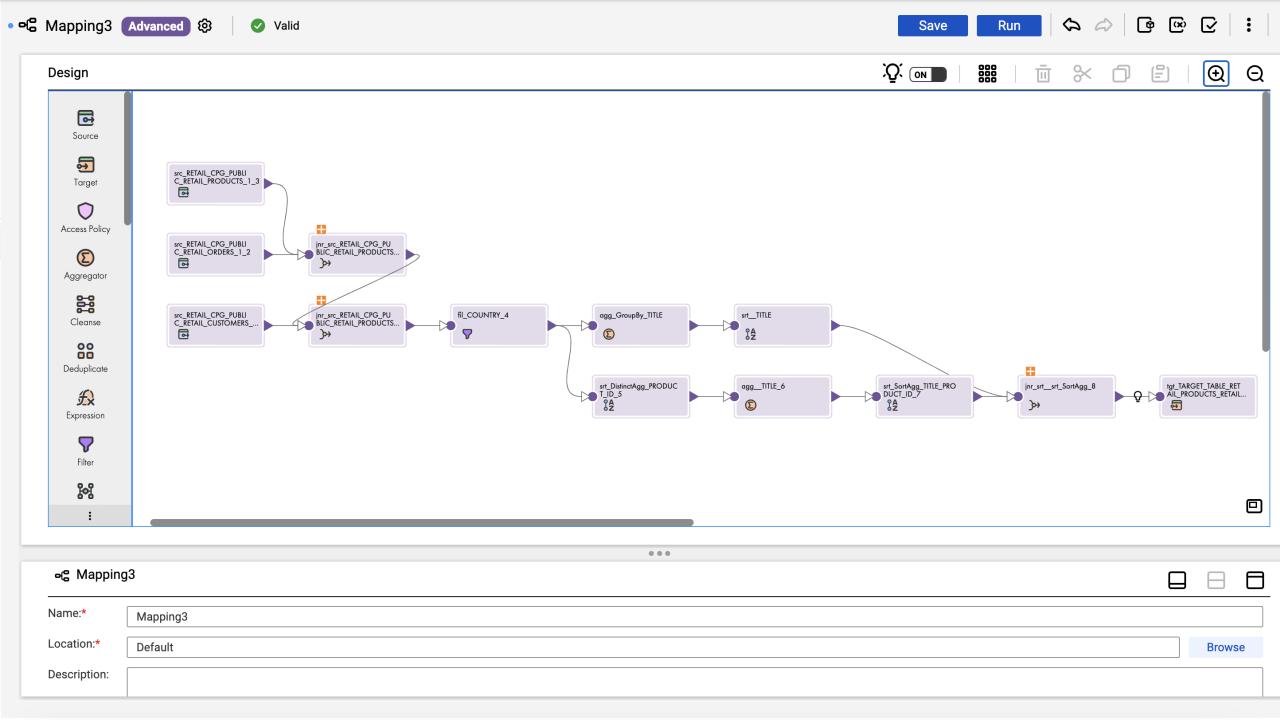
Create a mapping for the above

Ask CLAIRE...









# Increased Productivity With CLAIRE GPT

Data Engineer + CLAIRE GPT: Data pipeline creation



## 15 Weeks



## 8 Weeks



### **CLAIRE BENEFITS**

CLAIRE GPT serves as an assistant SME helping data engineers understand the business context.

CLAIRE GPT helps find the right datasets needed for the task directly from the requirements spec.

CLAIRE GPT helps data engineers quickly explore the datasets and find data quality issues. CLAIRE GPT generates the first draft of the pipeline from the finalized requirement spec. It also helps document and test the pipeline.



# The Impact of GenAl for Data Management

Allowing the World to Speak the Language of Data



## Data for All

Allow everyone in the organisation to be data driven, regardless of technical ability



## Create Usable Data

Enable decentralised data producers to create, document, catalog, and test new data assets



# Drive Exponential Productivity Growth for Your Data Team

Drive exponential growth in productivity of your existing data professionals with Al



Great data for great Al

# Informatica



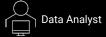
### **DATA CONSUMERS**













## Intelligent Data Management Cloud™

**DISCOVER & UNDERSTAND** 

ACCESS & **INTEGRATE**  **CONNECT &** AUTOMATE

**CLEANSE & TRUST** 

MASTER & RELATE

**GOVERN & PROTECT** 

SHARE & DEMOCRATISE





**DATA INTEGRATION &** ENGINEERING



API & APP INTEGRATION



**DATA QUALITY & OBSERVABILITY** 



MDM & 360 **APPLICATIONS** 



**GOVERNANCE &** PRIVACY



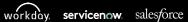
MARKETPLACE

Al-Powered Metadata Intelligence & Automation

### Connectivity

Metadata System of Record

### **DATA SOURCES**





















Real-time / Streaming Sources













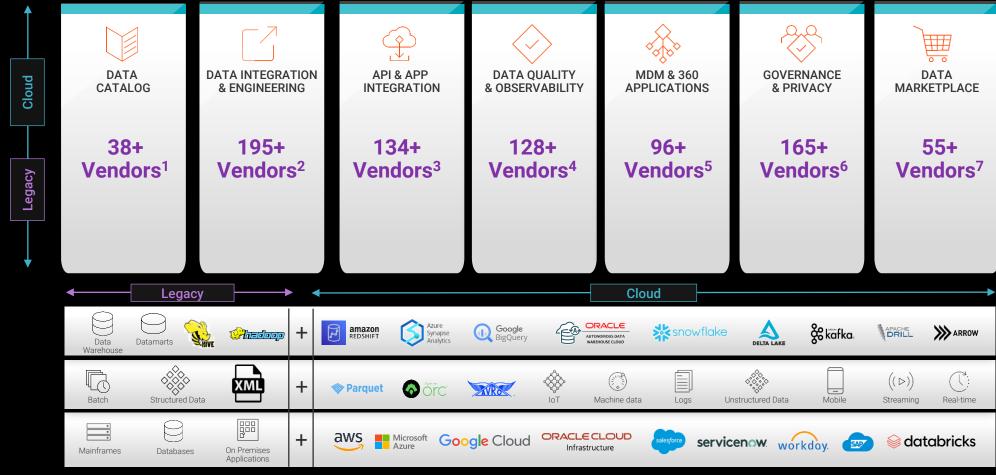






# Why Is Data Management Hard and Complex?

## Numerous Vendors Across Multi-Cloud and Hybrid Ecosystems





<sup>1</sup>Source: Trust Radius, Data Catalog Software, May 2023

<sup>2</sup>Source: Trust Radius, Data Integration Tools Software, May 2023

<sup>3</sup>Source: <u>Trust Radius, API Management Tools, May 2023</u> <sup>4</sup>Source: <u>Trust Radius, Data Quality Software, May 2023</u> <sup>5</sup>Source: <u>Trust Radius, Master Data Management (MDM) Tools, May 2023</u> <sup>6</sup>Source: <u>Trust Radius, Data Governance Software, May 2023</u>

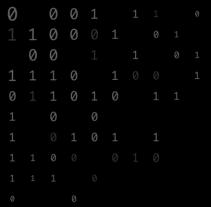
<sup>7</sup>Source: <u>Trust Radius, Data Collaboration Tools, May 2023</u>

# Piecemealed Solutions

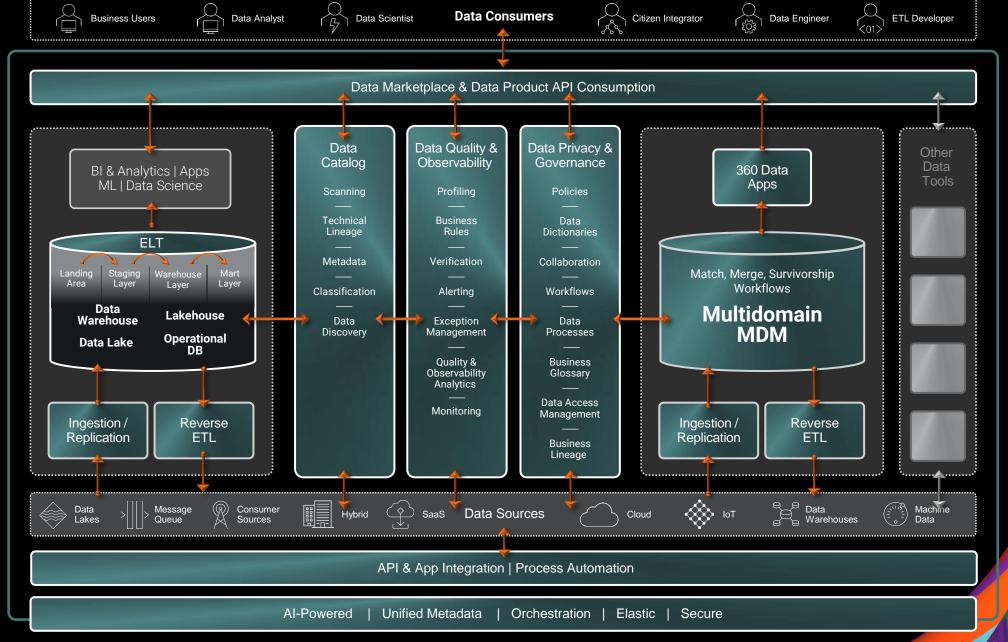
## Force Customers to "stitch" niche provider solutions together







Modern
Data
Architecture
for Analytics
and AI





# Customer Leadership—Global and Across All Key Verticals

#### **AUTO / TRANSPORTATION**



### **BANKING / INSURANCE**



#### RETAIL



### TECHNOLOGY / SERVICES



10,000+

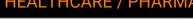
Customers

9

of Fortune 10

### GOVT. / PUBLIC SECTOR / EDU. HEALTHCARE / PHARMA







### **MANUFACTURING**



### **ENERGY / UTILITIES**



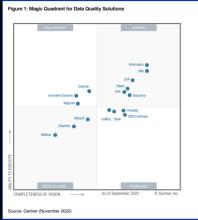
85
of Fortune 100

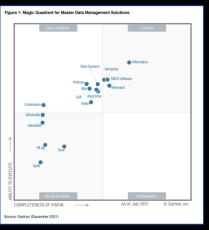


# Analysts Recognise Informatica Leadership

# Best Data Management Products

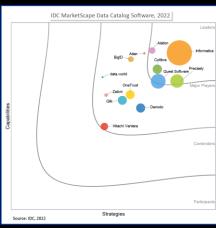












## Gartner Magic Quadrant™

Data Integration Tools, 2022 Data Quality Solutions, 2022 Overall Rating—Positive, 2022 MDM Solutions, 2021

## FORRESTER® The Forrester Wave™

Enterprise Data Catalogs For DataOps, Q2 2022 Enterprise Data Fabric, Q2 2022



MarketScape for Data Catalogs, 2022



iPaaS Technology Value Matrix, 2022



# Want to Continue the Conversation?

Let's connect and discuss a broad range of topics, including:

- Creating value from your data investments
- How to grow data maturity in your organisation
- Aligning your data strategy with business priorities
- Overall data strategy and business adoption



CDO Insights 2024: Charting a Course to Al Readiness



Informatica Experience Lounge





# Thank You!



Jonathon Bowring
Field Engineer at Informatica



