denodo

4. Spotkania praktyków #DataIntelligence

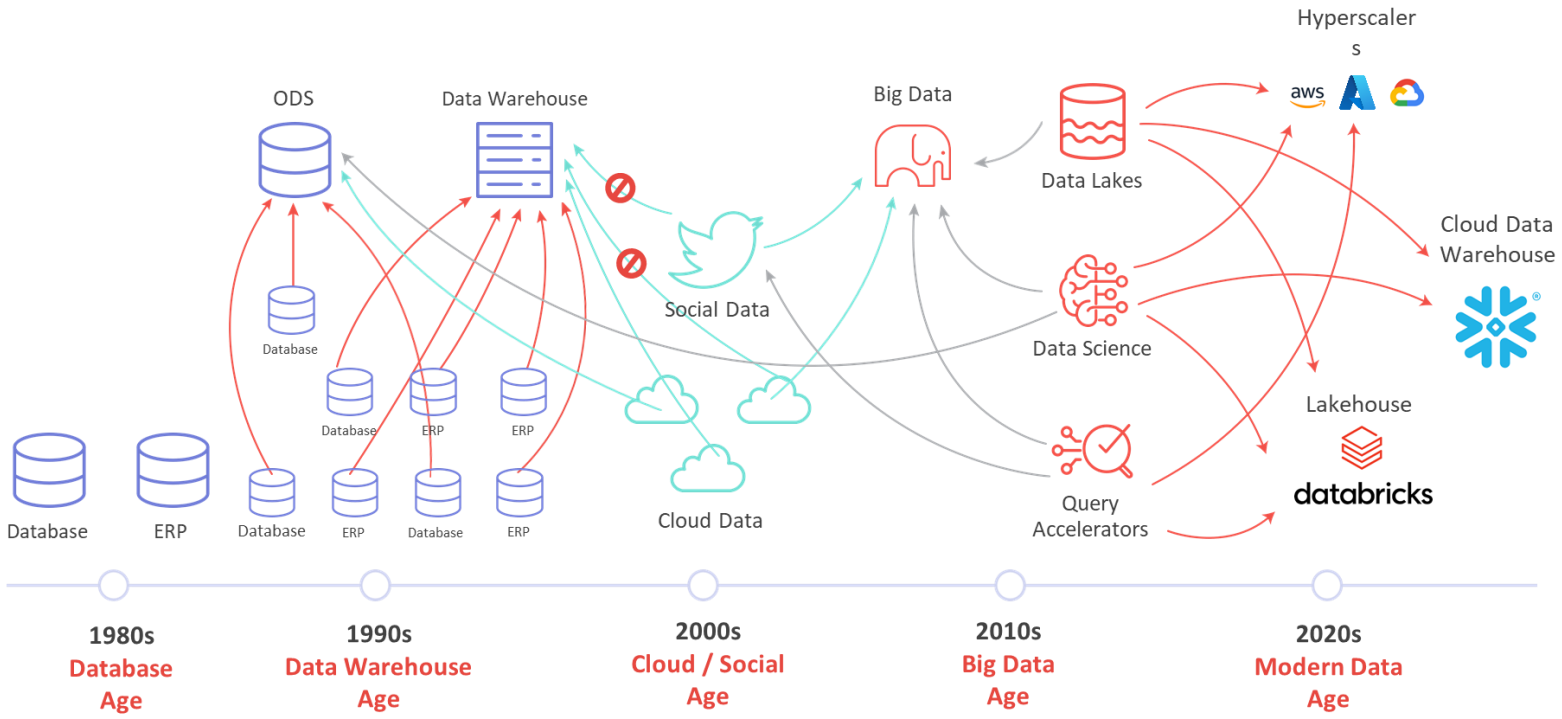
How to transform your Data Ecosystem for AI and Self-Service

real-life Use-Cases

AGENDA

1. Challenge: The Fragmented Data Landscape
2. The Solution: Logical Data Platform
3. Real-Life Use Cases: Denodo in Action

Challenge: The Fragmented Data Landscape

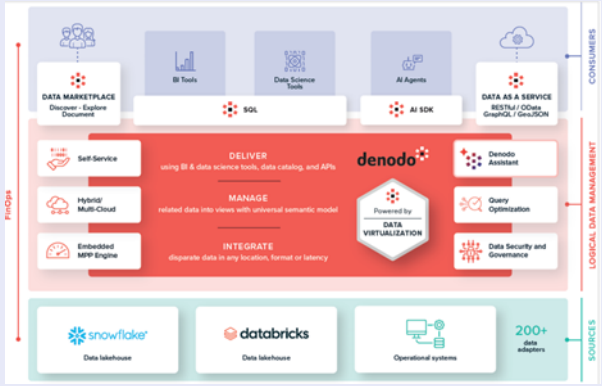


The Reality: The Digitalisation Obstacle

- **The Problem:**
Data is scattered across **numerous silos** (On-Premise, Cloud, Data Lakehouse, SAP, CSV/Excel files).

- **The Consequence:**
Slow Time-to-Market for new services and **high integration costs** (manual copying and moving of data).

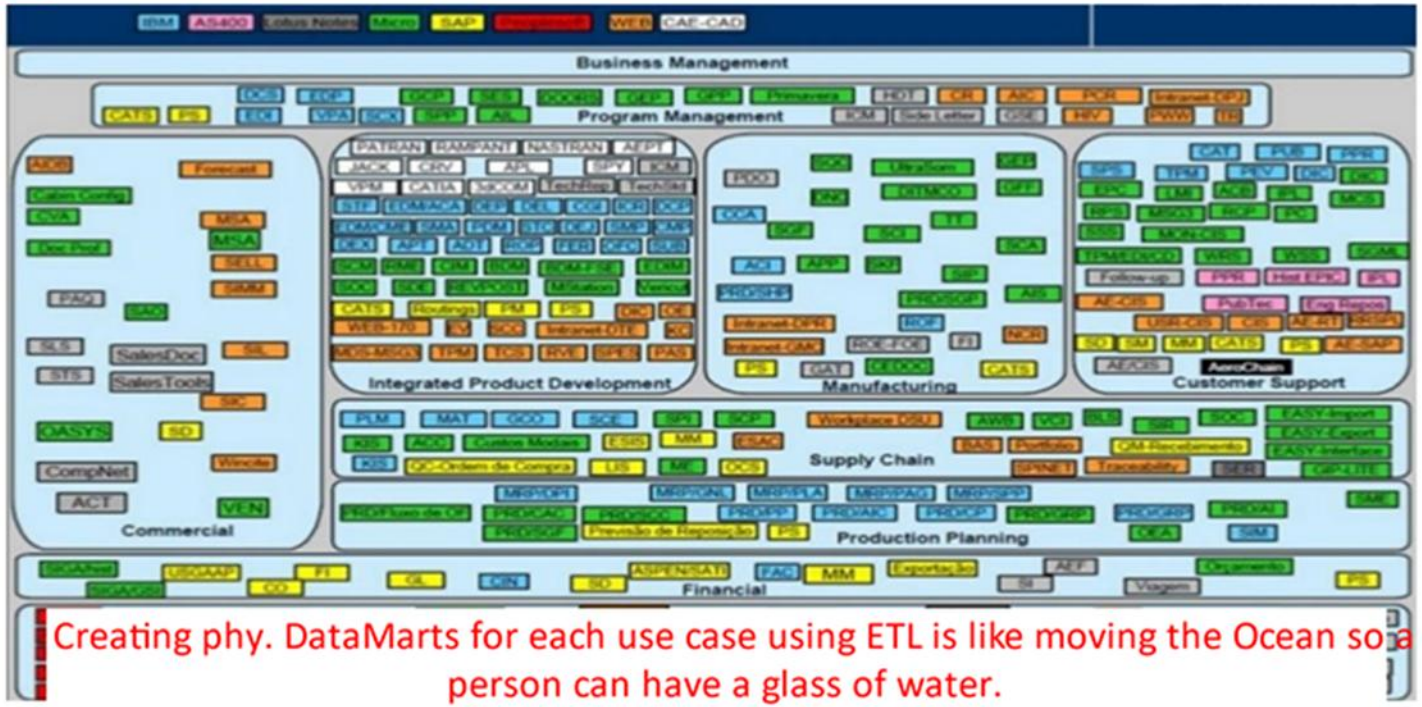
- **Core Message:** We require a **Logical Layer** that seamlessly connects raw data and business-ready intelligence.



The Solution: Denodo - The Logical Data Platform

Companies Use Data in 1,000's of different ways

This is not solved by moving data to a single data source



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The Three Pillars of Agility

1.CONNECT (INTEGRATE):

- to over **200 data sources** (SAP, Cloud, Databases, APIs, Files).
- Creates a **Unified Data Access Layer** (Semantic Layer).

2.GOVERN (MANAGE):

- **Centralized Authorization** and metadata management.
- **Tag-based Security Policies** for Compliance.

3.DELIVER:

- Provisioning data as **Data Products** (via the Data Marketplace) or APIs/SQL

- **Definition:**
- Denodo is the **Logical Data Platform**;
- **Data Virtualization** is the underlying methodology.

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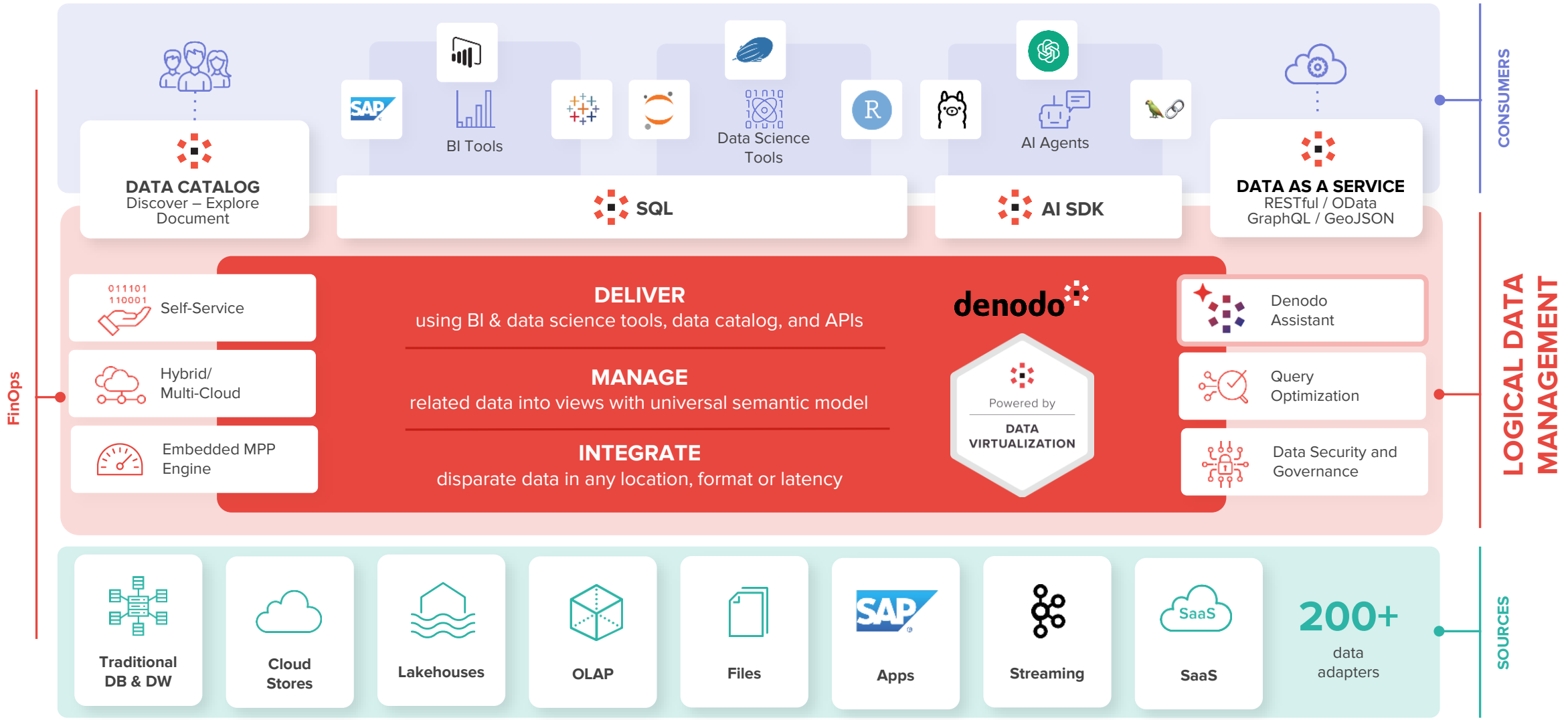
- **Principle:**
- **No data replication!** Denodo does not move the data; it accesses it in real-time where it resides.

Denodo Platform: One logical platform for all your data



Real-Life Use Cases: Denodo in Action

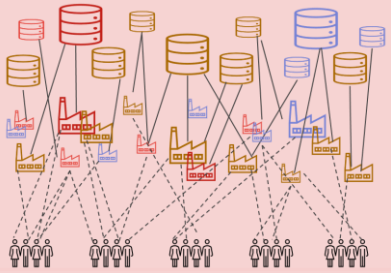
Compliance and Global Governance

Example:

A major **Manufacturer** must **isolate business data between** its **Joint Ventures.**

Challenge:

- **Complex regulatory requirements** (e.g., antitrust, Joint Venture agreements with Partners) **prevent necessary global data sharing.**



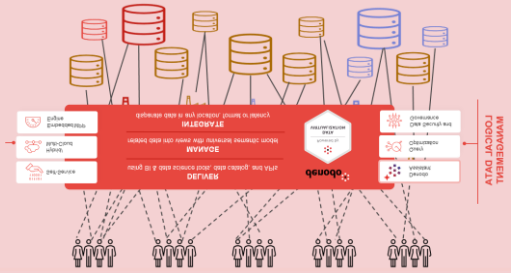
Solution:

Logical Authorization:

- Denodo enforces authorization centrally via a virtual layer.
- Tag-based Policies are used to implement a **Global Security Policy** that controls which users see which data.

Result:

- **Only one Governed Data Product** is required for all partners, **drastically simplifying maintenance** (instead of multiple, isolated data silos).



Customer Quotes:

Cost management

“With Denodo we can reconcile our financial data in real-time. What used to require overnight processing, now happens instantly.”

Head of Data Architecture at a global manufacturing company

denodo

Use Case: Accelerating Real-Time Services & AI

Example:

International Bank, real time fraud detection

Challenge:

- **Stale Data & Slow AI Development**
- AI models and dashboards require Live Data, **not weekly created extracts**.
- **Manual data reconciliation processes (Closed Loop Operations) are slow and error-prone.**

Denodo Solution:

Closed Loop Operations & AI Functions

Real-Time Integration:

- Denodo integrates operational data (SAP) and partner data live into a single Data Product.

Write-Back:

- Custom Web App allows reconciliation resolutions (e.g., "Shipped vs. Receipt" reports) to be written back directly to the database (Closed Loop).
- The manual process is replaced by **automated live queries**.

Result:

Purpose: Utilizes this to feed its **real-time fraud detection** with consistent data.

Technical:

Denodo Embedded MPP Engine and Arrow Flight (Performance Optimization) ensure **high-speed query performance**.

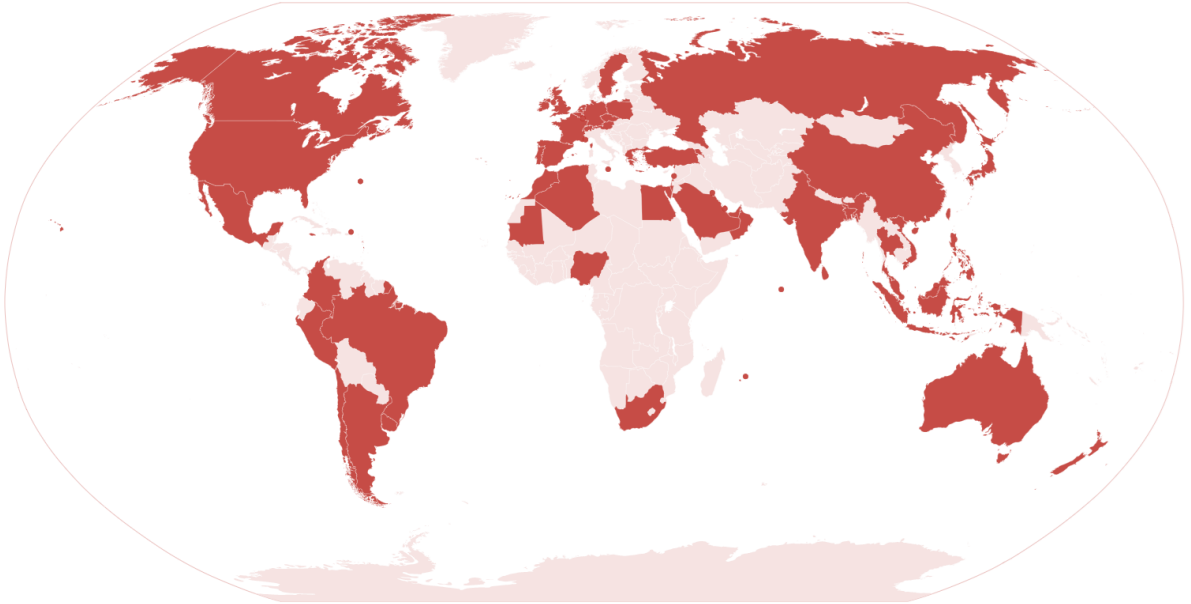
Direct support for **GenAI via the AI SDK and In-Query AI Functions**) for rapid data enrichment.

Improving Risk Management and Business Resilience trough Data Virtualisation

at a major global Bank

Background Landscape: challenges for Risk Management

- **Organisational complexity**
  - Services in over 60 countries
  - More than 300 legal entities



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- Organisational complexity
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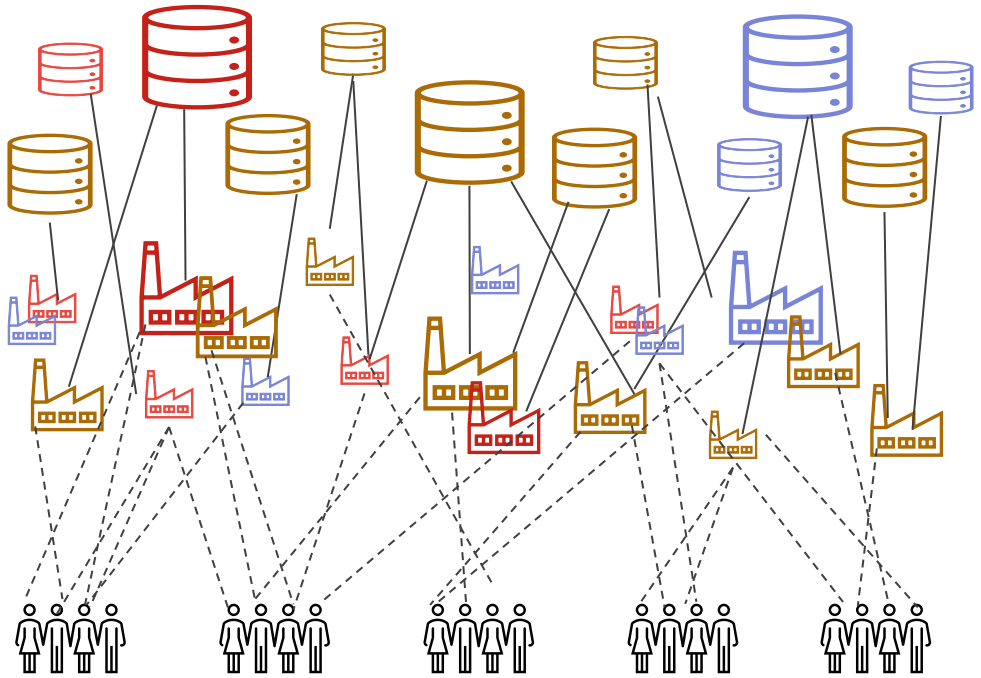
  - We have many 100s of data warehouses, distributed globally
  - Each is managed individually, leading to differences in what data is available, its quality, timeliness, etc.



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- Incrementally evolving data architecture
  - We have many 100s of data warehouses, distributed globally
  - Each is managed individually, leading to differences in what data is available, its quality, timeliness, etc.
- **Legal and jurisdictional data compliance**
  - High governed and manual data sharing approach

Desired Outcomes: our Risk Management Goals

Simplified Access

Easy to use, self-service consumption of data for:

- Internal Risk Management
- Insights and Analysis
- Risk Model Development
- Regulatory Reporting

Compliance Assurance

Regardless of where the data is sourced from, returned data sets:

- Meet all legal and regulatory compliance requirements
- Are self-consistent when data is collected across multiple jurisdictions

Efficiency & Autonomy

The solution:

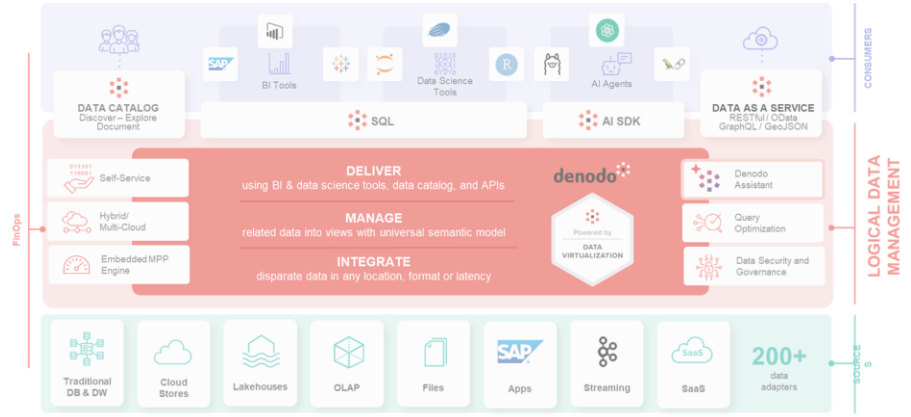
- Must be able to handle data requests of all sizes
- Must allow new data to be made available quickly
- Must continue to work, even as the underlying data architecture changes

Technology Approach – Focus on the Customer

- retained data requests using a SQL-style dialect, as customers are comfortable with this paradigm

- introduced a semantic data model, allowing customers to avoid needing to know data sourcing details

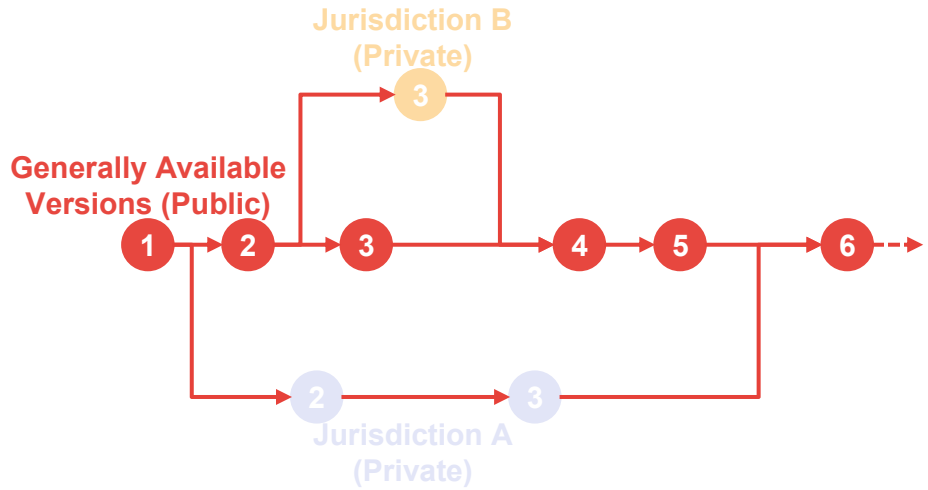
- maximised business **self-service for data definitions, controlling access to data**, and **ensuring data compliance**



Moving to Semantic Data Management

As requirements emerge and change, the data asset specifications must rapidly evolve to support them.

- We have introduced **versioning** of data assets, allowing incremental adoption of versions by each business process.
- We have created a **federated change model**, removing prioritisation backlogs.
- Data asset versions can be **private or public**, allowing localised changes to be used earlier.



Wrap Up

Bank is moving **away from data consumption based on direct data sourcing**,

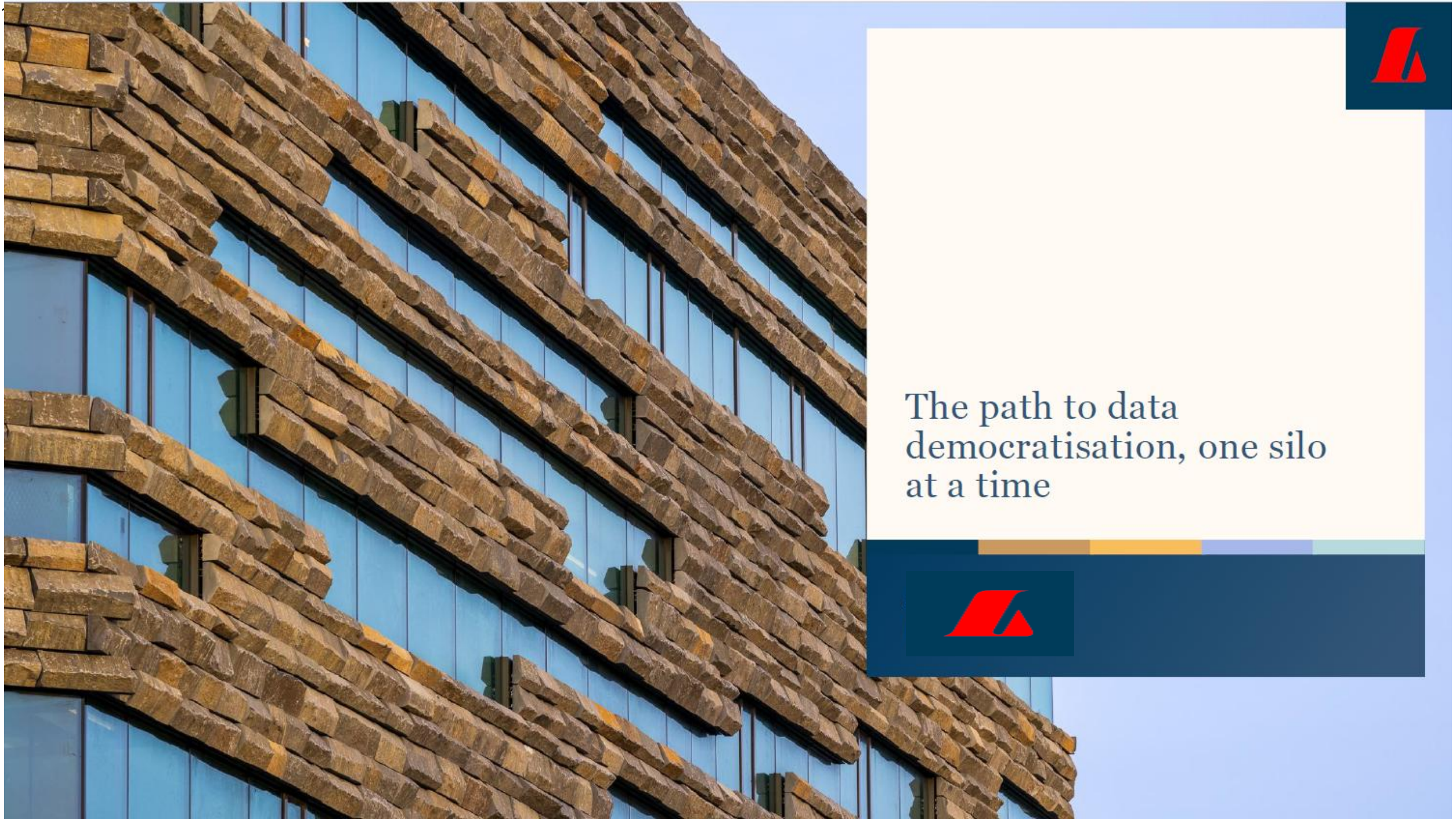
based on physical access and point to point data flows,

to a semantic data paradigm where **knowledge of the underlying data architecture is not required**.

Data virtualisation over big data platforms plays a fundamental role in making this possible.

Outcomes :

- ✓ **Faster, better and more consistent insights and decision making**
- ✓ **Model development is based on the same data used for our internal and regulatory reporting**
- ✓ **An evolutionary yet controlled approach to data management**
- ✓ **New flexibility for our Technology to change the underlying data architecture without impacting production processes**



The path to data democratisation, one silo at a time

Client Challenge and Logical Solution

Largest Financial Institution in this country (Founded 2008).

- Owned 98.2% by the State Treasury.
- Holds **40% of retail** and **32% of corporate** banking market share.

The Business Challenge: Data Fragmentation

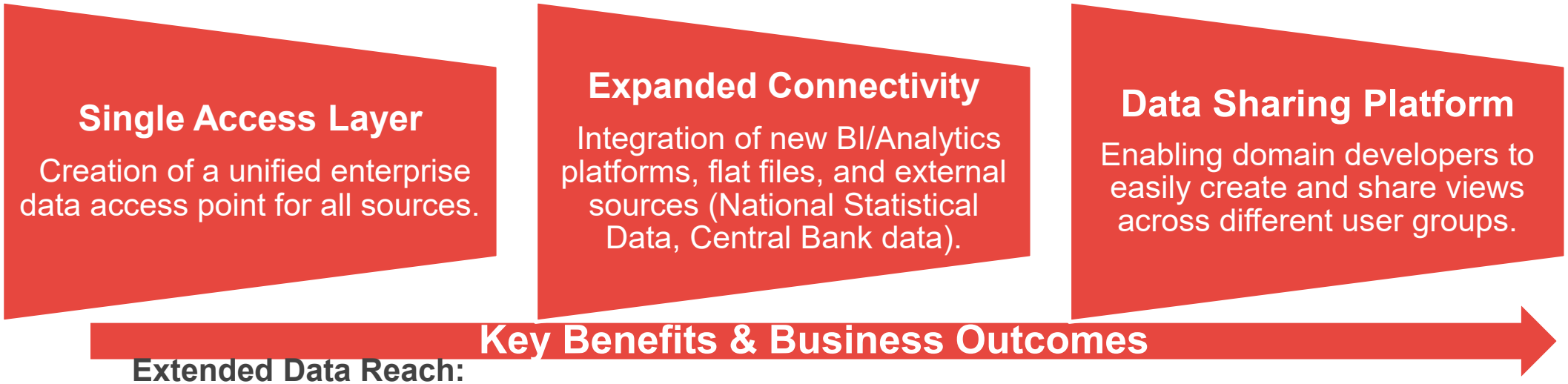
faced critical operational bottlenecks due to a sprawling data infrastructure:

- **45+ Siloed Data Sources:** Including Oracle, SQL Server, flat files, and external APIs.
- **Scattered Logic & Lineage:** Business rules were fragmented across the landscape, making data lineage and reliability difficult to ascertain.
- **Restrictive Access:** Column- and database-level security controls hampered essential data access for risk and KPI reporting.

The Goal:

Accelerate BI and operational reporting by consolidating all business rules and security protocols into a single, cost-effective, and technology-agnostic integration solution.

Implementation and Tangible Benefits



Key Benefits & Business Outcomes

Extended Data Reach:

- Achieved **80% user adoption** across the organization, enabling non-technical users to make informed decisions.

Time & Resource Savings:

- Gained **significant improvement** in time and resources required for operational and traditional BI reporting.

Centralized Governance:

- Data security was revamped in a **central global repository** using row-level restrictions and corporate directories.

Real-Time Capabilities:

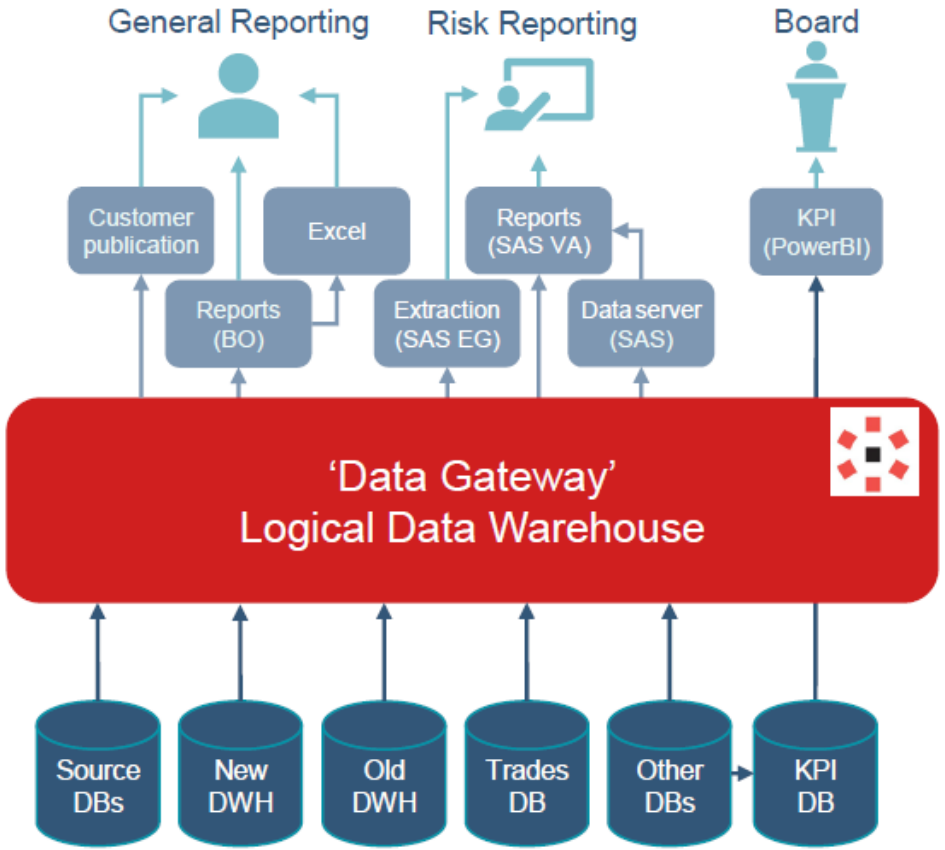
- Enabled the use of **live data** for crucial strategic decisions, including self-service loans, marketing campaigns, and **self-service analytics** (e.g., COVID-19 crisis dashboards for the Board).

Self-Service:

- Built a self-service platform using **Tableau** and the **Denodo Data Catalogue** to empower ad-hoc data extraction and analysis.

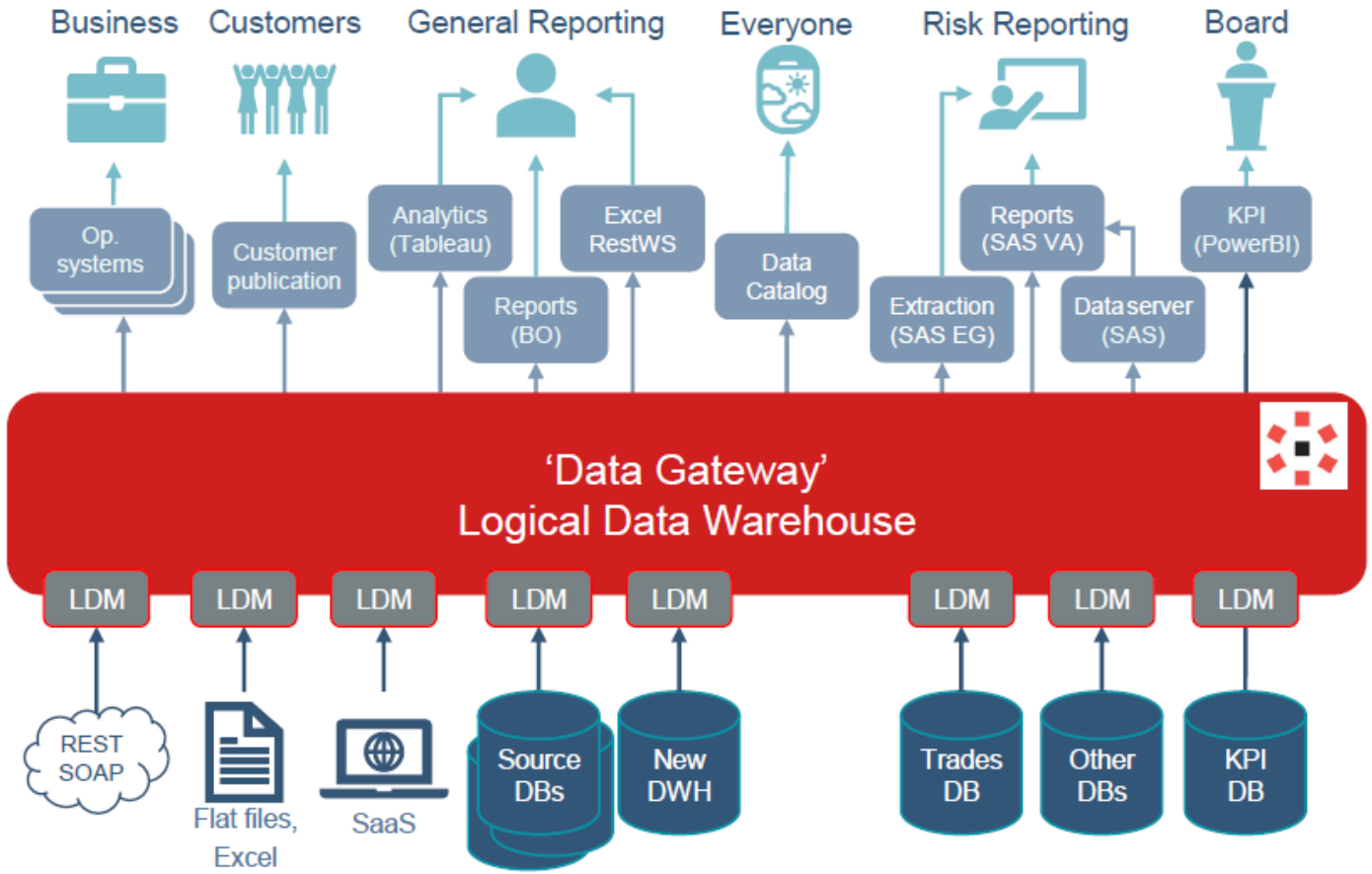
Breaking down silos with the Logical Data Warehouse

- Unique query point
  - “All I want is in the Logical Data Warehouse”
  - “It doesn’t matter what database I am on now!”
- Centralized business logic
  - “All the logic, common or not, is in LDW”
  - “I can know how the data is transformed”
- Concentrated access control
  - “I only connect to LDW now”
  - “The LDW is in charge of the data security”



DataMesh has conquered the bank

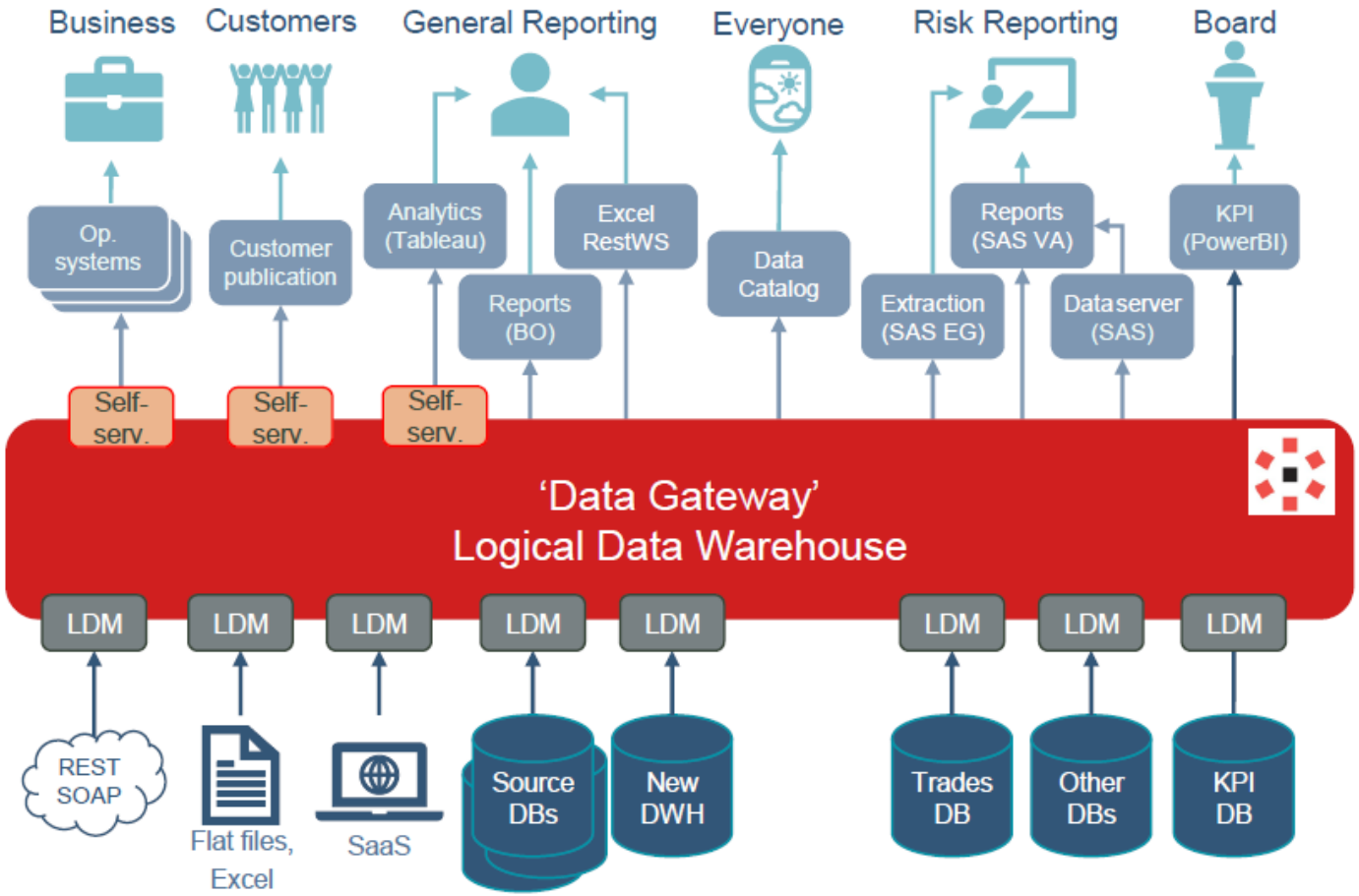
- Every source is a datamesh
  - Including Data Warehouse
  - Each new data entered with a data mesh
- Consolidation in the Data Gateway
  - Combination layer for mesh sources
  - Management of double usage
- Creation of history in sources
  - When possible, history is created in sources
  - Non-historical sources are physicalized



2017 2018 2019 2020 2021 2022 2023

Self-service for data consumers

- Data consumers create views
  - On top of the logical datawarehouse
  - Special training for business users
- Views are managed by consumers
  - Based on governed views (ldw)
  - Each domain or team get their own Denodo DB
- Counterpart of the data mesh
  - Logic is pushed down from consumers
  - Clearer view of all the data pipeline



2017 2018 2019 2020 2021 2022 2023 **2024**

Business Value

15%
fewer ETL jobs
by connecting directly to sources

35%
YoY increase in Data Catalog usage

85%
of the bank's employees have consumed data from Denodo in the past 12 months

75%
faster delivery of new data

From months to sometimes hours

23
sources of data
relational or not, API, cloud and on-prem

Data Catalog a
"WOW"
moment for our stakeholders

12
business domains with self-service access to data

16
op. systems get data from Denodo

12.500
queries daily

2.500
query points
7.000 views total

4. Spotkania praktyków #DataIntelligence

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