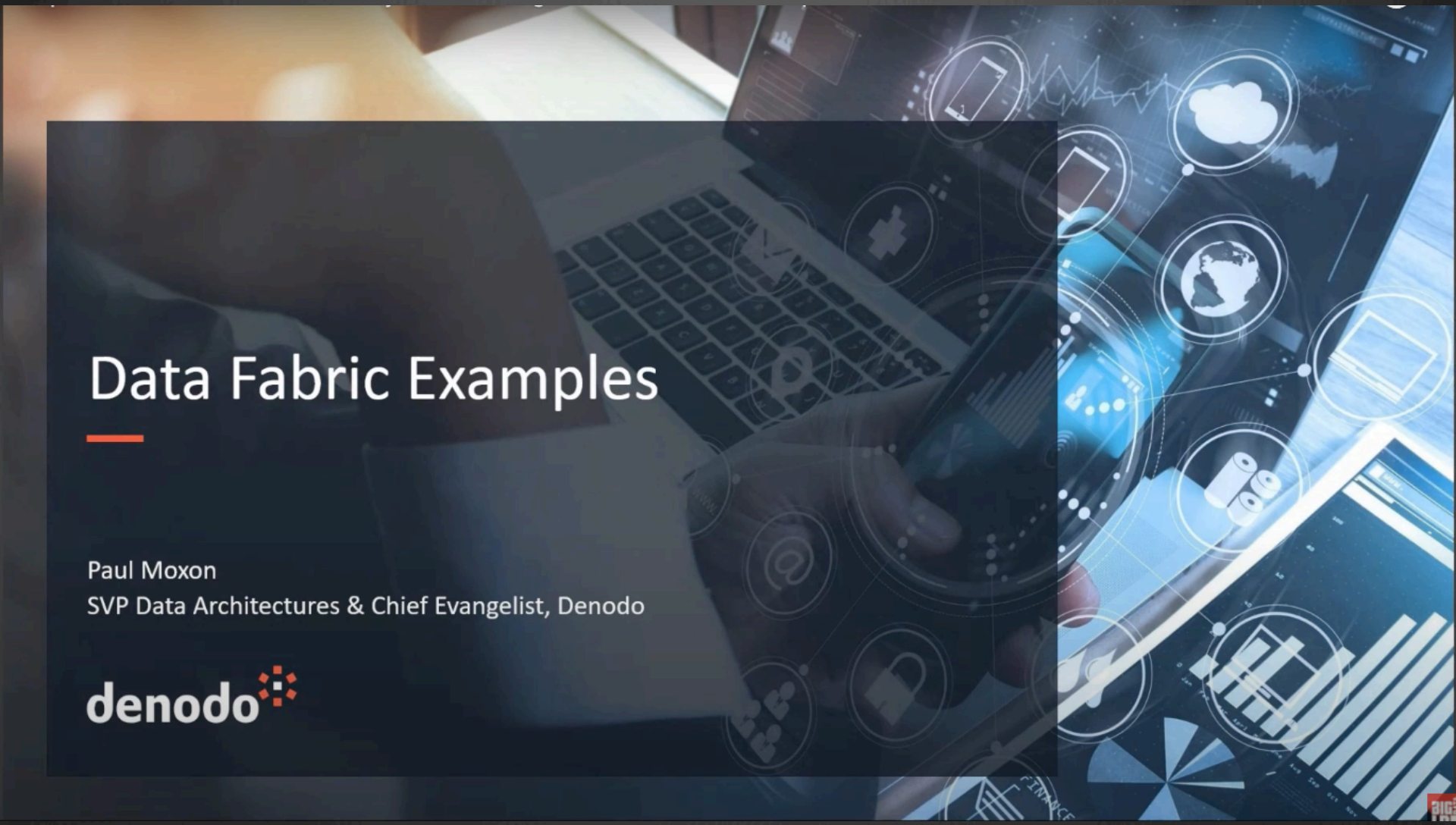

Data Fabric Examples

Paul Moxon
SVP Data Architectures & Chief Evangelist, Denodo

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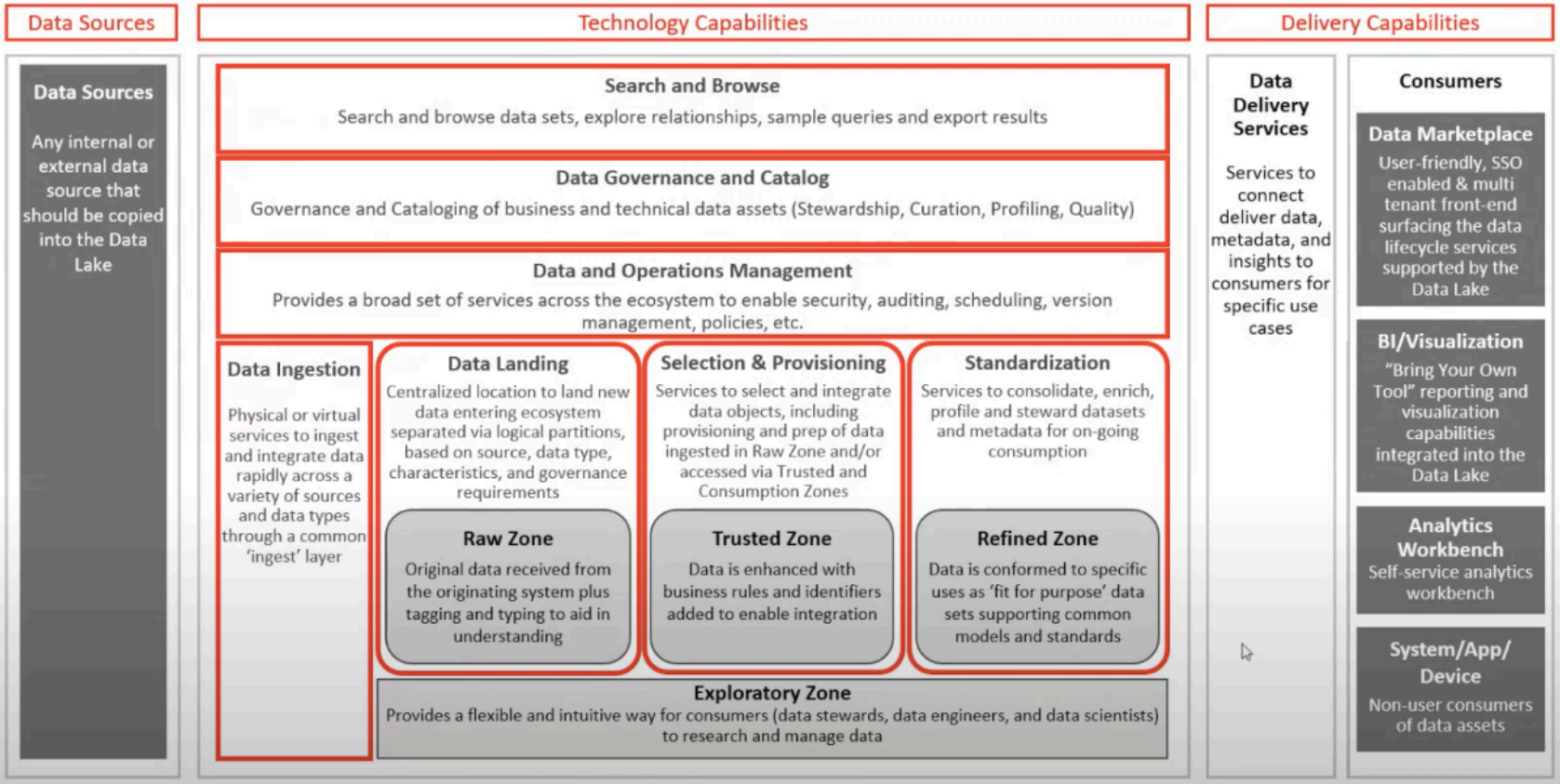
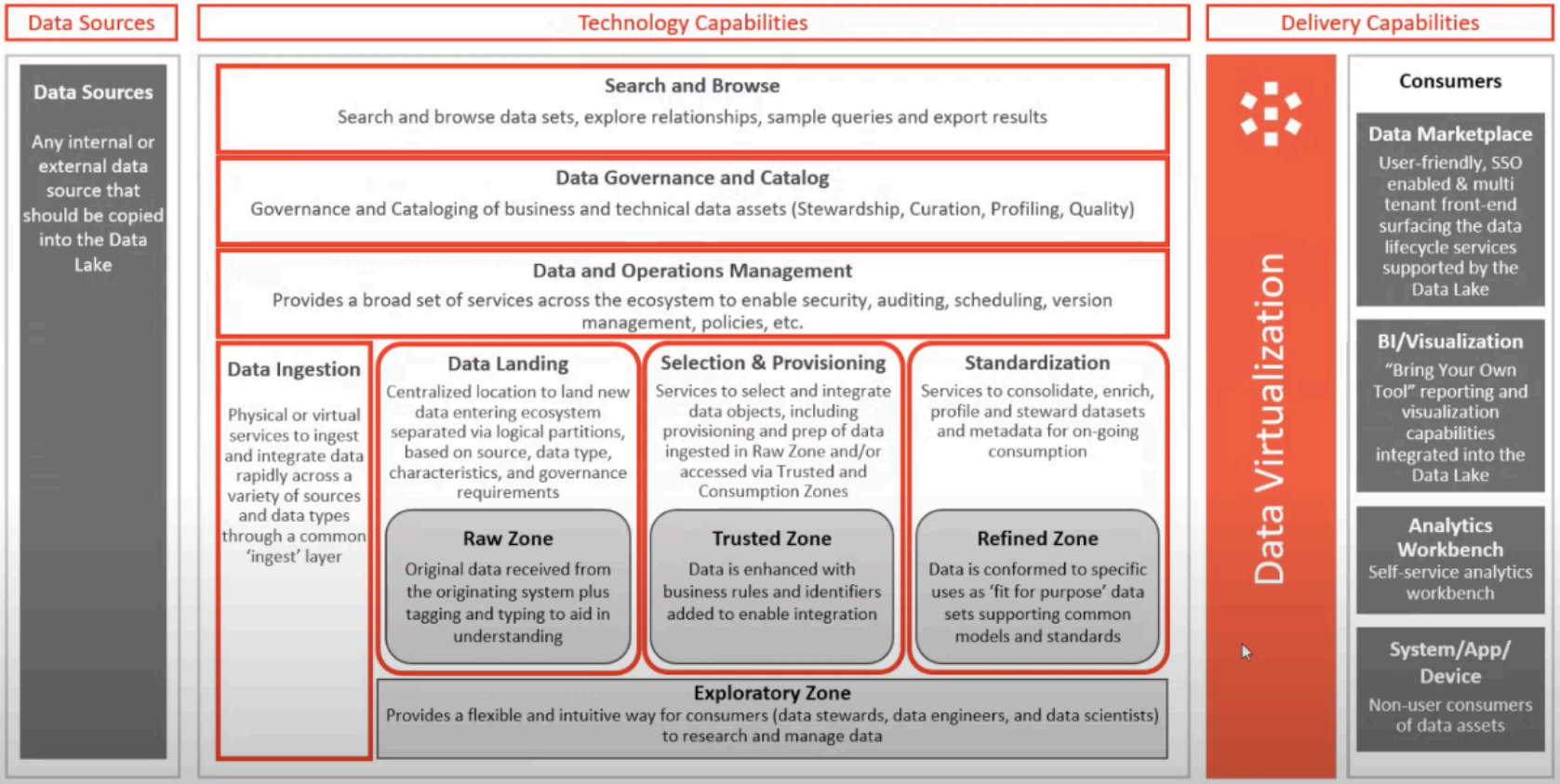
Use Cases

1. **Logical Data Lake**
2. Logical Data Warehouse
3. Governed Self-Service

Data Lake Reference Architecture



Data Lake Reference Architecture



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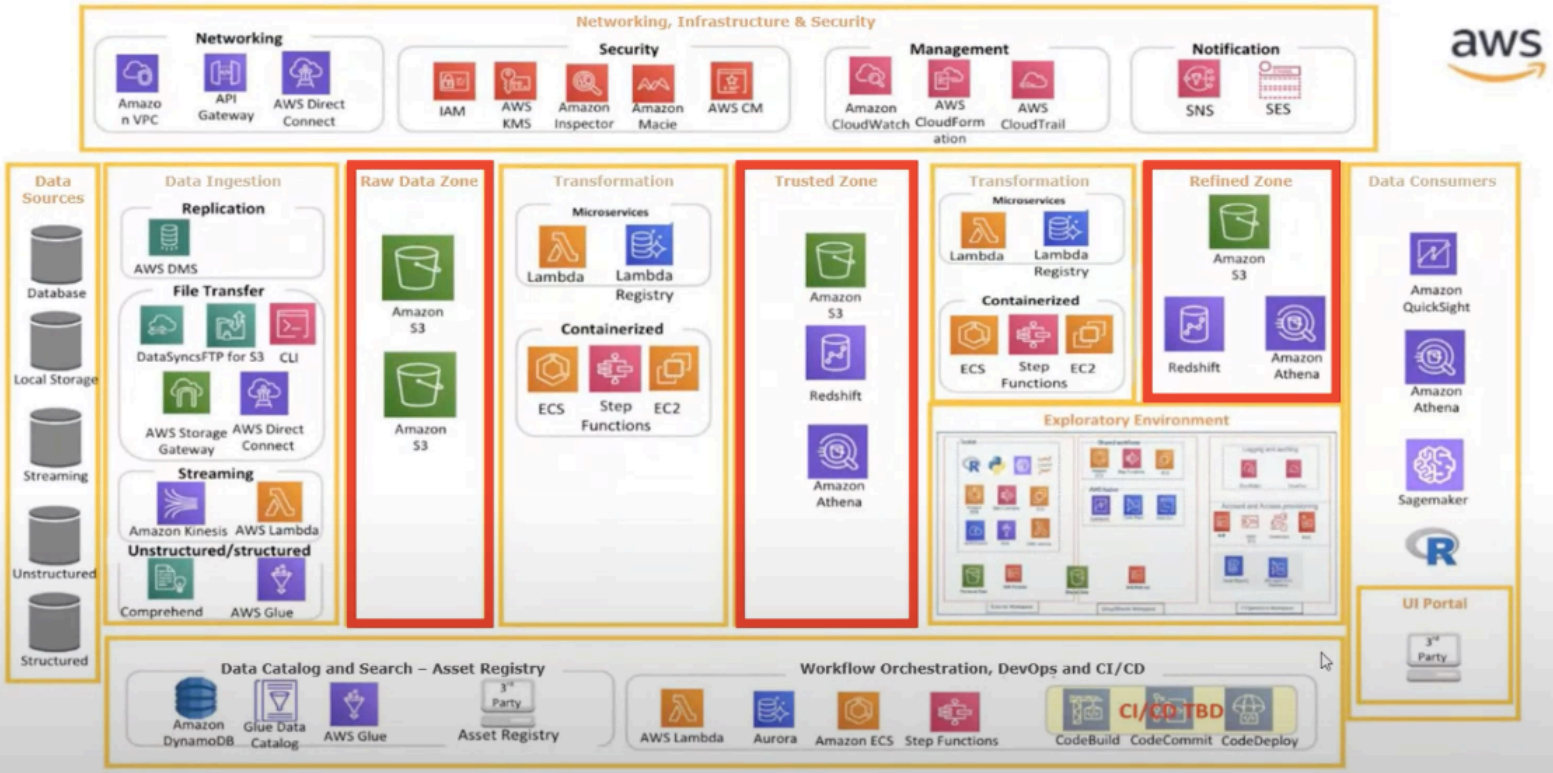
Data Lake Example



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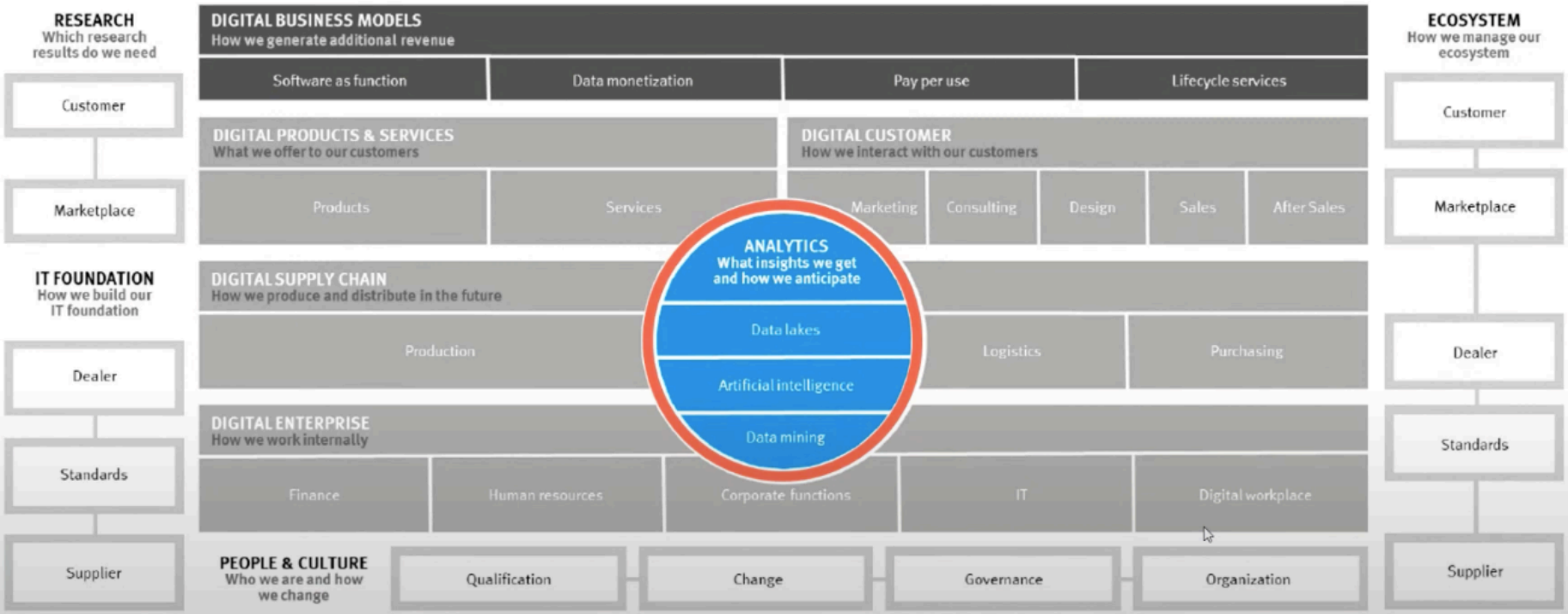
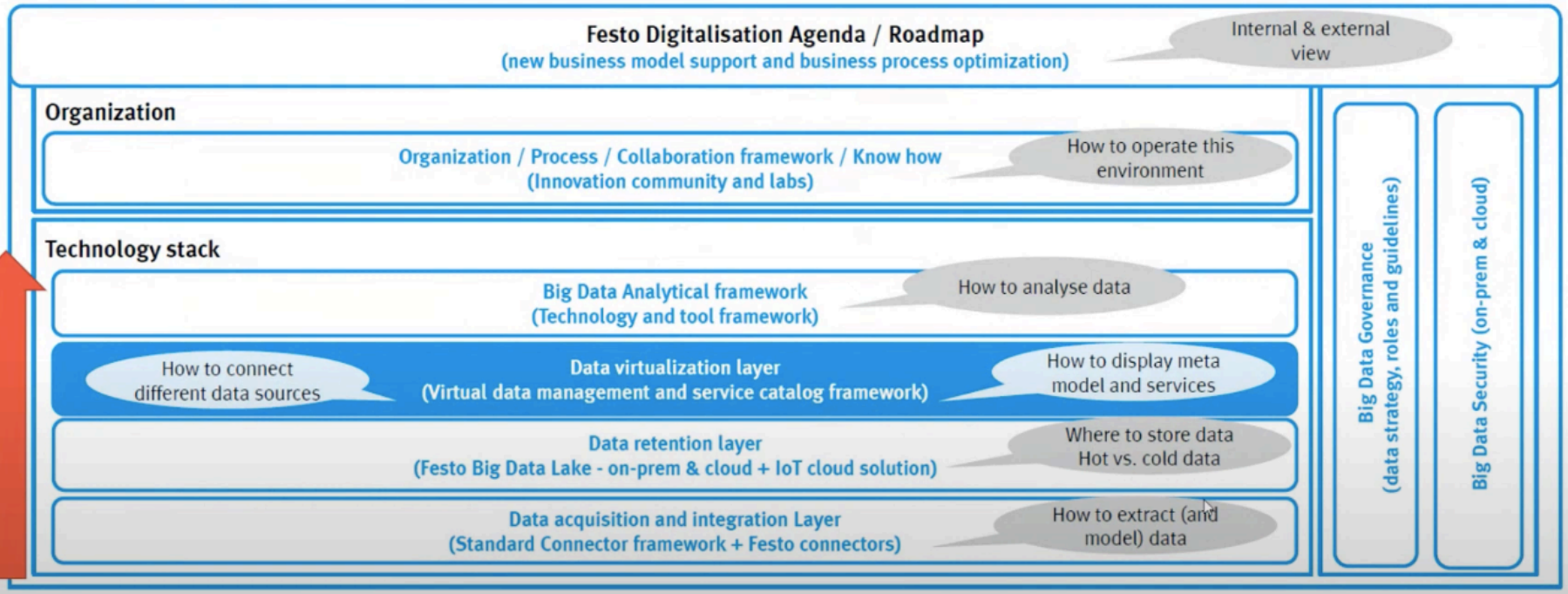
FESTO – Digital Transformation Journey

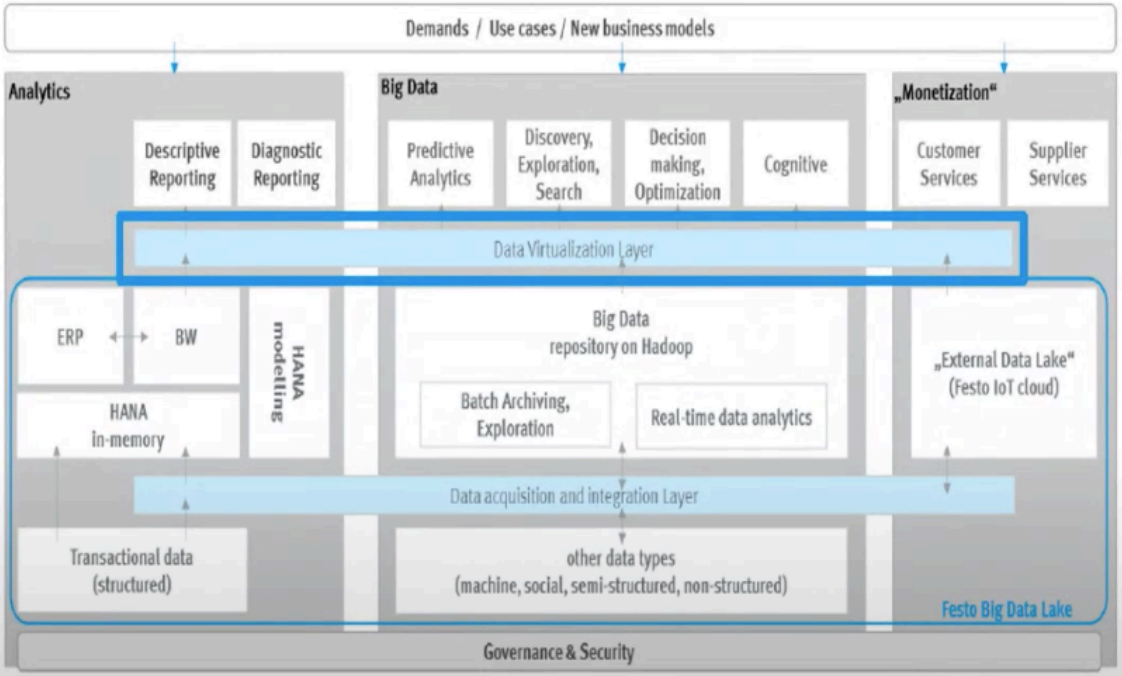


FESTO – Digital Transformation – Data Framework

Big data analytics framework - building blocks



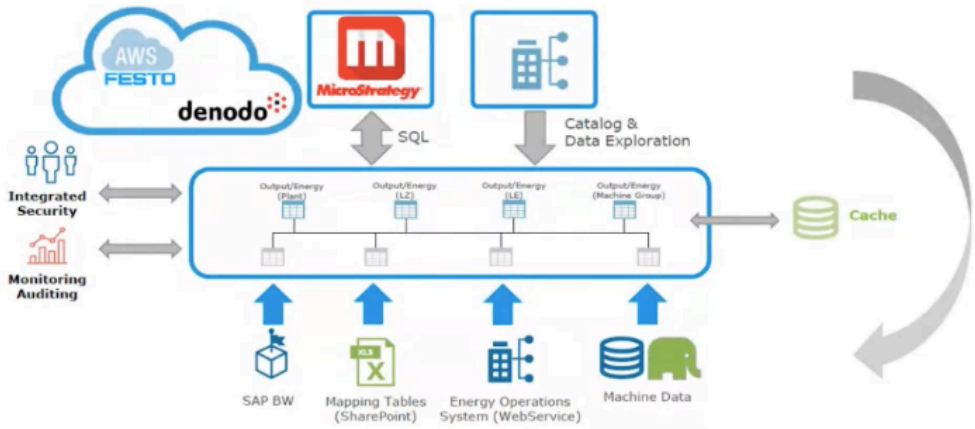
FESTO – Data Architecture



Data virtualization layer as central component in Analytics and Big Data Architecture:

- Handling of **growing amount of data sources and consumers** and its release dependencies
- **Source agnostic, single endpoint** for data consumption
- **Agility and flexibility** in data modelling by **virtual combination** of data from different sources without classical ETL and DWH usage
- **Operationalization** of suitable (e.g. Big Data) use cases
- Support of **changing sources** (e.g.cloud transformation)
- Enabling **business** to **create own data models** (self-service capabilities) with central governance

Pilot Use Case – Energy Transparency System 2.0



Green Cockpit for visualization of energy KPIs for plant, LZ, LE and machine level

- Appropriate time box of one week
- **Clear scope** of pilot and **achievable** in sprint
- **Technical preparation** is crucial
- **Interdisciplinary project team** is crucial
- Usage of creative working areas
- **Agile** working approach
- **External partner onsite**
- High flexibility given by **Denodo** to support **agile development**
- Fast identification of problems

Second Project – Digital Shopfloor Management

Digital Shopfloor Management

Daily and shift-accurate production key figures

- Visualization of the relevant key figures for the daily "live" control center meeting
  - output quantities
  - rework and scrap rates
  - stock levels and ranges
  - forecasts
  - productivity
  - backlog and delivery reliability

- Reduces the administrative effort by approx. 1h per day for each service unit
- Handwritten notes are eliminated

Use Cases

1. Logical Data Lake
2. **Logical Data Warehouse**
3. Governed Self-Service

Logical Data Warehouse – U.S. Telecoms Provider

- Vision:

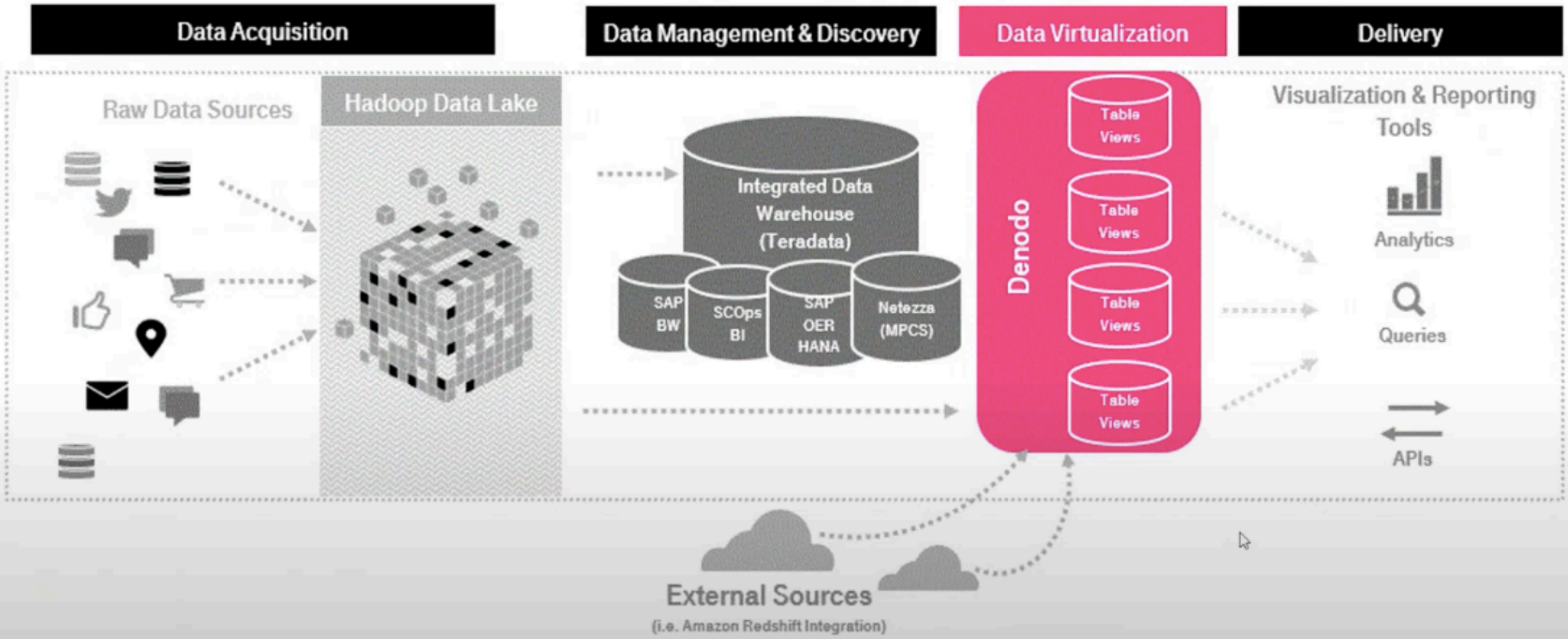
  The Integrated Data Warehouse (IDW) is a scalable BI platform that can adapt to the speed of the business by providing relevant, accessible, timely, connected, and accurate data

More Data	The Data Lake and IDW is purposely built to consume more data at scale
Speed	Data latency will be measured in hours rather than in days
Quality	Data will be consistent, accurate, and owned by the business through stronger governance
Integrated	Users can perform cross functional analysis through integrated data sets
Security	Platform will be compliant to PII and PCI security protocols
Accessible	A simple way for users to access the underlying integrated data

Logical Data Warehouse (Cont'd)

- The primary components of IDW Architecture are:
  - **Data Ingestion**: Batch and Real-Time data ingestion.
  - **Data Systems**: Comprising of several databases, Teradata and Hadoop. Data ingested from sources lands here and dispatched to consumers after required preparation steps.
  - **Data Abstraction**: transparent access to the data persisted in Hadoop and Teradata systems to the users. The users will have the ability to mix and merge the data in underlying data persistence systems using Data Abstraction Layer. The Data Abstraction Layer is implemented using Denodo Data Virtualization.
  - **Data Consumption**: Analytical Reporting in IDW, Self-Service BI, Real-Time Dashboards, Analytical Ad hoc Queries, Advanced Analytics and Sandboxes, Data Application Systems.

Logical Data Warehouse (Cont'd)



Use Cases

1. Logical Data Lake
2. Logical Data Warehouse
3. **Governed Self-Service**

The Challenge of Self-Service

Governance ⟷ Self-Service

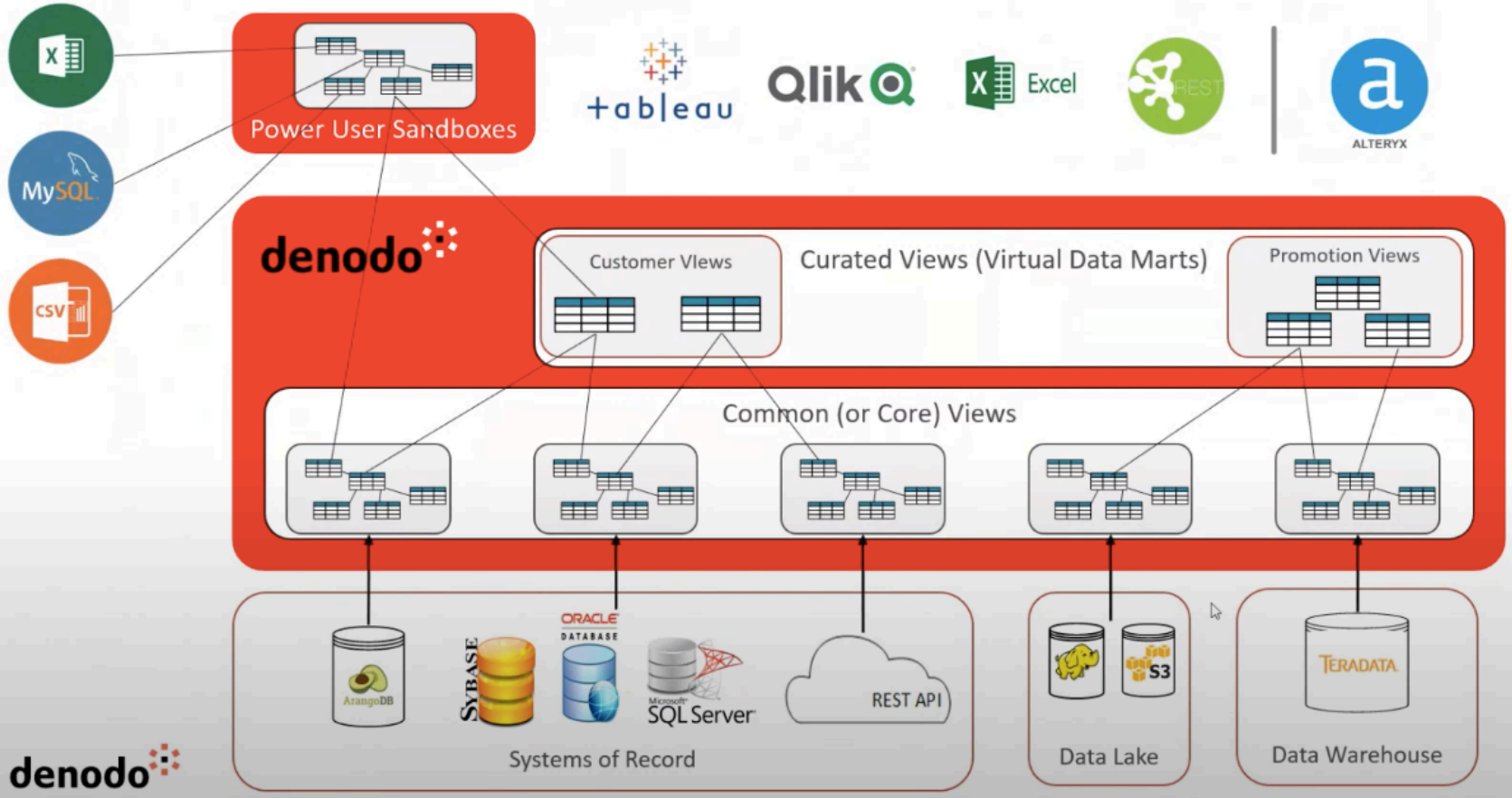
Standards ⟷ Speed

Architecture ⟷ Agility

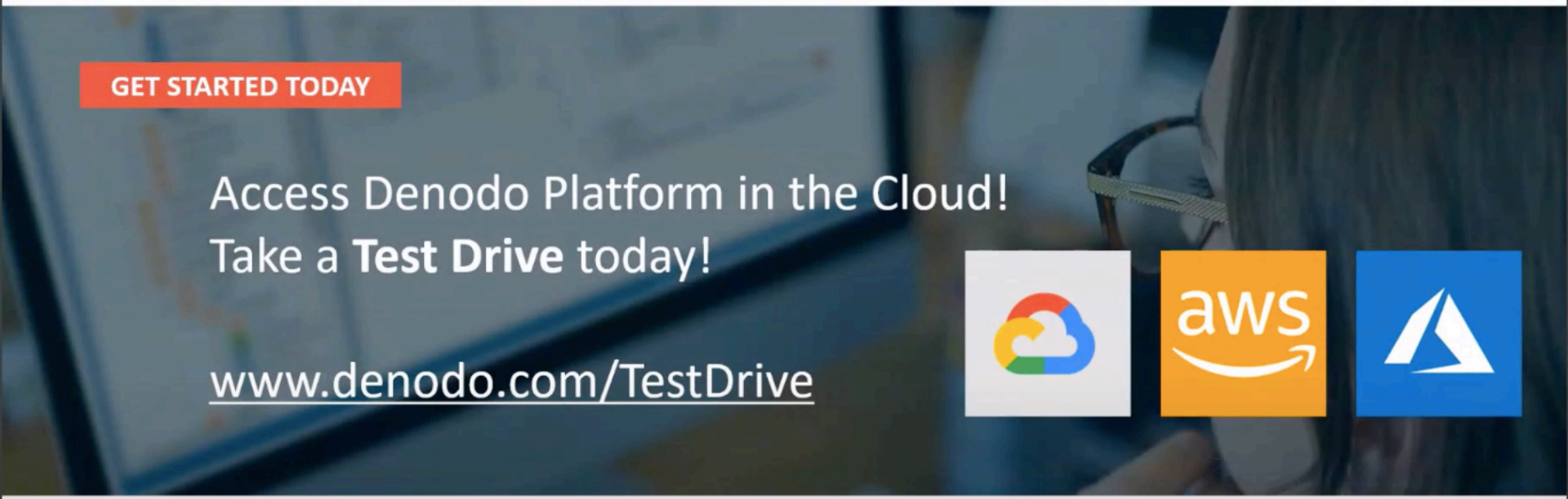
Operations ⟷ Innovation

Centralization ⟷ Decentralization

Governed Self-Service – Global Financial Organization



Next Steps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