The Guardian Life Insurance Company of America
New York, NY

Delivering Self-Service using Big Data and Data Virtualization on the Cloud

About Guardian

158-year-old mutual company
2018 Fortune 239 Ranking

9,000 employees
Over 2,750 financial representatives and more than 55 agencies

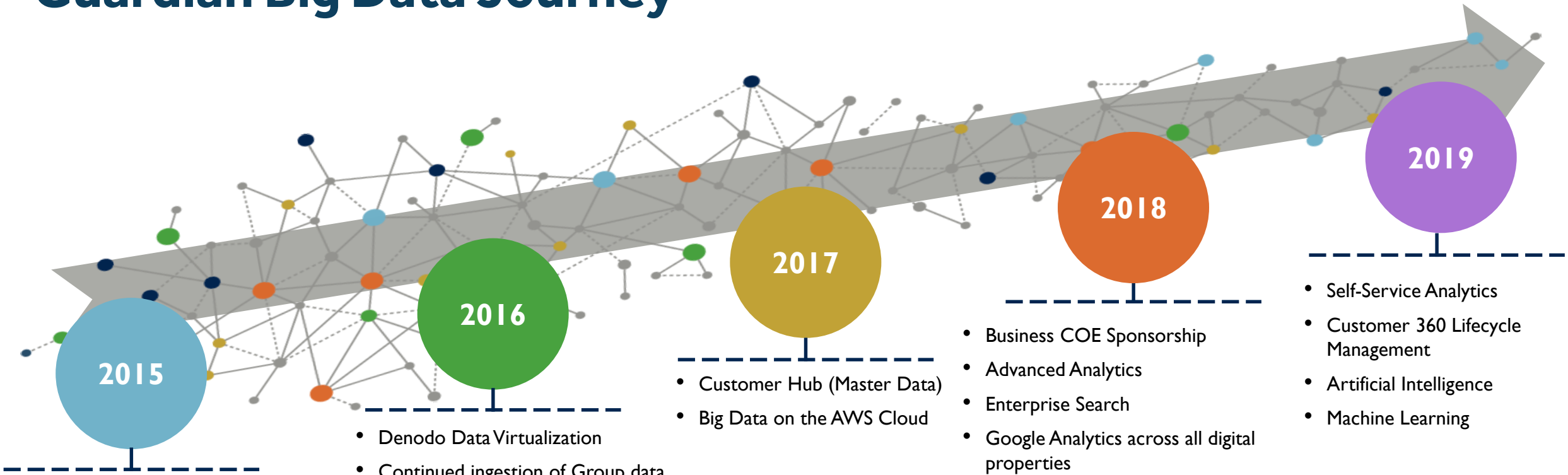
Annuities
Investment
Life Insurance
Dental Insurance
Employee Benefits
Disability Income Insurance

For more information, visit Guardian's website:
www.GuardianLife.com

History Lesson

No Enterprise Data

Guardian Big Data Journey



- Launched Big Data Platform
- Guardian Data Council Established
- Built Enterprise Data Marketplace
- Ingested Group data
- LOB Data Summits
- Initiated Advanced Analytics Primers

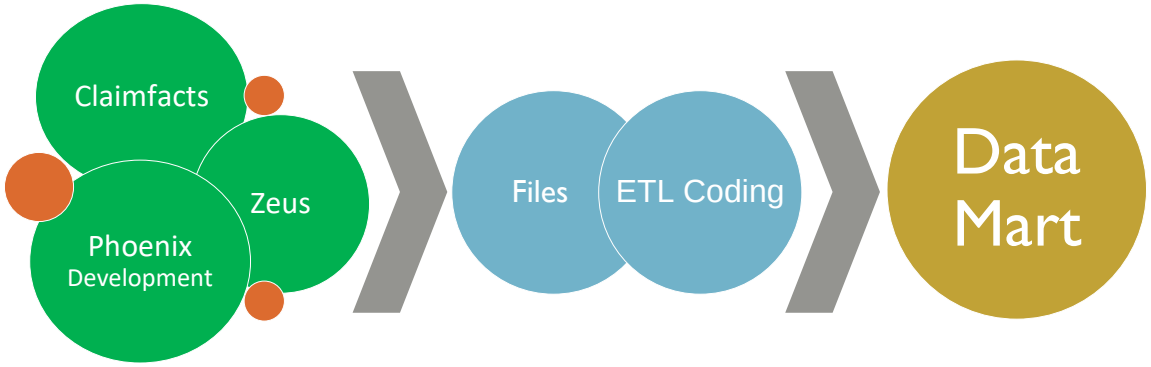
- Denodo Data Virtualization
- Continued ingestion of Group data
- Claim Predictability and Claims Termination Advanced Analytics
- Client Profiling & Segmentation
- Started ingesting IM data

- Customer Hub (Master Data)
- Big Data on the AWS Cloud

- Business COE Sponsorship
- Advanced Analytics
- Enterprise Search
- Google Analytics across all digital properties
- Prototyping Artificial Intelligence
- Prototyping Machine Learning

- Self-Service Analytics
- Customer 360 Lifecycle Management
- Artificial Intelligence
- Machine Learning

Reduce Project Costs and Improve Speed to Market



LEGACY PROCESS

Adding a new touchpoint (from the mainframe) creates

- significant development and testing work.
- increased mainframe footprint and demand for MIPS
- Cost Avoidance for the future
- additional project complexity, entailing coordination across multiple teams
- demand for resources doing legacy (COBOL) programming

DATA LAKE PROCESS

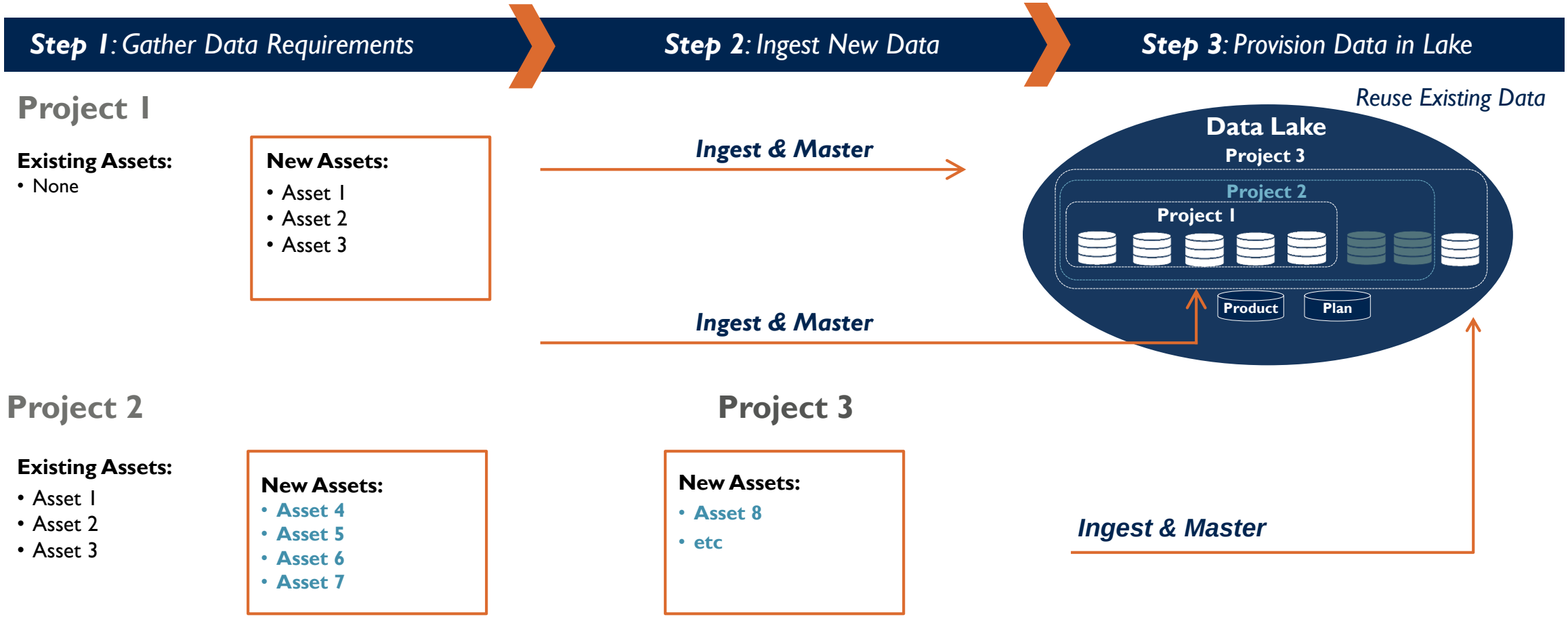
Data Lake Development includes ETL coding

- Data Lake team collects requirements
- Data Mart sits in the Data Lake without the need to move data out

Optimizing Data Consumption

Maximizing Reuse in the Data Lake

- Data assets in the Lake will grow as new projects are initiated
  - New projects will reuse and build upon existing assets, and bring in new data assets to fill in any gaps



Four Stages of Building and Integrating Data Lakes

Stage 1
Landing zone for raw data

Data lake is a low-cost, scalable, "pure capture" environment

- Data lake is built separate from core IT systems
- Data are stored in raw formats
- Internal data can be easily complemented with or enriched by external sources of data

Stage 2
Data science environment

Data lake is actively used as a platform for experiments

- Data lake becomes a test-and-learn environment
- Data scientists analyze unaltered data and build prototypes for analytics programs
- IT organization deploys "just enough" data governance

Stage 3
Offload for data warehouse

Data lake is integrated with existing enterprise data warehouses (EDWs)

- High-intensity mass-extraction tasks remain in EDWs…
- …but large, more detailed sets of data are pushed to the data lake, in the process, easing storage and cost constraints
- Data lake can be used for "needle in a haystack" searches or other tasks that do not require traditional indexing

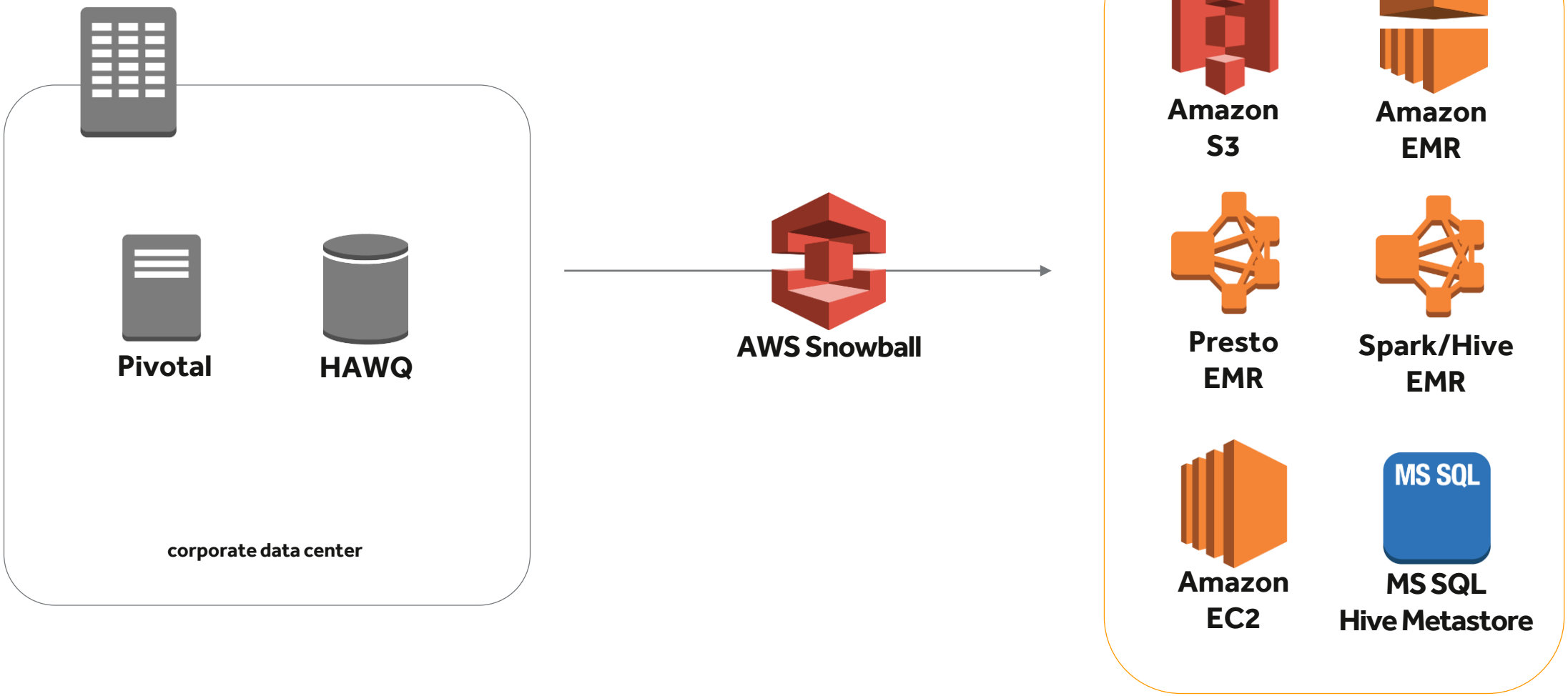
Stage 4
Critical component of data operations

Data lake is a core part of the data infrastructure

- Data lake can now replace operational data stores and enable "data-as-a-service" options
- Businesses can better handle computing-intensive tasks, such as machine-learning programs
- Data-intensive applications or application programming interfaces may be built on top of the data lake
- IT organization deploys "strong" data governance

Source: Hagstroem, M; Roggendorf, M; Saleh, T; Sharma, J. (2017); *McKinsey & Company – A smarter way to jump into data lakes;* https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/a-smarter-way-to-jump-into-data-lakes

Big Data Platforms

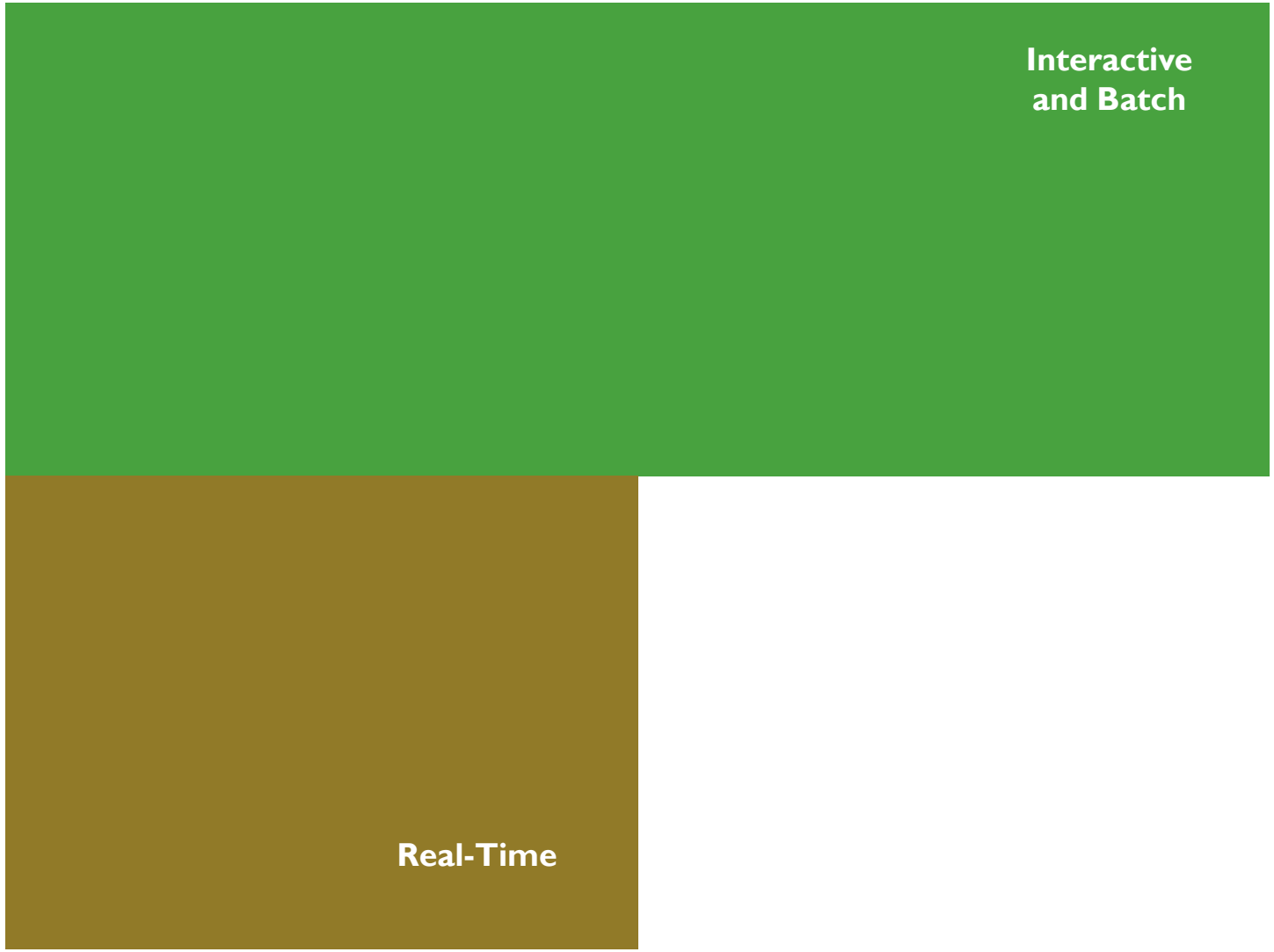


Data Lake Architectural Patterns

Process

Store

Data Lake Architectural Patterns

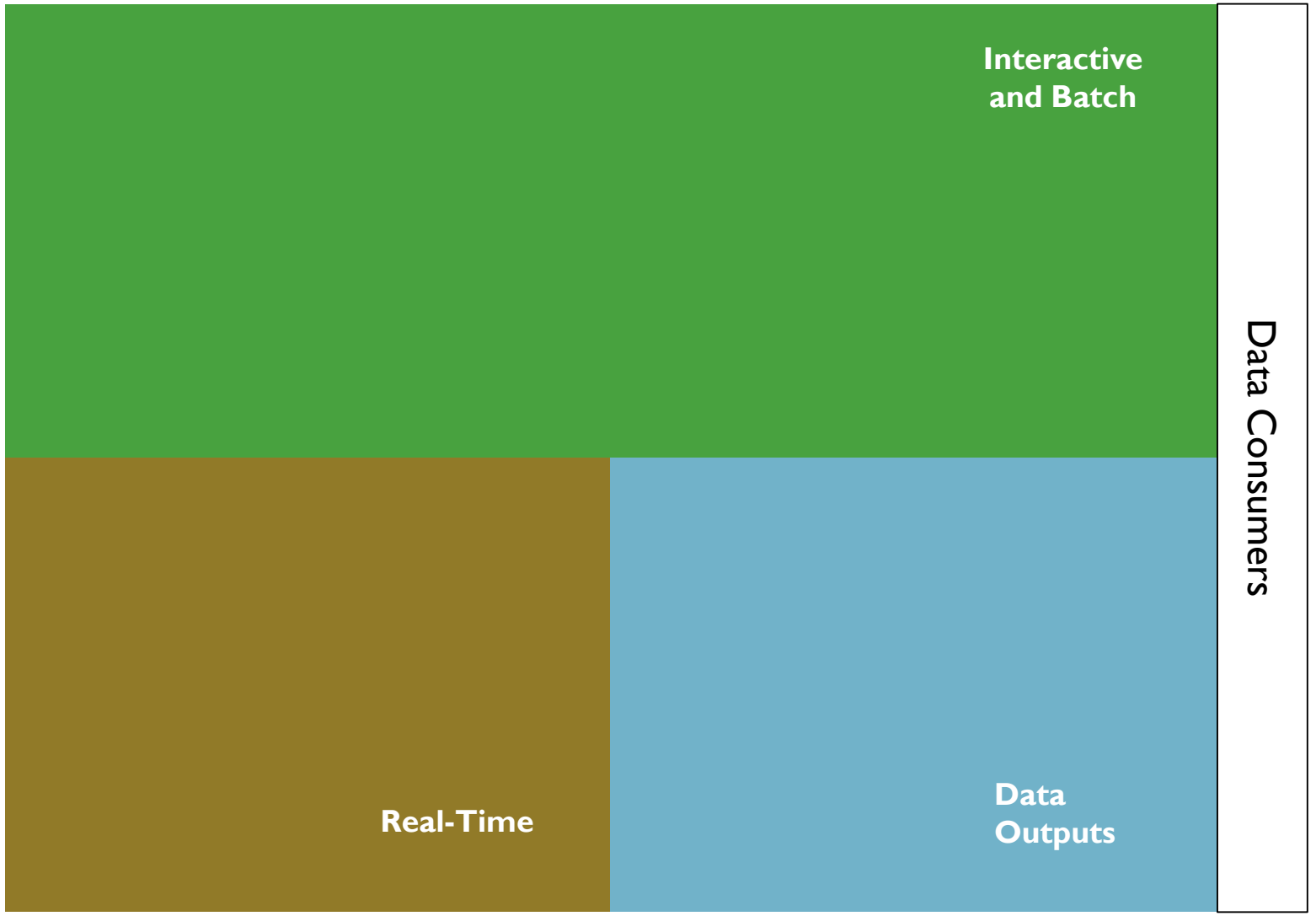


Process

Store

Guardian

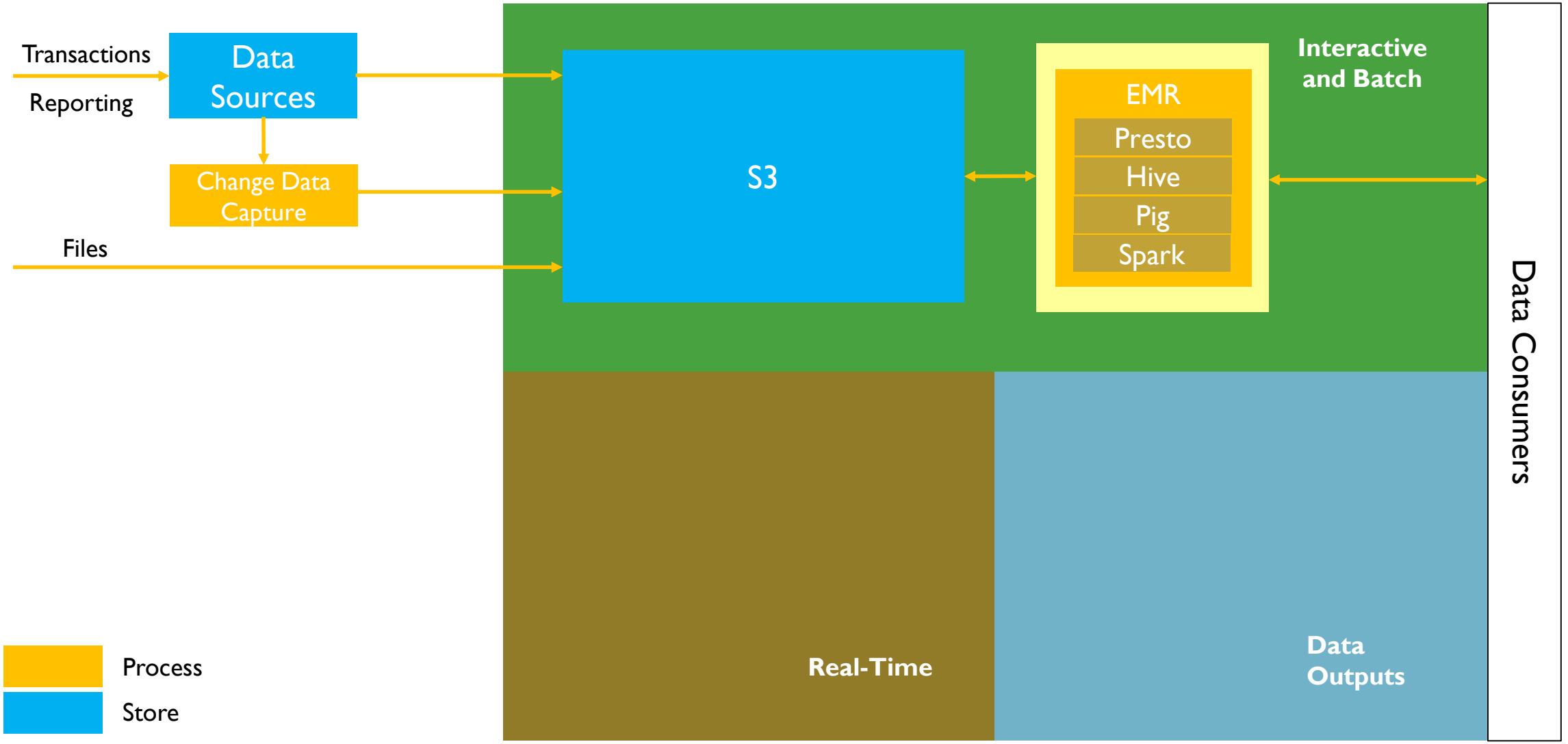
Data Lake Architectural Patterns



Process

Store

Data Lake Architectural Patterns



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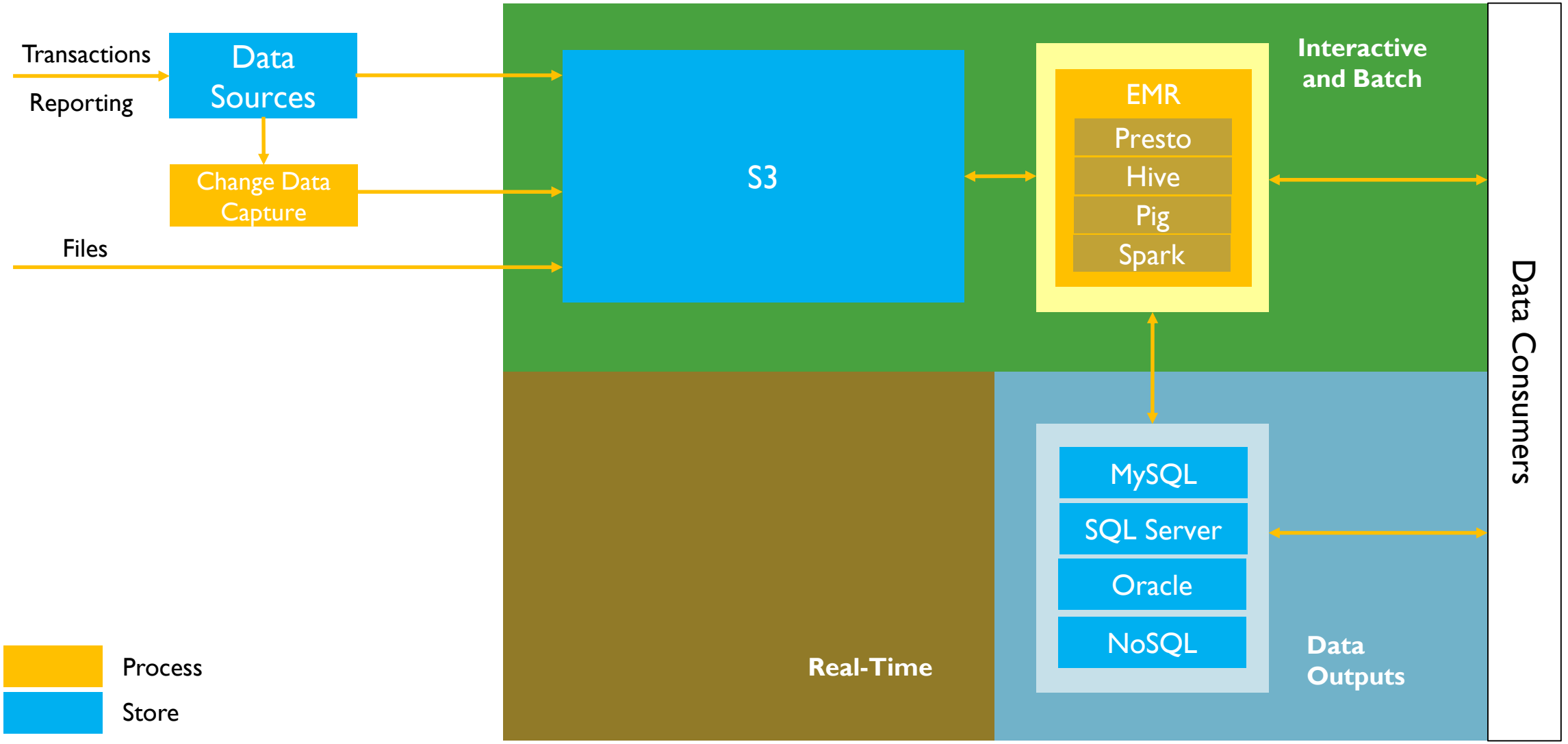
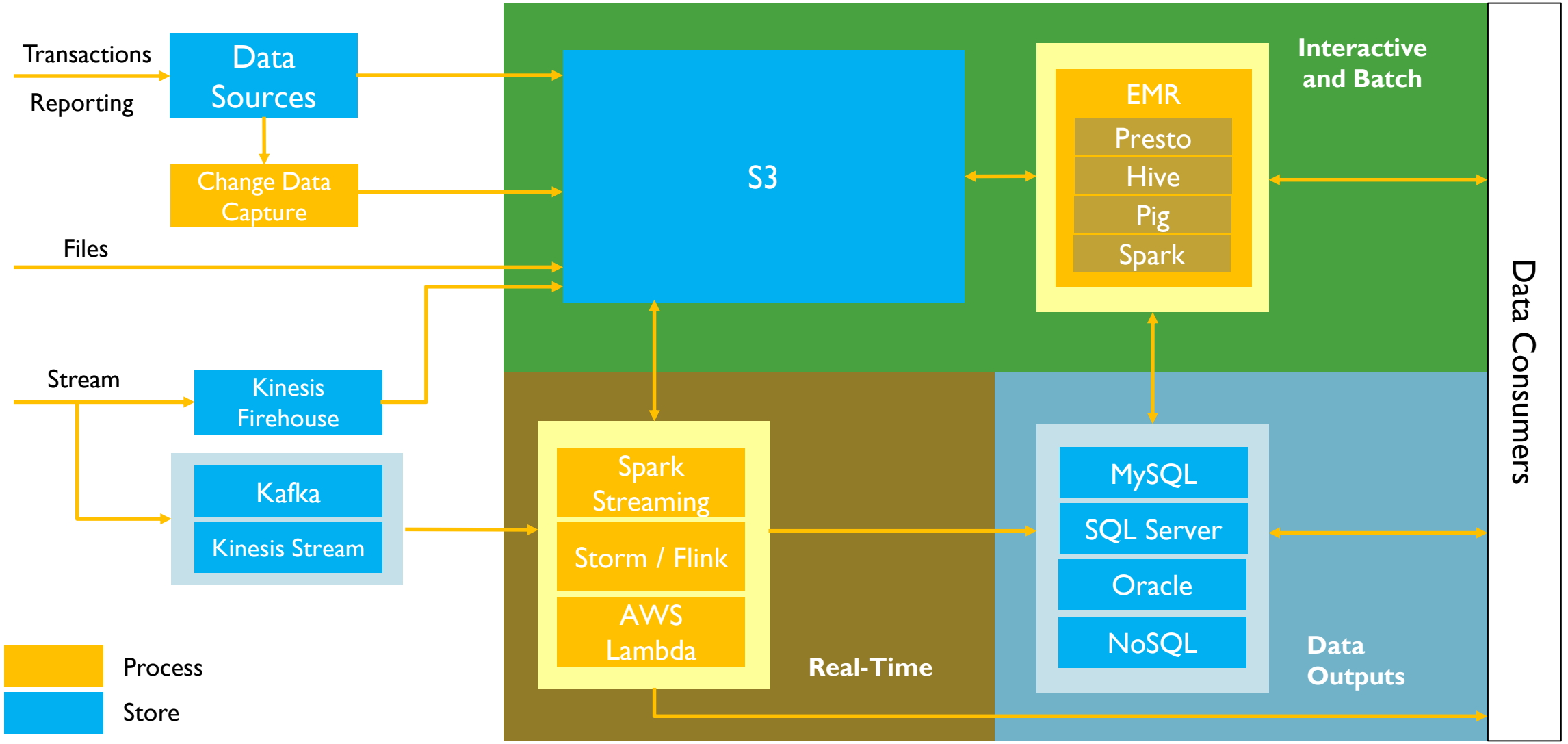
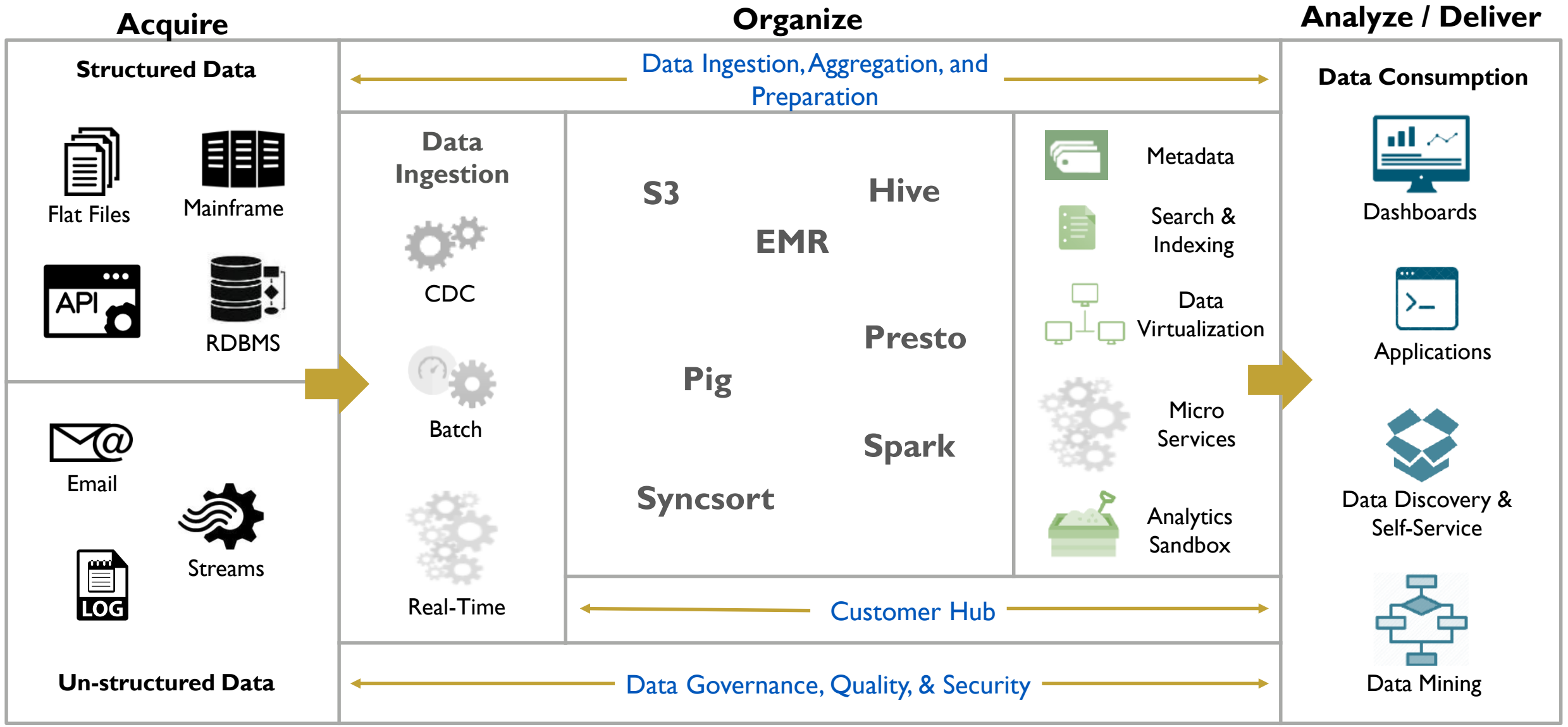


Data Lake Architectural Patterns



High-Level Data Lake Architecture



Guardian Data Virtualization

Current Use

- Enterprise Data Marketplace – operational and reporting use cases
- Use DV to provision data with the Data Lake and other data sources
- Use DV to enable self-service for BI (Tableau, Alteryx)
- Use DV to deliver On-Demand Reports

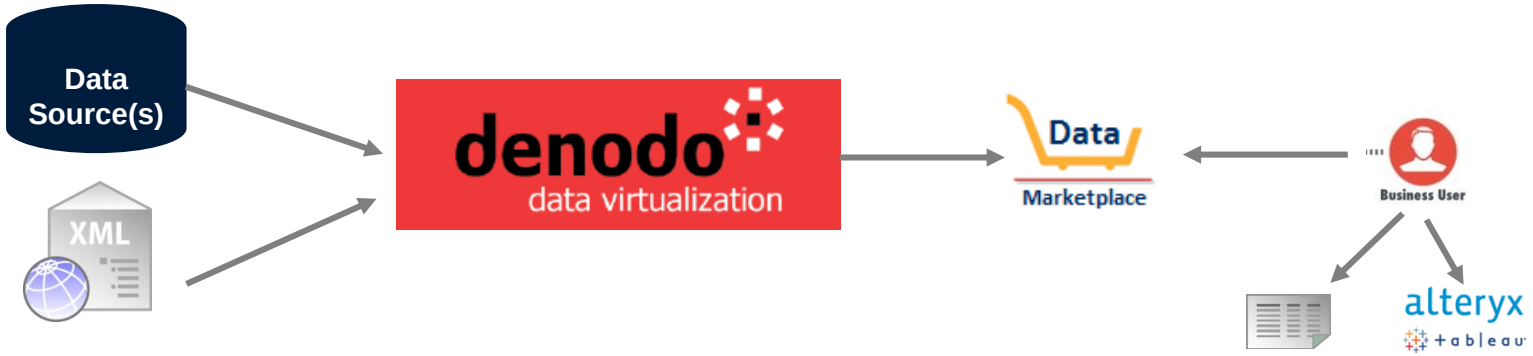
Business Value

- Enabled Data-as-a-Service
- Abstraction layer without affecting business users

Guardian DV Design Patterns

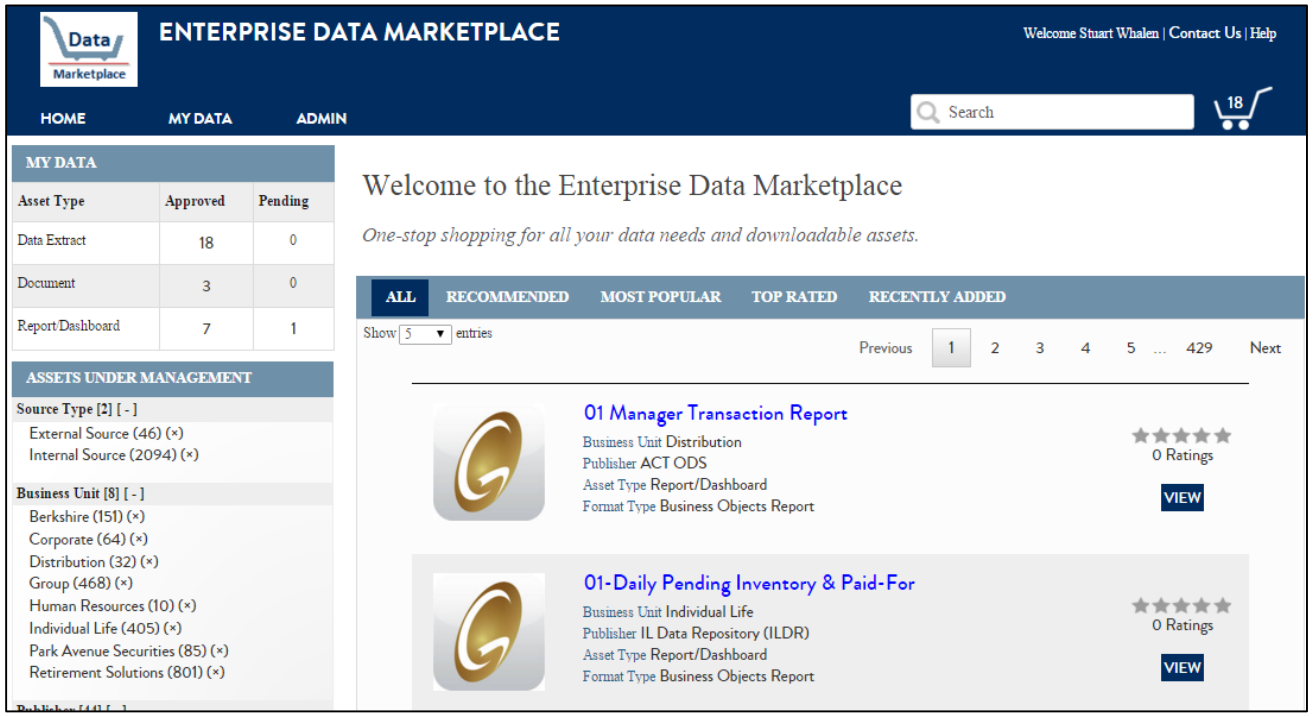
Business Reporting

- Download report extracts from the Marketplace
- Utilize Tableau and Alteryx connectors through the Marketplace



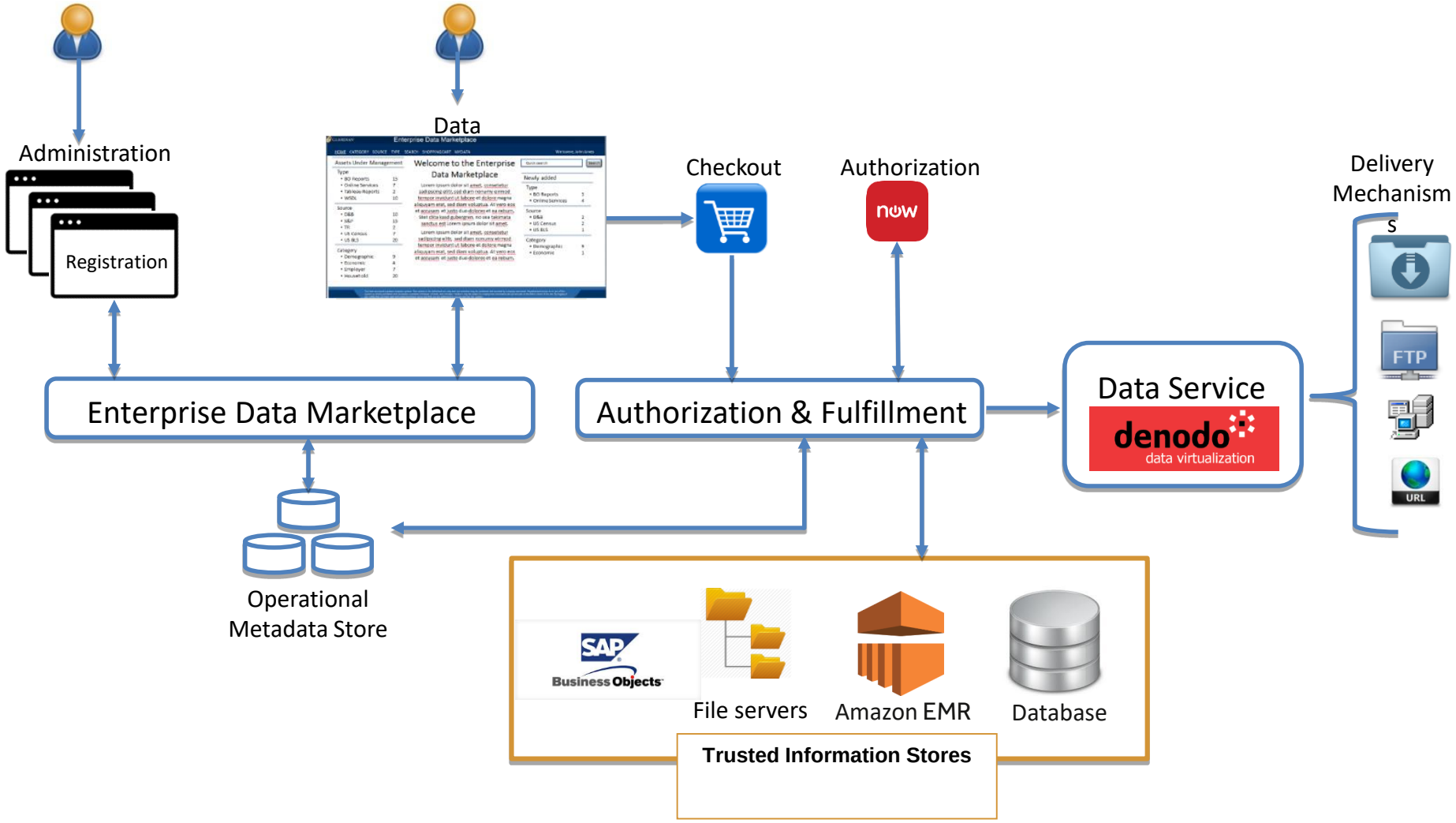
Enterprise Data Marketplace

- A centralized market place for all users to view standardized and approved internal/external data services, reports and connections
- Standard platform with common design patterns for all technology areas to follow
- Supports all data consumers, allowing them to search, request access to and utilize data assets within a centralized marketplace.
- Single hub for data asset meta data, usage tracking, audit, scheduling, delivery and entitlements management
- Abstracts data assets to:
  - Reduce app to app integration
  - Reduce dependencies on specific technologies
  - Removes redundant/inconsistent data

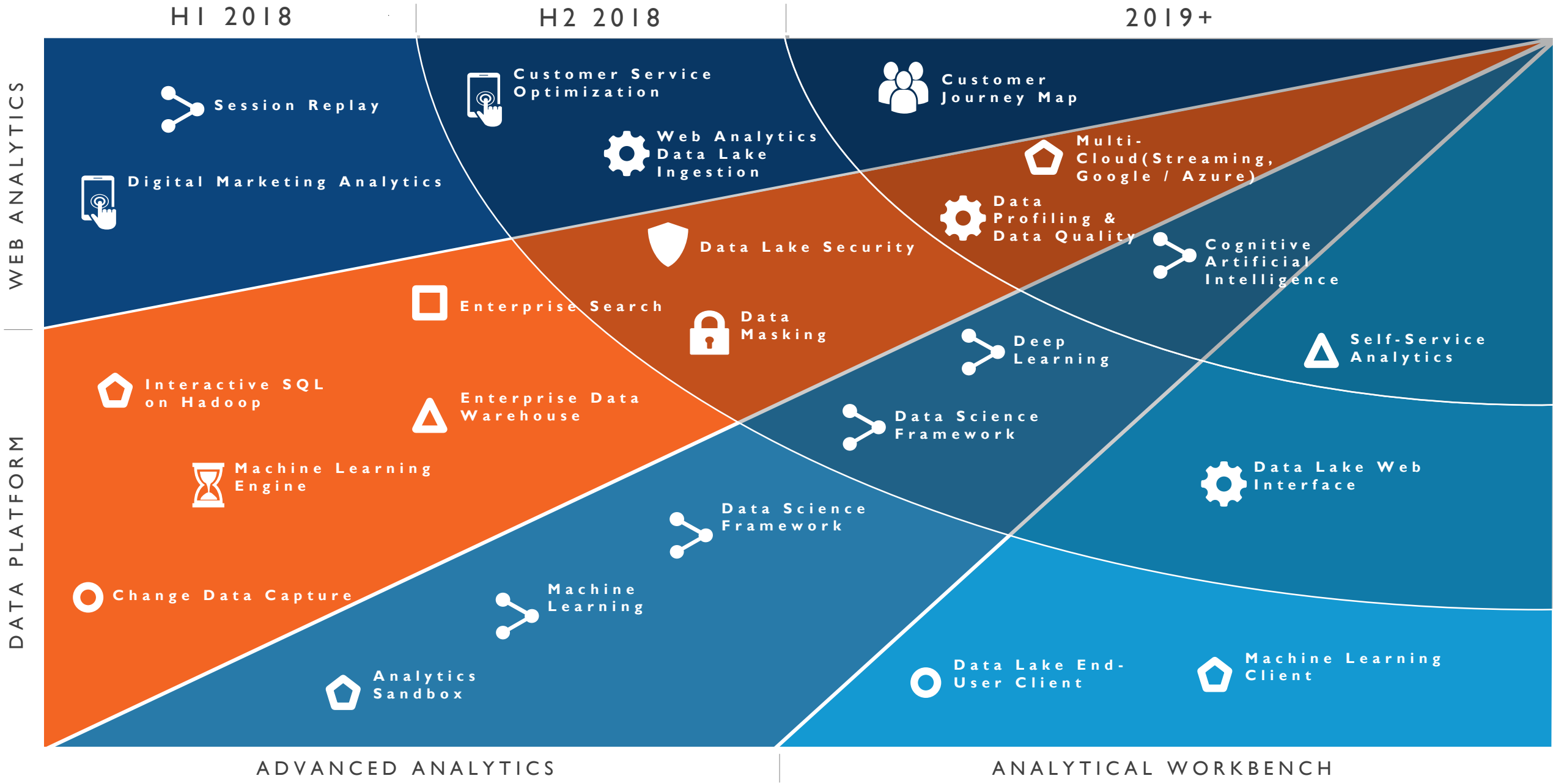


Enterprise Data Marketplace

Reference Architecture



Data Technology & Capabilities Roadmap



Data Virtualization

Key Benefits

Cost Effective

- Rapid data integration at a fraction of physical warehousing and ETL time and cost

Immediate

- Evolve quickly when requirements change
- Securely deliver data as needed, using the query optimizer

Business Friendly

- Transform native IT structures and syntax into easy-to-understand, IT-curated data services sharable using business self-service tools

Ease of Use

- Develop and expose web services without the need for Java/.Net skills

Thank You

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