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To the Point: Use Data Virtualization to Increase Business Agility and Connect Your Universe of Data

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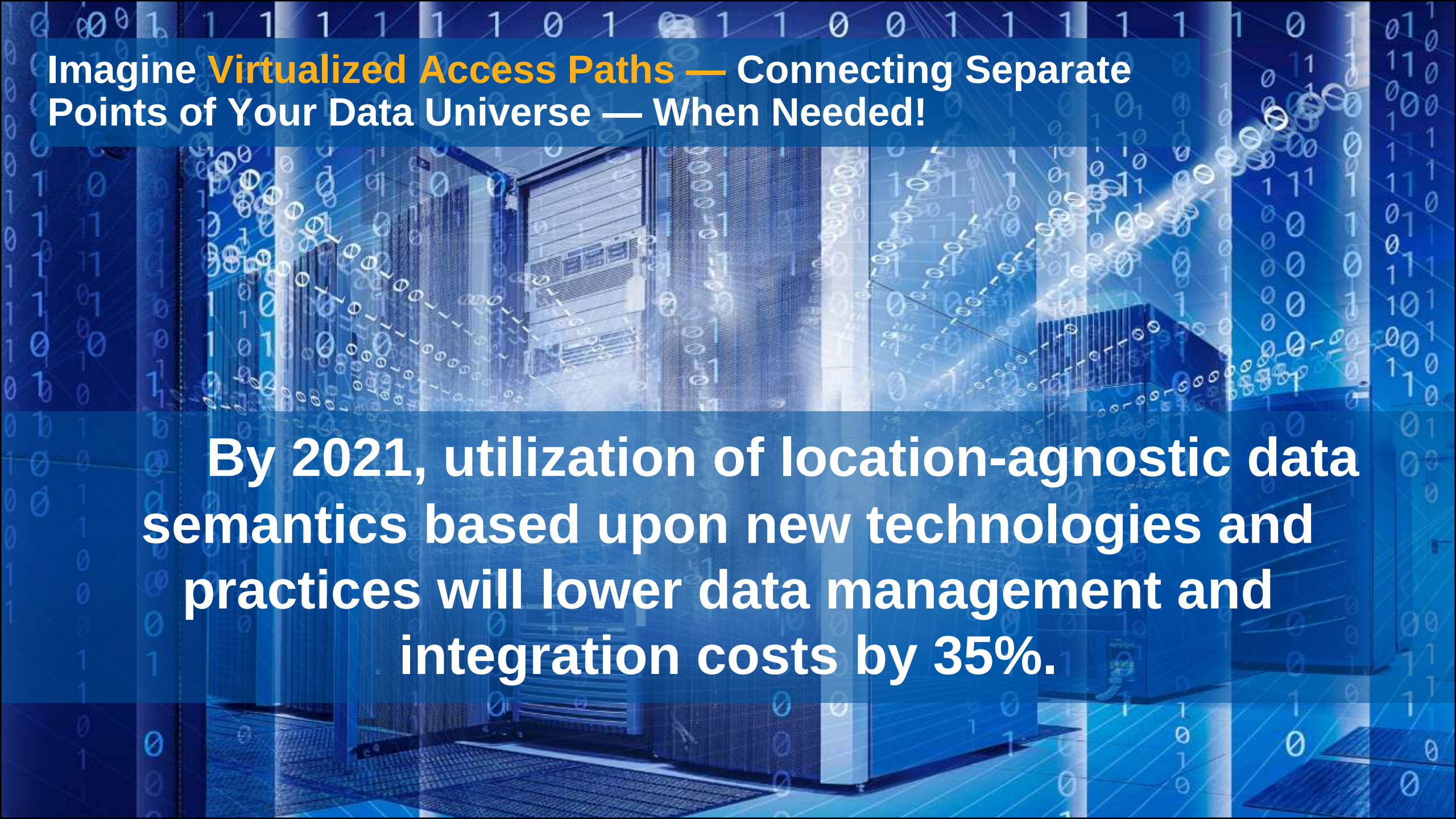
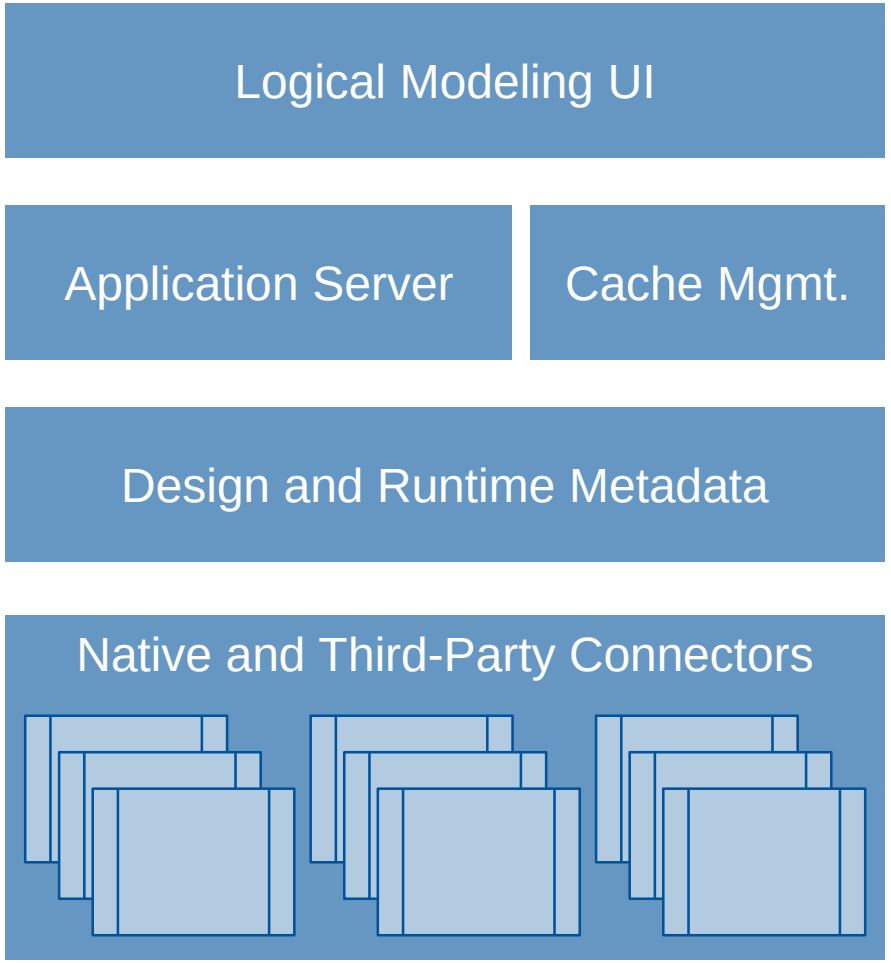

Imagine Virtualized Access Paths — Connecting Separate Points of Your Data Universe — When Needed!
By 2021, utilization of location-agnostic data semantics based upon new technologies and practices will lower data management and integration costs by 35%.

Key Issues

1. What are the basics of data virtualization technology and its major use cases?
2. How should organizations use data virtualization to modernize their data integration strategy?
3. What is the state of data virtualization technology in the market?

The Basics of Data Virtualization

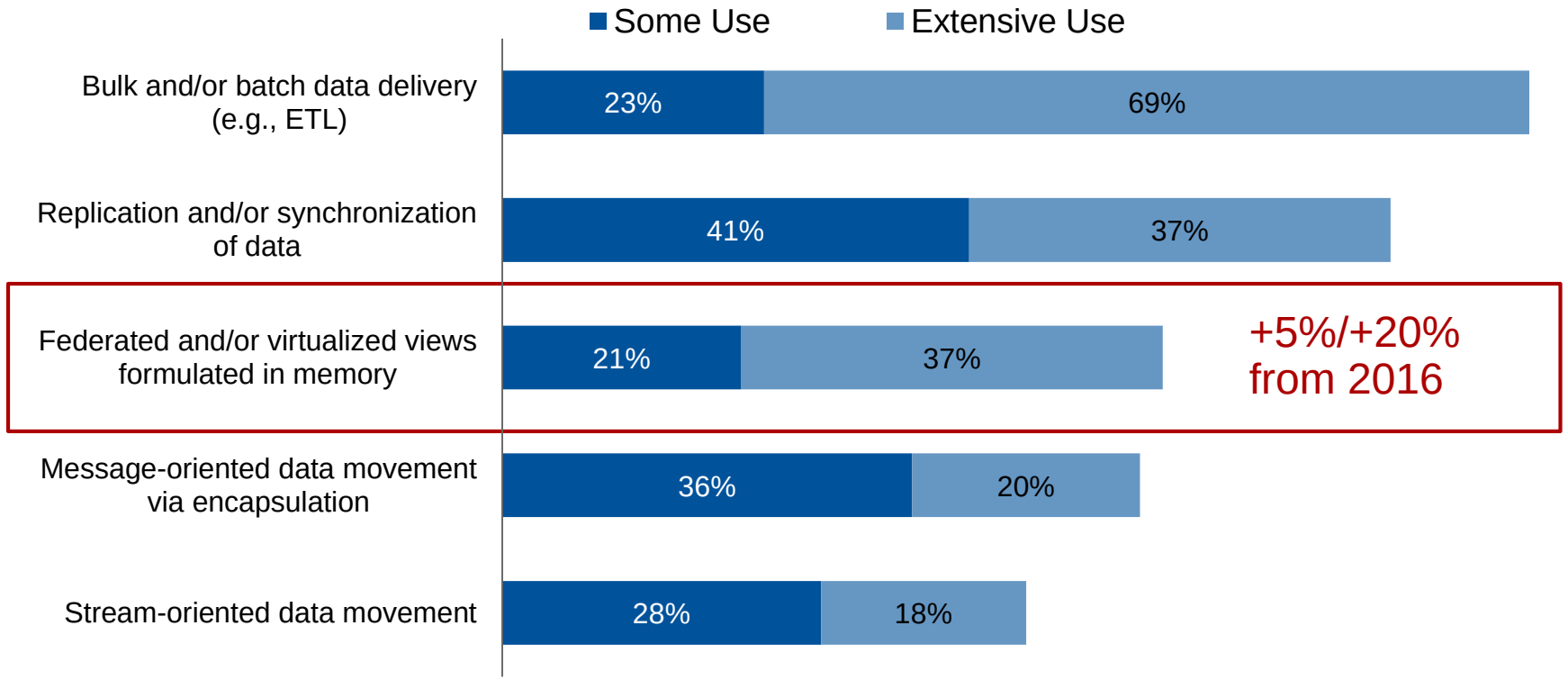
- Effectively, it's a virtual access tier.
- The modeling tier is for architects and users that understand data architecture.
- An application server performs processing.
- Cache is managed often in multitiered fashion to "accelerate" data delivery.
- Design time metadata provides the framework and the "best" platforms utilize performance, capacity and utilization runtime audits to optimize.
- Connectivity and abstraction capabilities serve to access various data sources.



What Does It Mean for Data and Analytics Leaders?

Data Virtualization Complements and Extends Data Integration Architectures

Which styles of data delivery does your organization use or plan to use for your data integration tools?



- When matched with appropriate use cases, data virtualization approaches exhibit up to 40% reduction in implementation time.
- Key benefits: Shorter delivery cycles, reduced ongoing maintenance and change management.

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Source: Gartner Data Integration Tools Usage and Adoption Study, 2017

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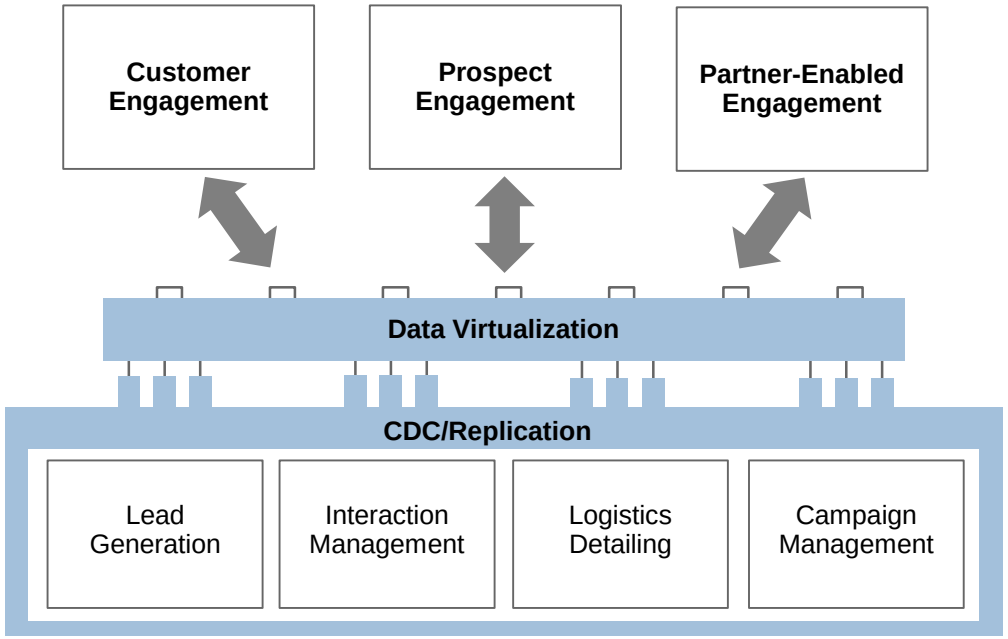
Example: Combining Virtualization and CDC/Replication of Data for Enhanced Customer Experience



Challenge

- Customer centricity initiative for consistent data and seamless customer experience.
- Frequent changes in data sources make physical data consolidation impractical.
- Overlapping/Conflicting views of departmental data inhibit "just-in-time" access to customer buying patterns and eligibility status for offers.

Solution

- Creation of a layer of data abstraction to render a consistent set of up-to-date insights.
- Rather than move, combine and physically store data, a data virtualization tool was deployed for federated and integrated views of data from source applications that receive CDC feeds.

Results

- Surmounted constraints of siloed, physical implementation of data in diverse applications.
- Delivered value in engagements with existing and prospective customers.

Use Cases for Data Virtualization

Traditional Analytical Use Cases	Traditional Operational Use Cases	Emerging Use Cases
Prototyping for physical data integration	Abstract data access layer/virtual ODS	Cloud data sharing
Data access/Semantic layer for analytics	Registry-style master data management	Edge data access in IoT integration
Logical data warehouse architecture	Legacy system migration	Data hub enablement
Data preparation	Application data access	Data and content integration

Regulatory constraints on moving data

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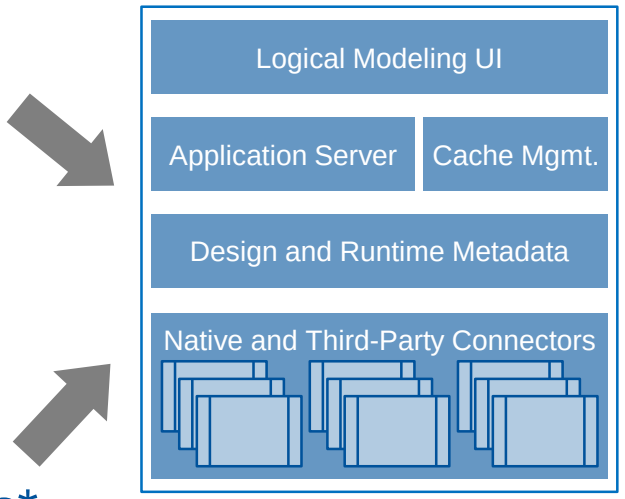
Enabling Abstraction and Federation in Many Forms: Provider Landscape Spans Fragmented Market Spaces

Stand-Alone Data Virtualization Tool Providers*

- Actifio
- DataVirtuality
- Denodo
- Gluent
- OpenLink Software
- Primary Data
- Progress
- Red Hat
- Rocket Software
- Stone Bond Technologies
- TIBCO Software

Data Integration Tool Suite Providers*

- IBM
- Informatica
- Information Builders
- Oracle
- SAP
- SAS
- Talend



Embedded to Applications/Platforms*

- BI and analytics platforms
- Advanced analytics platforms
- Data preparation tools
- Others

Extendable Feature of DBMS*

- Actian
- IBM
- MarkLogic
- Microsoft
- Oracle
- SAP
- VirtDB
- Others

* Representation list only, nonexhaustive

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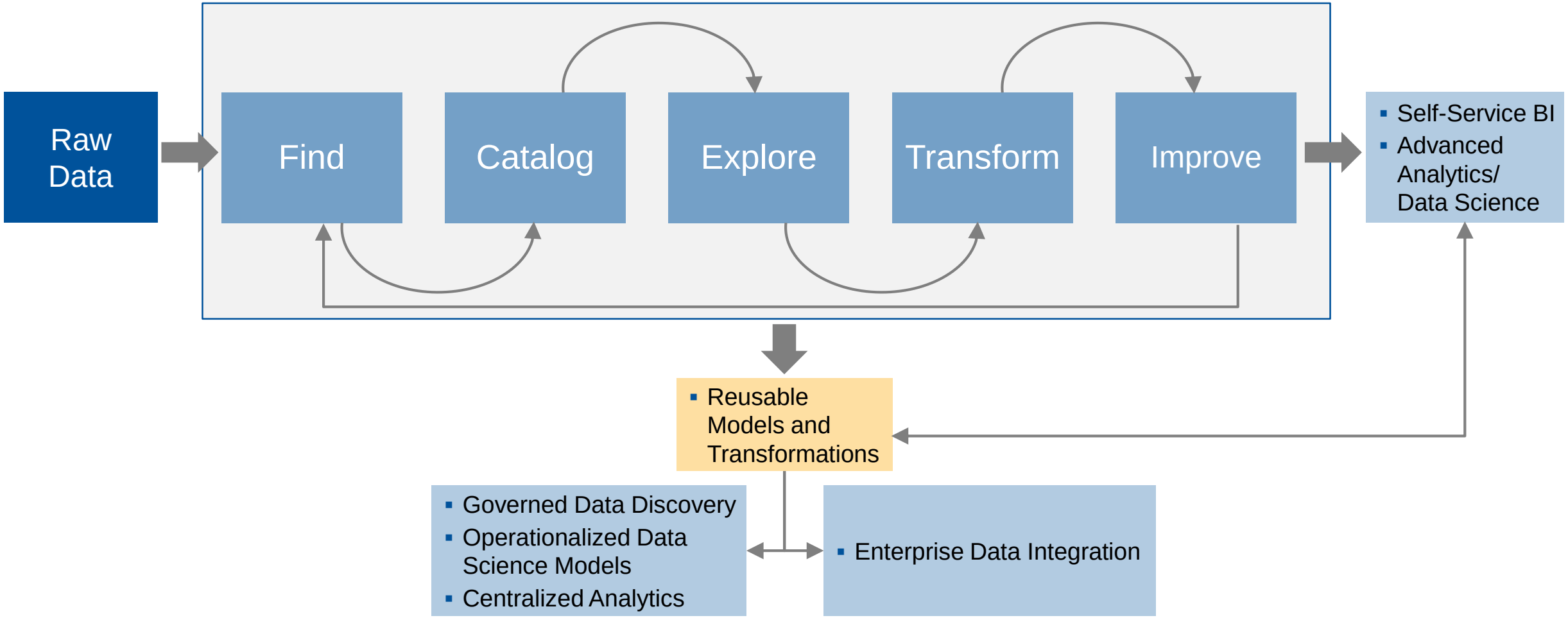
Data Access/Semantic Virtual Tier Embedded in Data Preparation Tools



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Beware: Data Virtualization Is Not a Silver Bullet

Data Virtualization Doesn't Fix …

Performance	Query complexity, data volume and data transformations against diverse data sources/systems
Metadata and data quality	Semantic consistency and metadata management. Results only as good as quality of that data
Availability of data sources	Unavailability of source systems and data sources disrupts data access, impacts business
Governance model of sources	Alignment of policies: Sources vs. information mgmt. (information security, confidentiality, integrity, etc.)
Breadth of data delivery	Data virtualization complements rather than completely replaces a data integration architecture

Well-anticipated data consumption and performance needs, for example, may be more appropriately met using preconsolidated data.

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Recommendations

- ✓ Set proper expectations upfront, select the right use cases to identify when to collect data versus simply connecting to it, before starting your data virtualization journey.
- ✓ Position data virtualization capabilities as important components of an overall data integration portfolio to support bimodal strategy as a whole.
- ✓ Create a data exploration capability via data virtualization to identify data silos (operational and analytics) that are candidates for consolidation or that may persist as federated data use cases.
- ✓ Use data virtualization to develop the shared data access layer to reduce data redundancy, become more flexible and improve reuse/governance.
- ✓ Review data usage, view creation, frequency of access, performance and capacity utilization metadata to determine how long should views remain virtual and when they should be converted to other integration types and platforms for optimization.

Recommended Gartner Research

- **Adopt Data Virtualization to Improve Agility and Bimodal Traits in Your Aging Data Integration**
  Ehtisham Zaidi and Mei Yang Selvage (G00327618)
- **Modernize Your Data Integration Architecture for Digital Business by Combining Data Delivery Styles**
  Ehtisham Zaidi, Eric Thoo and Ted Friedman (G00327623)
- **Market Guide for Data Virtualization**
  Ehtisham Zaidi, Mark A. Beyer and Ankush Jain (G00314826)
- **Magic Quadrant for Data Integration Tools**
  Mark A. Beyer, Eric Thoo and Others (G00314940)
- **Critical Capabilities for Data Integration Tools**
  Eric Thoo, Ehtisham Zaidi, Mark A. Beyer and Mei Yang Selvage (G00319933)

For information, please contact your Gartner representative.

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