

“ It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so. ”

LEADING INDICATORS

## Status Quo is failing ...

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Variable Data Formats



Unlimited, Real-Time Data Access



Changing Requirements



Fast Time to Results



Mission-Critical Functions

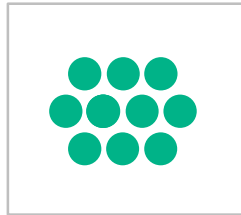


“ As data structures get more complex and data volume grows, traditional relational databases—and their need for a pre-defined schema are falling short.”

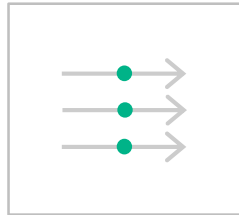
FORRESTER®

A NEW APPROACH

# Expect That Over Time, *Everything* Can Change, at Any Time



**DATA**



**WHERE DATA  
COMES FROM**



**HOW DATA IS  
ACCESSED**



**WHO ACCESSES  
THE DATA**

# The MarkLogic Alternative to RDBMS with ETL

An *Operational and Transactional* Enterprise NoSQL Database



## EASY TO GET DATA IN

Flexible Data Model

- Data ingested as is (no ETL)
- Structured and unstructured data
- Data and metadata together
- Adapts to changing data and changing data structures



## EASY TO GET DATA OUT

Ask Anything Universal Index

- Index once and query endlessly
- Real-time and lightning fast
- Query across JSON, XML, text, geospatial, and semantic triples in one database

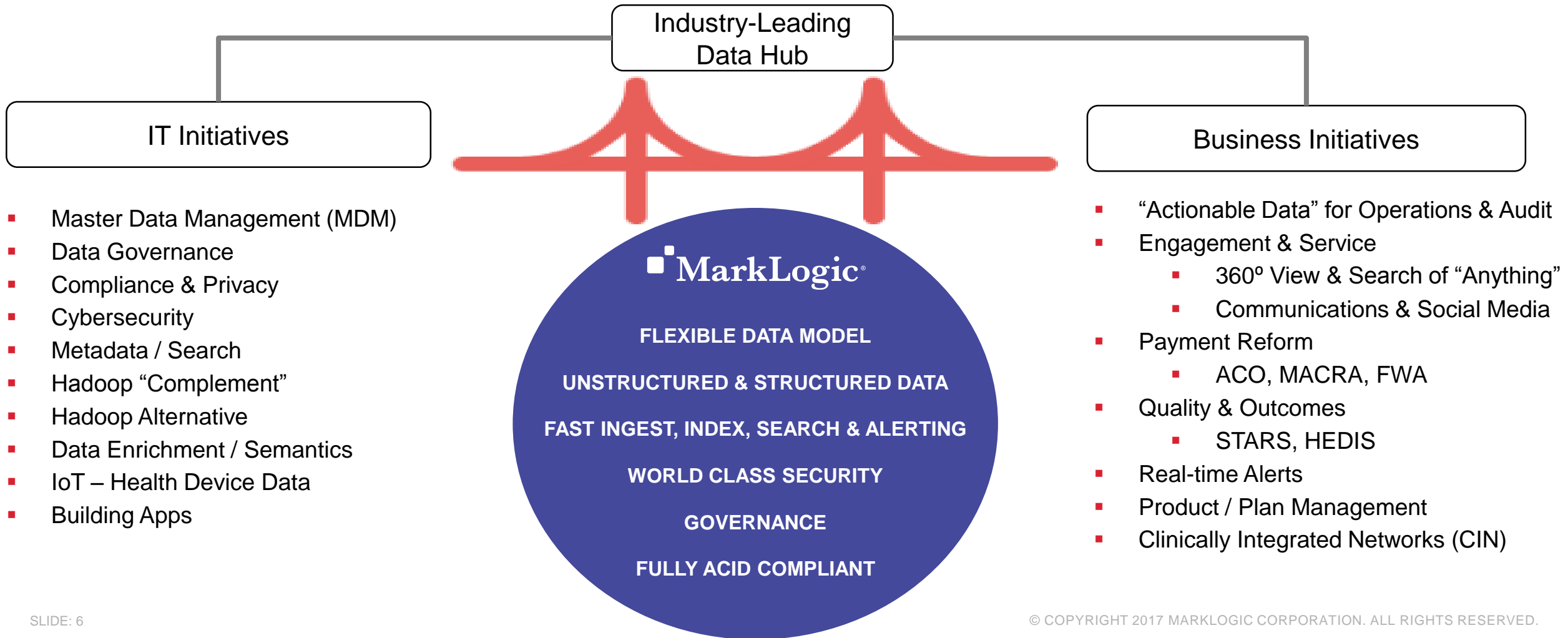


## 100% TRUSTED

Enterprise Ready

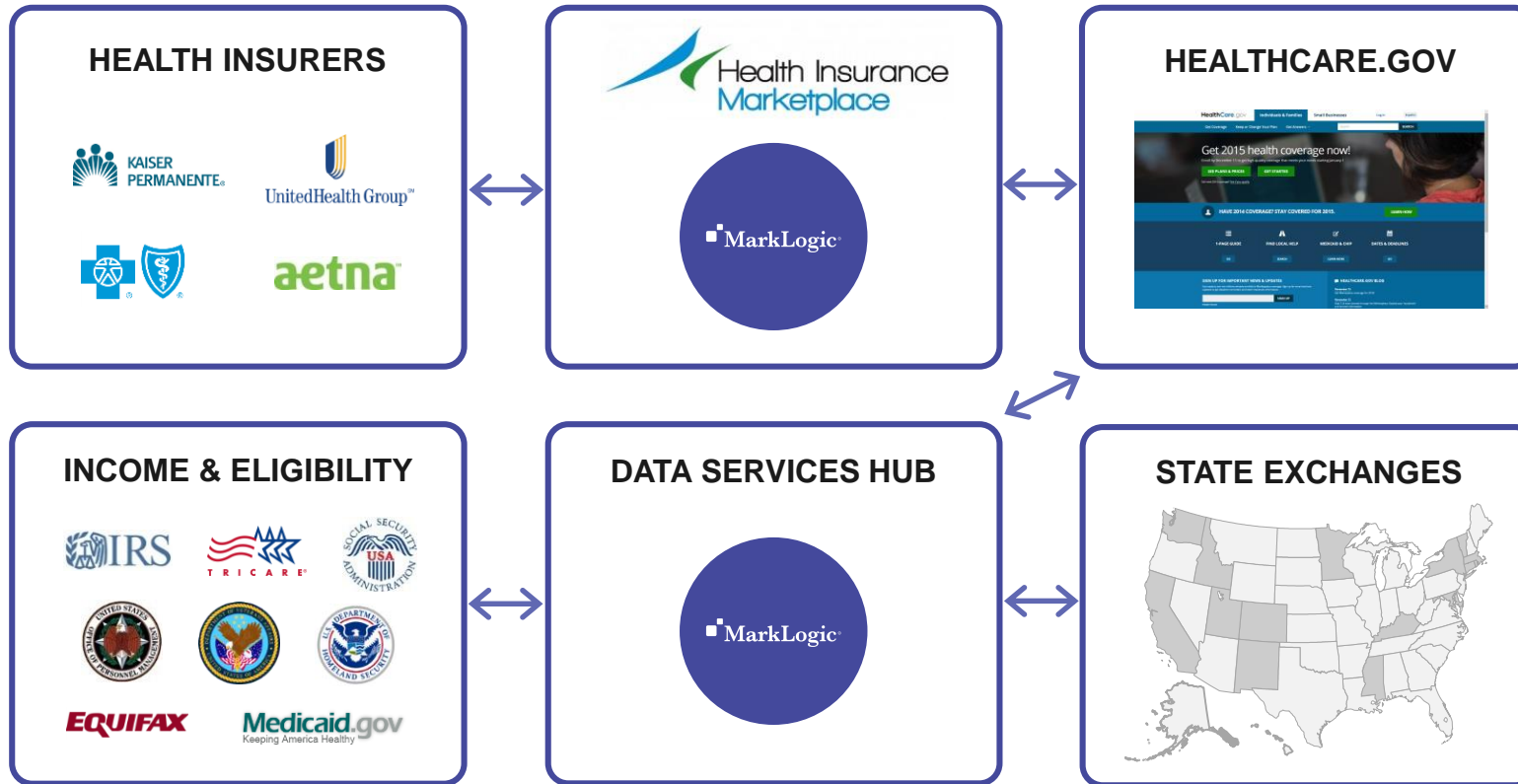
- Reliable data and transactions (100% ACID compliant)
- Out-of-the-box automatic failover, replication, and backup/recovery
- Enterprise-grade security and Common Criteria certified
- HIPAA Compliant

# Healthcare “Next Gen” Data Projects



# HealthCare.gov – Online, Real-Time Enrollment

Transforming the Health Insurance Industry



## WHY MARKLOGIC?

- Oracle data model too rigid
- ETL taking too much time
- Structured and unstructured data
- Scalability with 100% data integrity
- Flexibility to support changing data
- IRS mandated security requirements

# HealthCare.gov – Marketplace & Data Services Hub

Transforming the



## The Results

- **Timely** – Met congressional deadline for delivery
- **Scalable** – 280,000 concurrent users
- **Fast** – 6,500 transactions per second
- **Success** – 12.7 million citizens enrolled for 2017

*“The largest personal data integration government project in the history of the Republic.”*

- STEPHEN PARENTE, PHD, MPH, MS

### HEALTH INSURER



### INCOME & ELIGIBILITY



# Healthcare's Experts at Integrating Data From Silos

## MATURITY

- 1,000+ global customers
- Decade of customer success
- 250+ partners
- 550+ employees worldwide
- Capitalized for success (lead funding from Sequoia Capital and Wellington)

## CREDIBILITY

### HEALTHCARE:

HealthCare.gov

aetna®

WellCare®  
Health Plans

ICA®  
THE  
INTEROPERABILITY  
EXPERTS

AMA®  
AMERICAN MEDICAL  
ASSOCIATION

American Hospital Association  
HEALTH FORUM®  
MEDIA | EDUCATION | DATA

m\*modal™  
COLLABORATIVE INTELLIGENCE

HighRoads®

intel®

Cognizant





## EXPERTISE

- **System Integrator Augmentation**  
Data integration experts  
for payers, providers and HIT vendors
- **24x7 Expert Support**  
From true engineers
- **Online Community**  
Free dev software, collaborate with  
tens of thousands of people
- **Free Training**  
Web-based and instructor-led

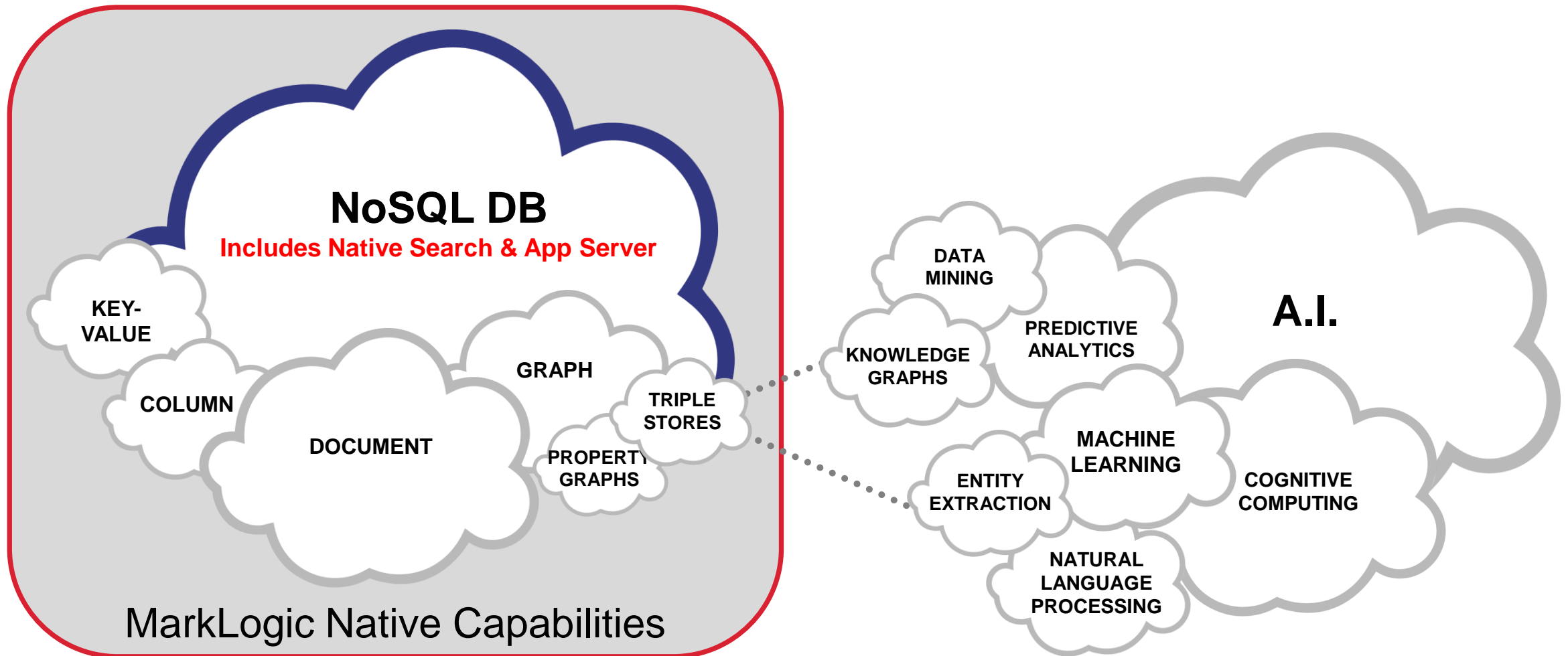
# What is MarkLogic?



# Multi-Model – Power, Flexibility, Composability

	 JSON	 XML	 RDF	 JSON/XML + RDF
USAGE	STRUCTURED DATA STORED AS OBJECTS	STRUCTURED / UNSTRUCTURED DATA & TEXT	FACTS & RELATIONSHIPS	SYSTEMS OF ENTITIES & RELATIONSHIPS
DESCRIPTION	<ul style="list-style-type: none"> <li>▪ Schema-agnostic</li> <li>▪ Query with JavaScript</li> <li>▪ Compact, fast to parse</li> <li>▪ 6 kinds of values: objects, arrays, floats, strings, booleans, nulls</li> <li>▪ Avoids namespaces, comments, attributes</li> <li>▪ Common data format for the web</li> </ul>	<ul style="list-style-type: none"> <li>▪ Schema-agnostic</li> <li>▪ Query with XQuery</li> <li>▪ Can store objects, sets, and many data types such as dates, durations, integers, etc</li> <li>▪ Uses namespaces, comments, and attributes</li> <li>▪ More maturity than JSON as a data model</li> </ul>	<ul style="list-style-type: none"> <li>▪ Define facts and relationships</li> <li>▪ Atomic structure</li> <li>▪ Universal standards (RDF and SPARQL)</li> <li>▪ Used for reference data, metadata</li> </ul>	<ul style="list-style-type: none"> <li>▪ Documents can contain triples</li> <li>▪ Triples can annotate documents</li> <li>▪ Graphs of triples can contain documents</li> <li>▪ Enhanced querying:               <ul style="list-style-type: none"> <li>– Expand/Restrict document search</li> <li>– Enhance graph search</li> </ul> </li> </ul>

# Multi-Model Data Platform vs. Standalone Tools

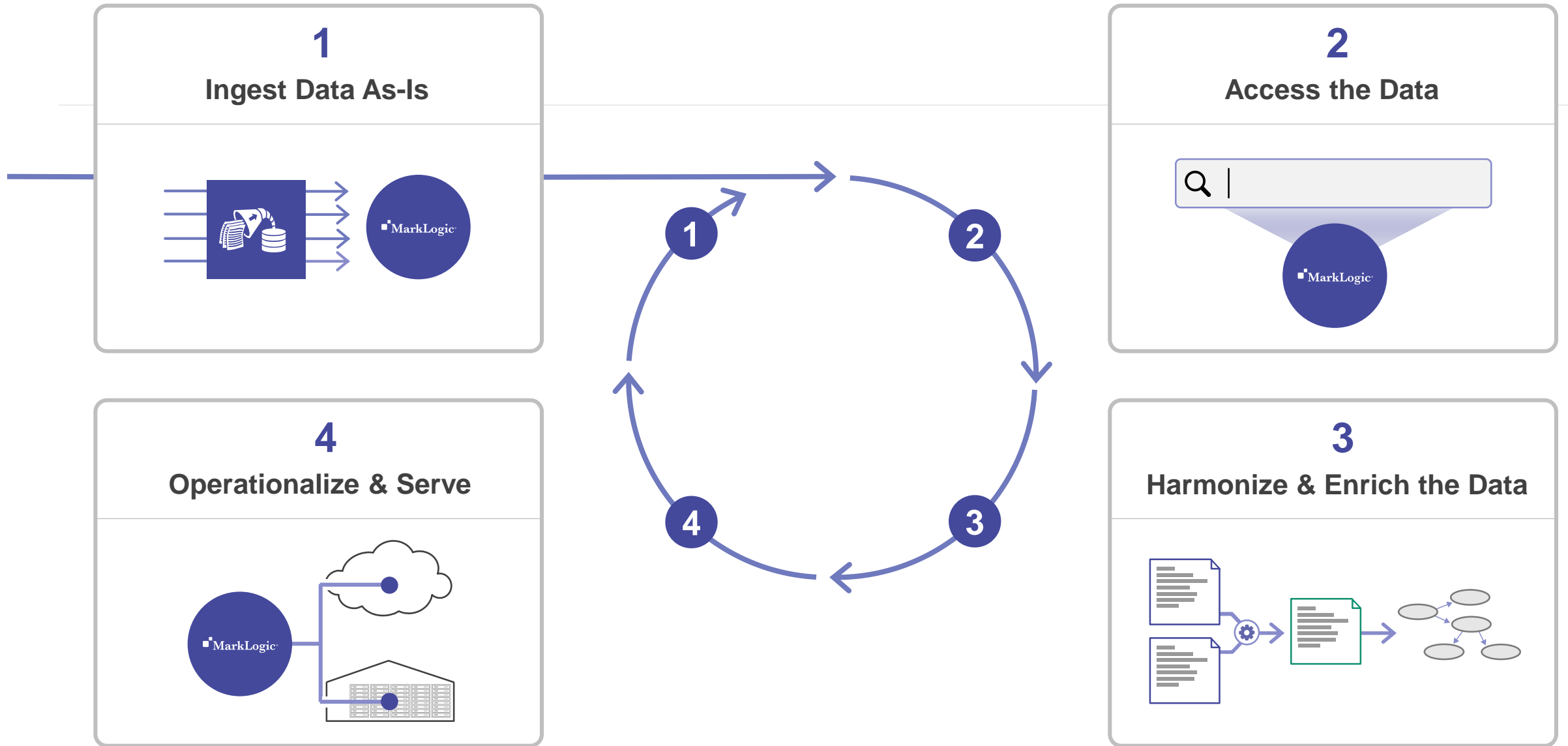


# Not Just a NoSQL Database ... An Enterprise Platform

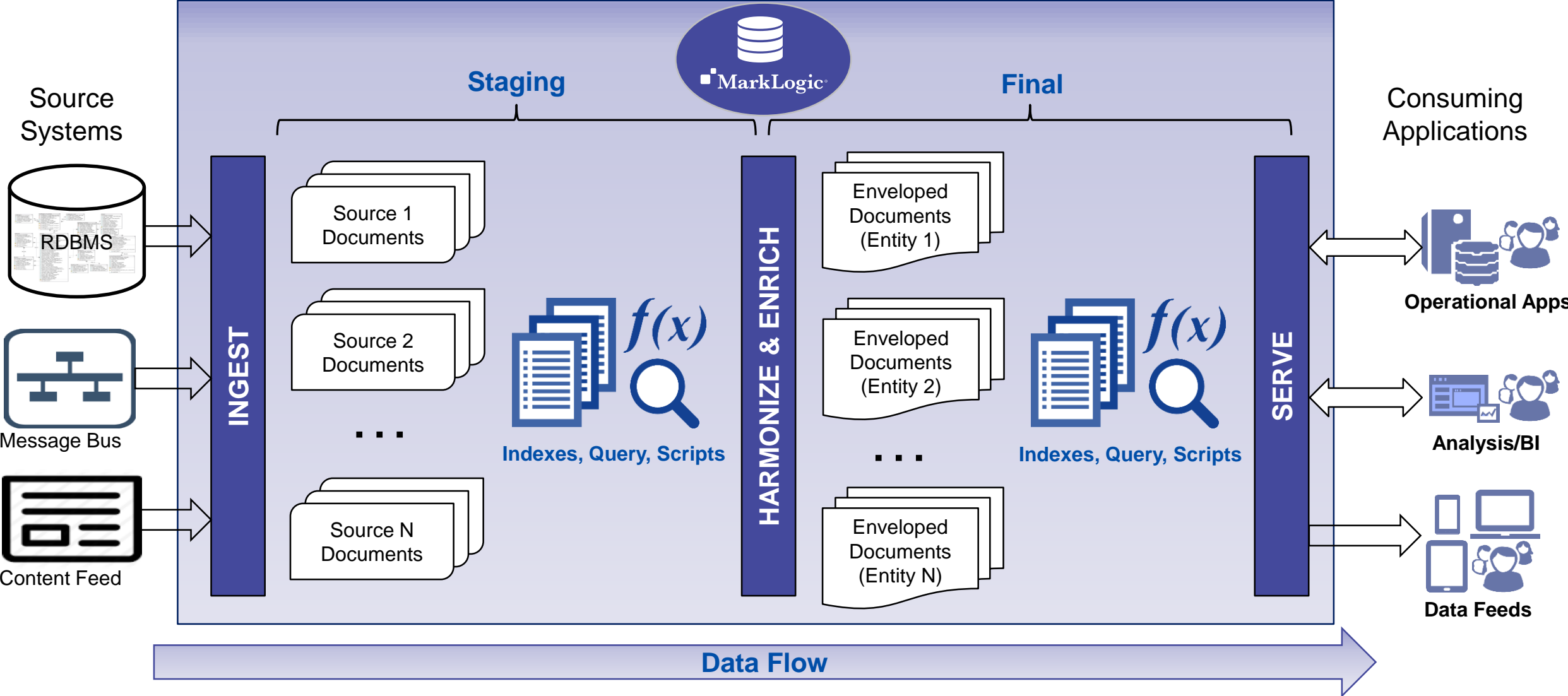
**Native advanced features** add greater value and deliver a simplified enterprise architecture

Features	MarkLogic	Relational Databases	Other NoSQL Databases
Flexible Data Model	✓	✗	?
Search and Query	✓	✗	✗
Semantics	✓	✗	✗
Scalability and Elasticity	✓	?	?
ACID Transactions	✓	✓	✗
Certified Security	✓	✓	✗
HA/DR	✓	?	?
Hadoop Integration	✓	?	✓

# Modern Data Journey: MarkLogic Data Hub Pattern



# MarkLogic Data Hub Framework



# Operational Data Hub

