

IoT and big data with Red Hat JBoss Middleware and SAP HANA

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THE INTERNET OF THINGS LANDSCAPE

Connectivity and “smarter” devices driving change



EXPLOSIVE GROWTH IN CONNECTED DEVICES



UBIQUITOUS INTERNET CONNECTIVITY



AFFORDABLE BANDWIDTH



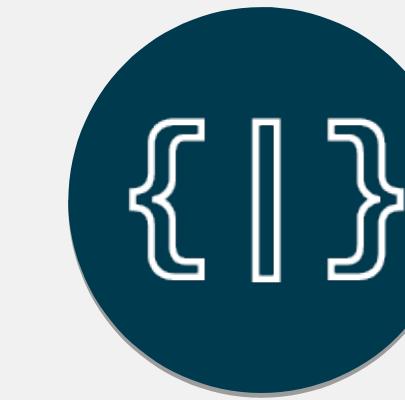
COMMODITIZED STANDARDIZED HARDWARE

- Microcontrollers
- Electronic sensors



ADVANCES IN CLOUD COMPUTING

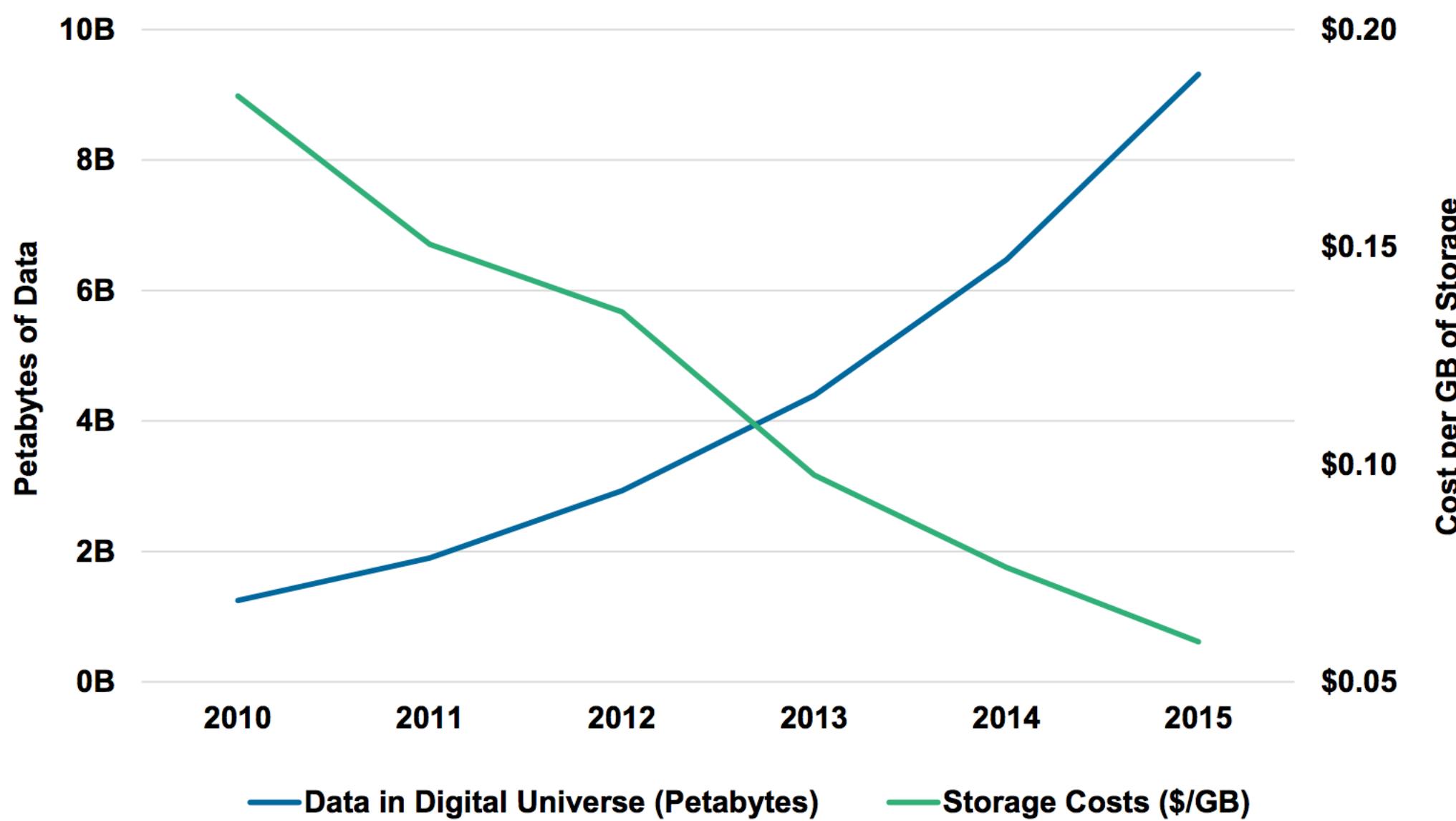
Decreased cost of storing and processing data



STANDARDS BASED AND OPEN SOURCE SOFTWARE

Global Data Growth Rising Fast = +50% CAGR since 2010...
Data Infrastructure Costs Falling Fast = -20% CAGR

Data in Digital Universe vs. Data Storage Costs, 2010 – 2015



Data Generators = Increasing Rapidly



@KPCB

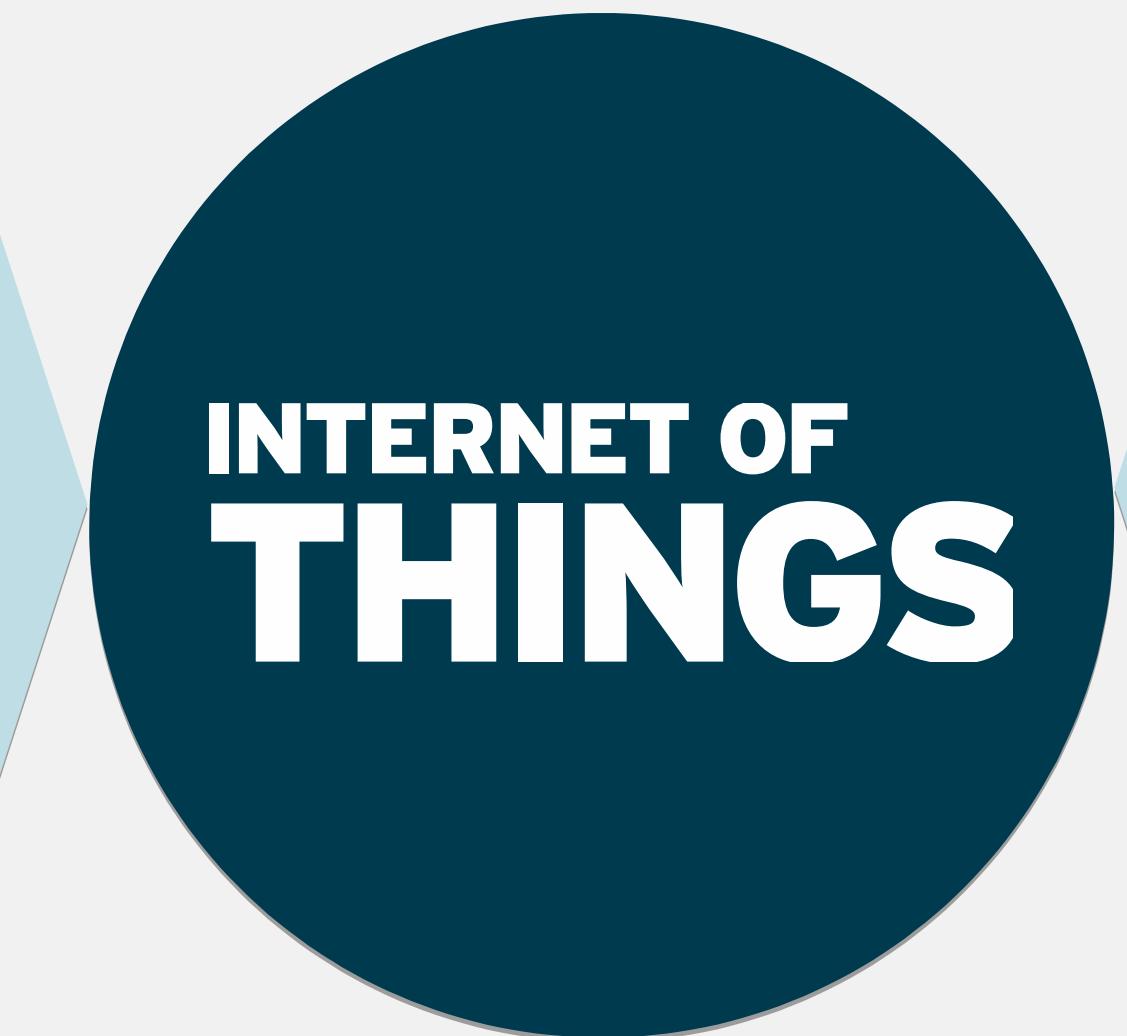
Source: Apple, DJI, Waze, Tesla, Microsoft, Ring, Fitbit, B & H Foto & Electronics.

KPCB INTERNET TRENDS 2016 | PAGE
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BUSINESS DRIVERS

Business drivers behind enterprise IoT investment

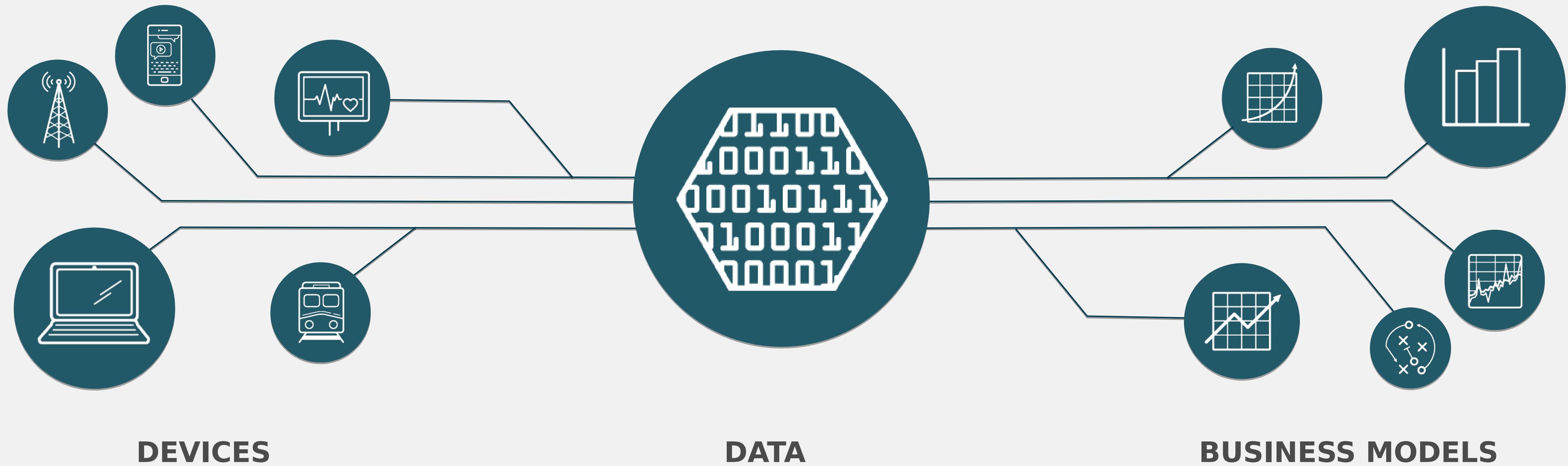
Economic gains
New revenue streams
Regulatory compliance



**INTERNET OF
THINGS**

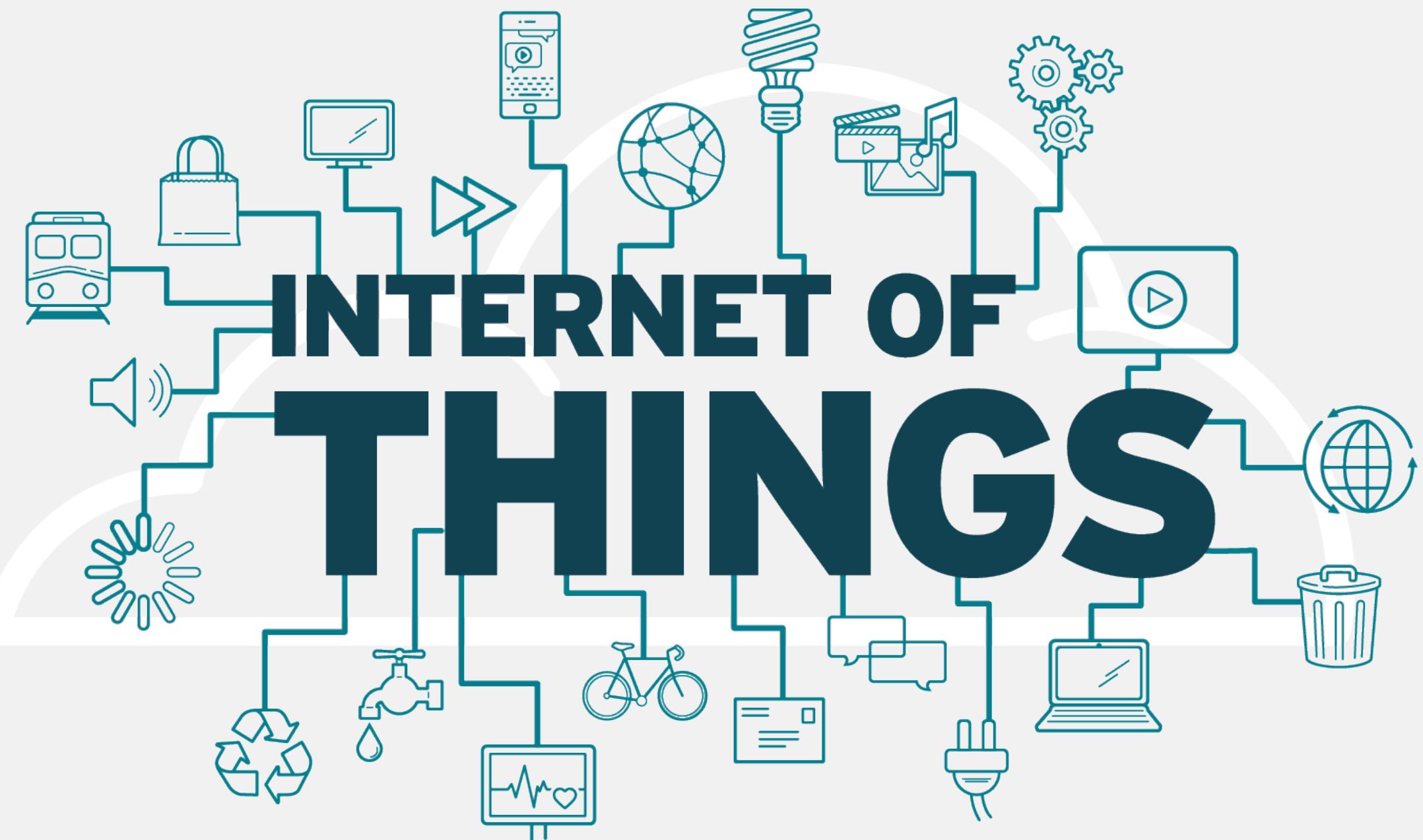
Efficiencies and productivity
Ecological impact
Customer satisfaction, ease of use

THE DATA-DRIVEN IoT



Devices are the eyes and ears of the intelligent system, not its brain.

Red Hat and IoT

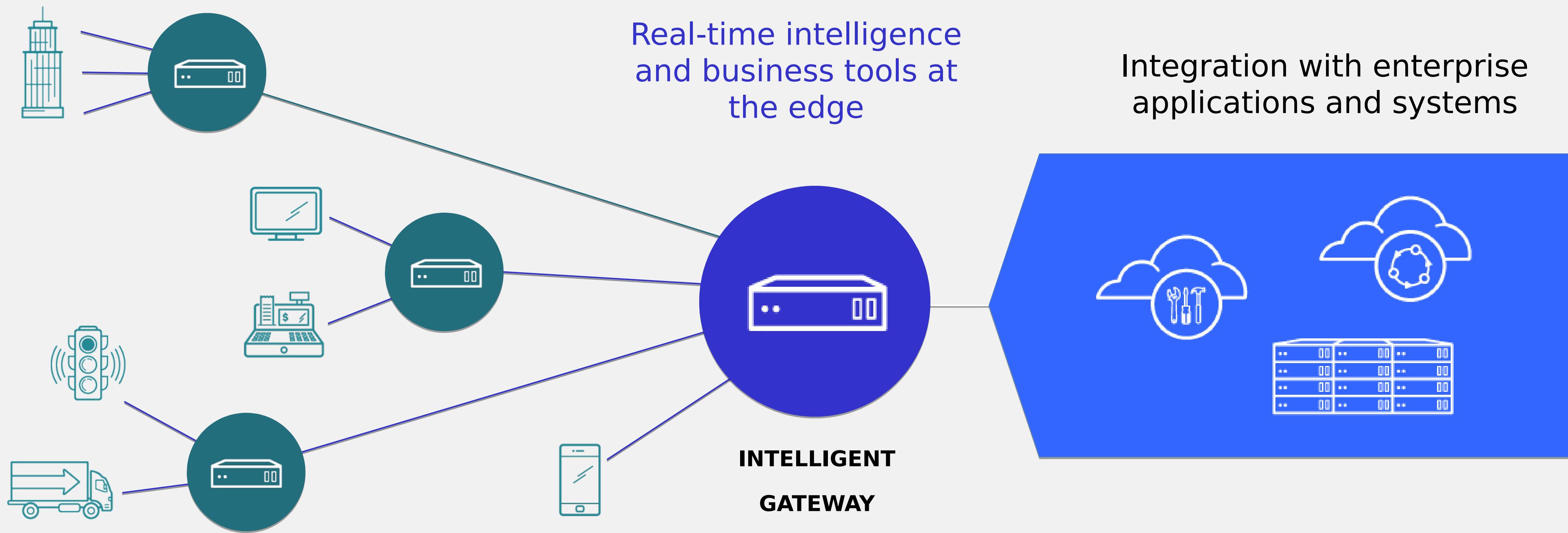


Red Hat helps enterprises and partners collect, communicate, transform, store, and act upon critical data generated by the Internet of Things.

Our open-source solutions

- free you from proprietary lock-in and cost escalation
- capture community innovation
- provide the enterprise-level security, reliability, scalability and support required by the IoT

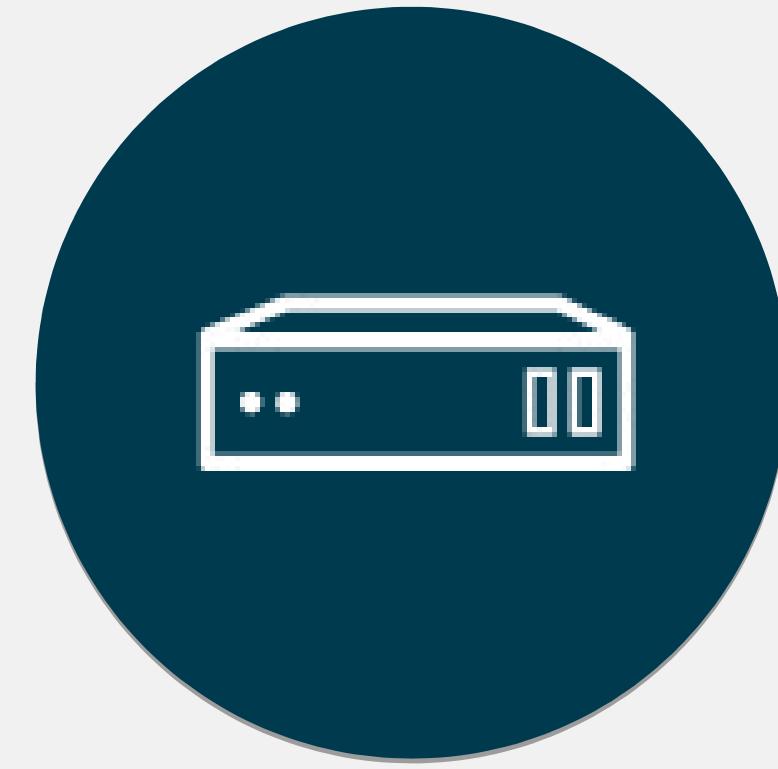
Unified enterprise IoT architecture



Rapid application development and delivery across entire intelligent system
Common OSS infrastructure with enterprise-ready security, scale, and manageability

Intelligent gateway

Data acquisition, integration, and rules activation, providing dynamic intelligence at the edge

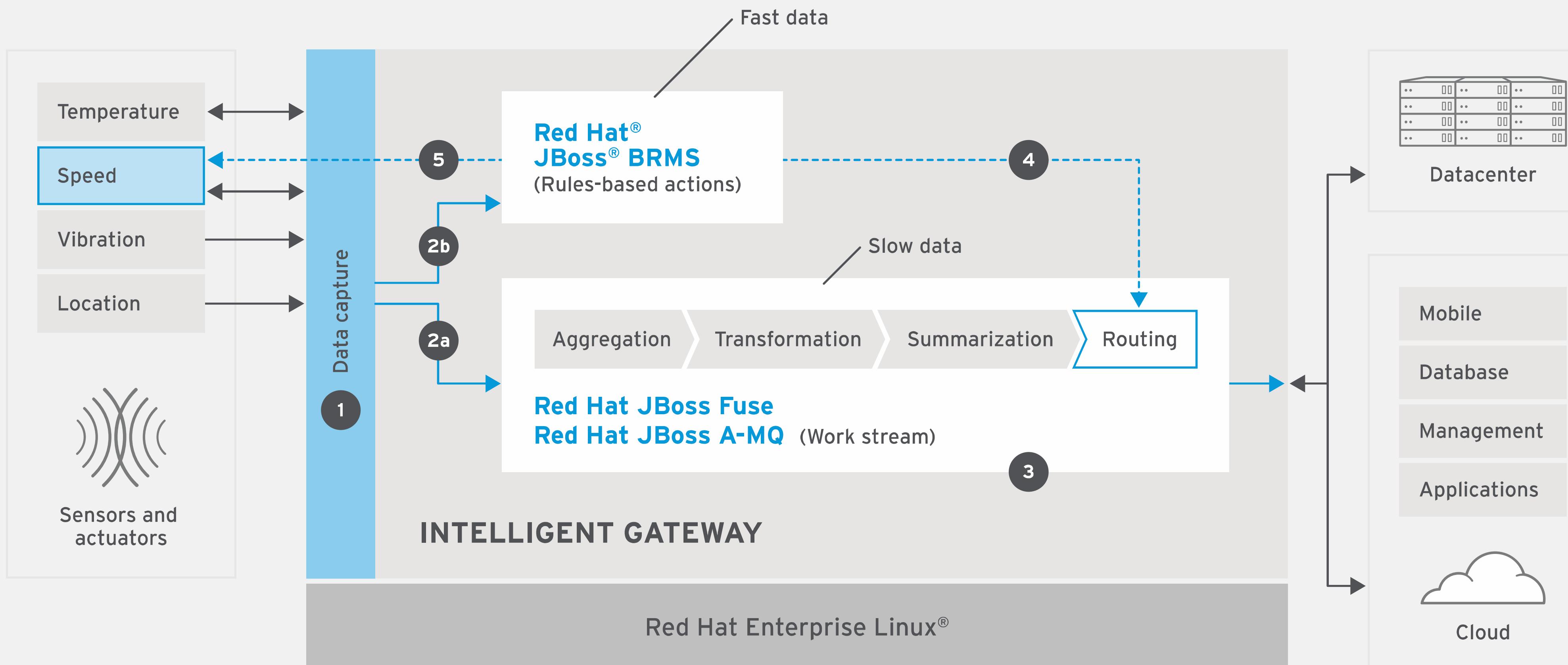


Bridge between IT and OT by streamlining the many data formats and velocities

- Process and act on data at scale
- Reduce latency and bandwidth
- Apply real-time decisions locally
- Transform IoT data and connect with enterprise systems
- Control and manage millions of IoT devices

Intelligent gateway Architecture

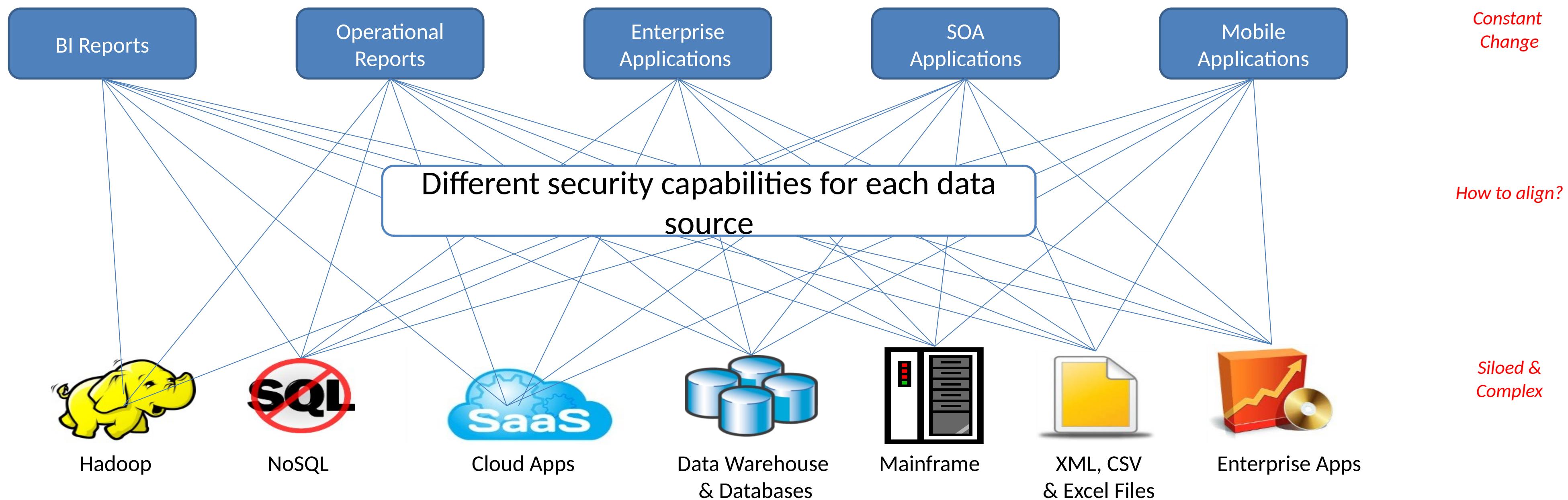
Transforming device data into actionable information



JBoss Data Virtualization

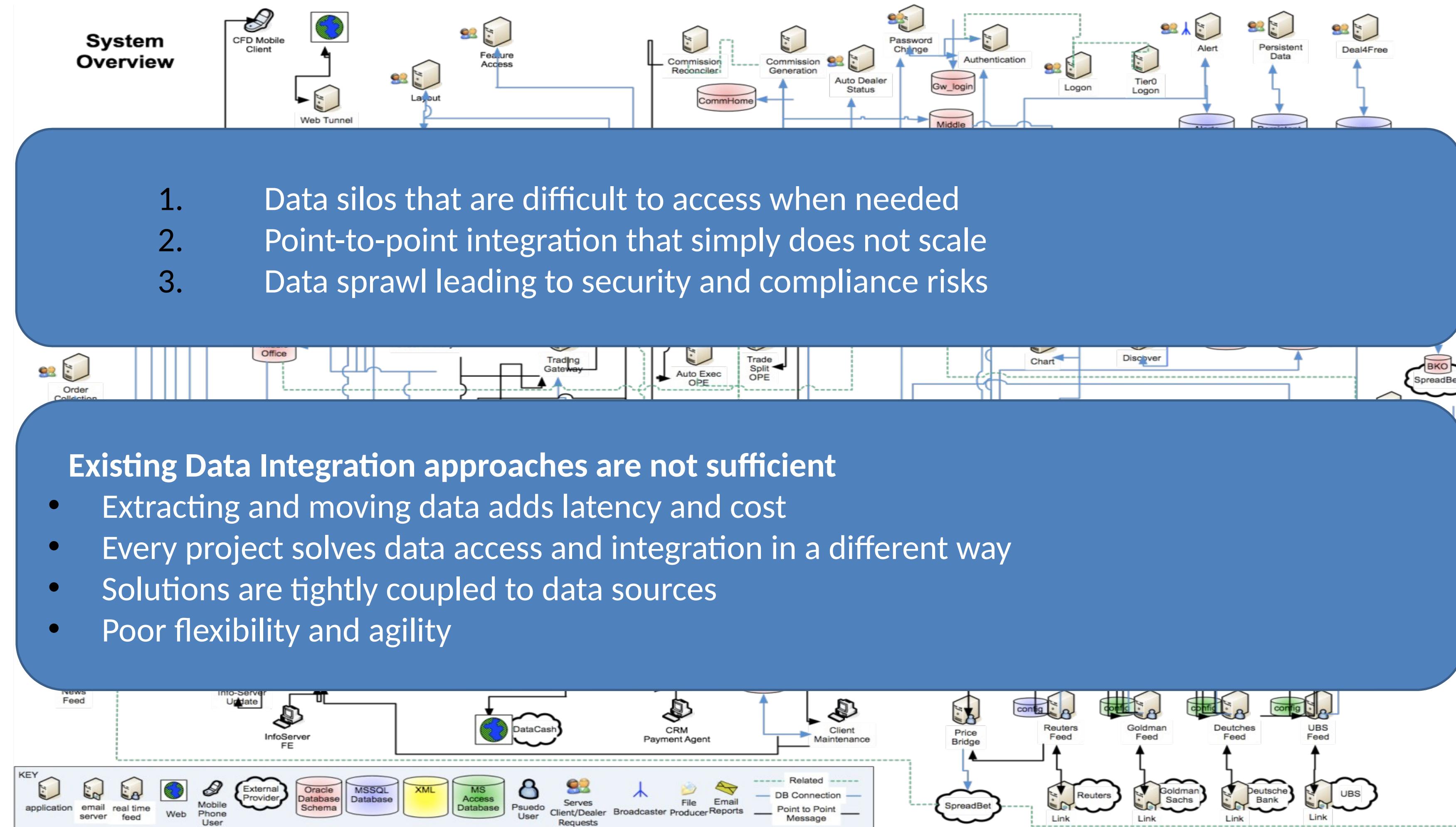
Data Control Challenges Getting Bigger with Big Data, Cloud, and Mobile

- Security capabilities are tightly coupled to data sources
- Extracting and moving data adds risk
- Every project solves data access and integration in a different way
- Inconsistent and decentralized control of data



DATA IS BURIED DEEP IN I.T. SYSTEMS

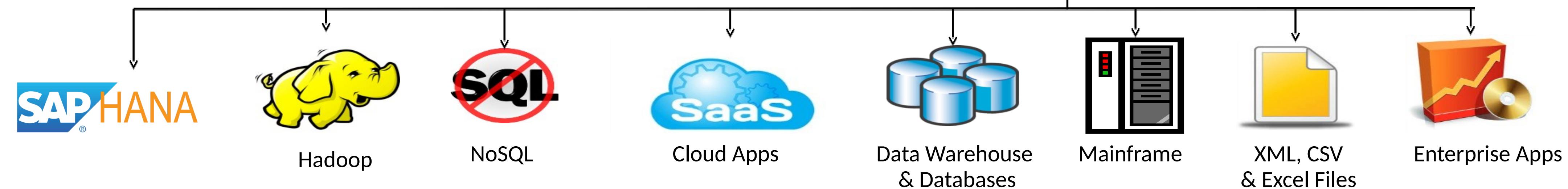
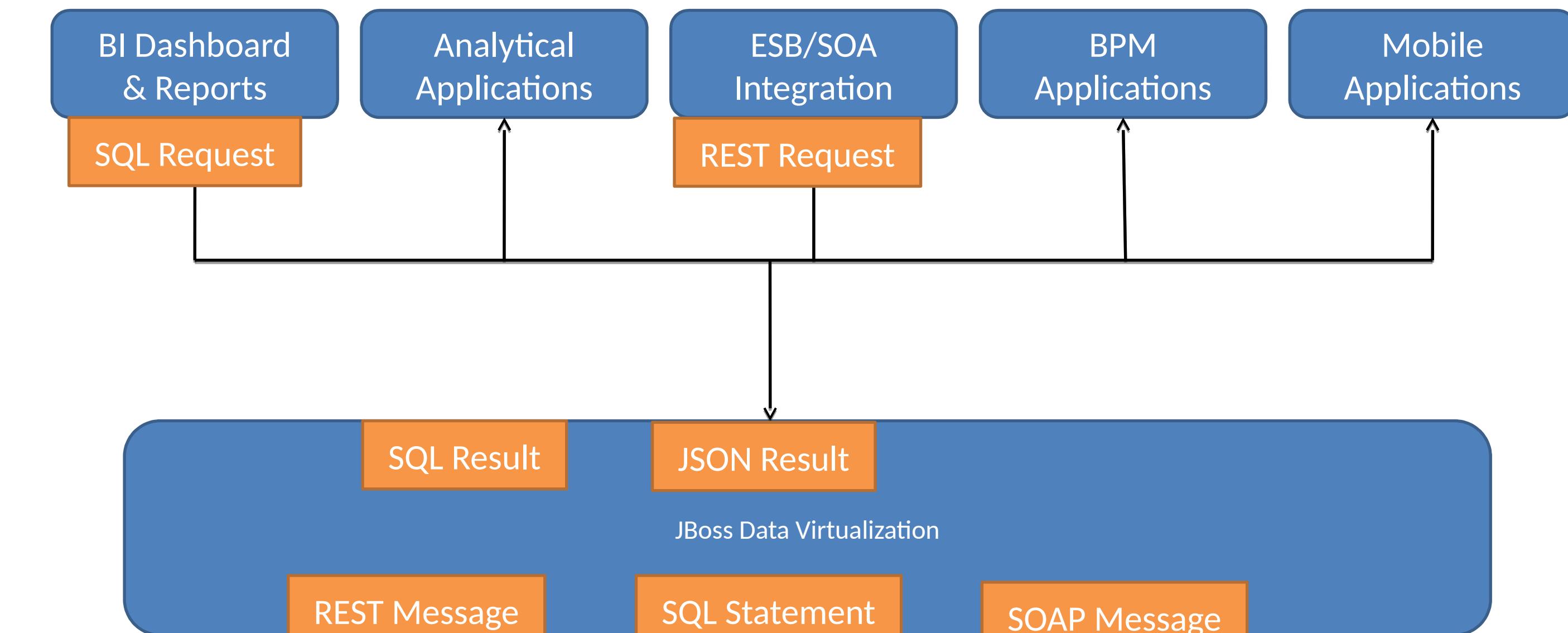
BIG DATA, CLOUD, MOBILE MAKING DATA PROBLEM BIGGER



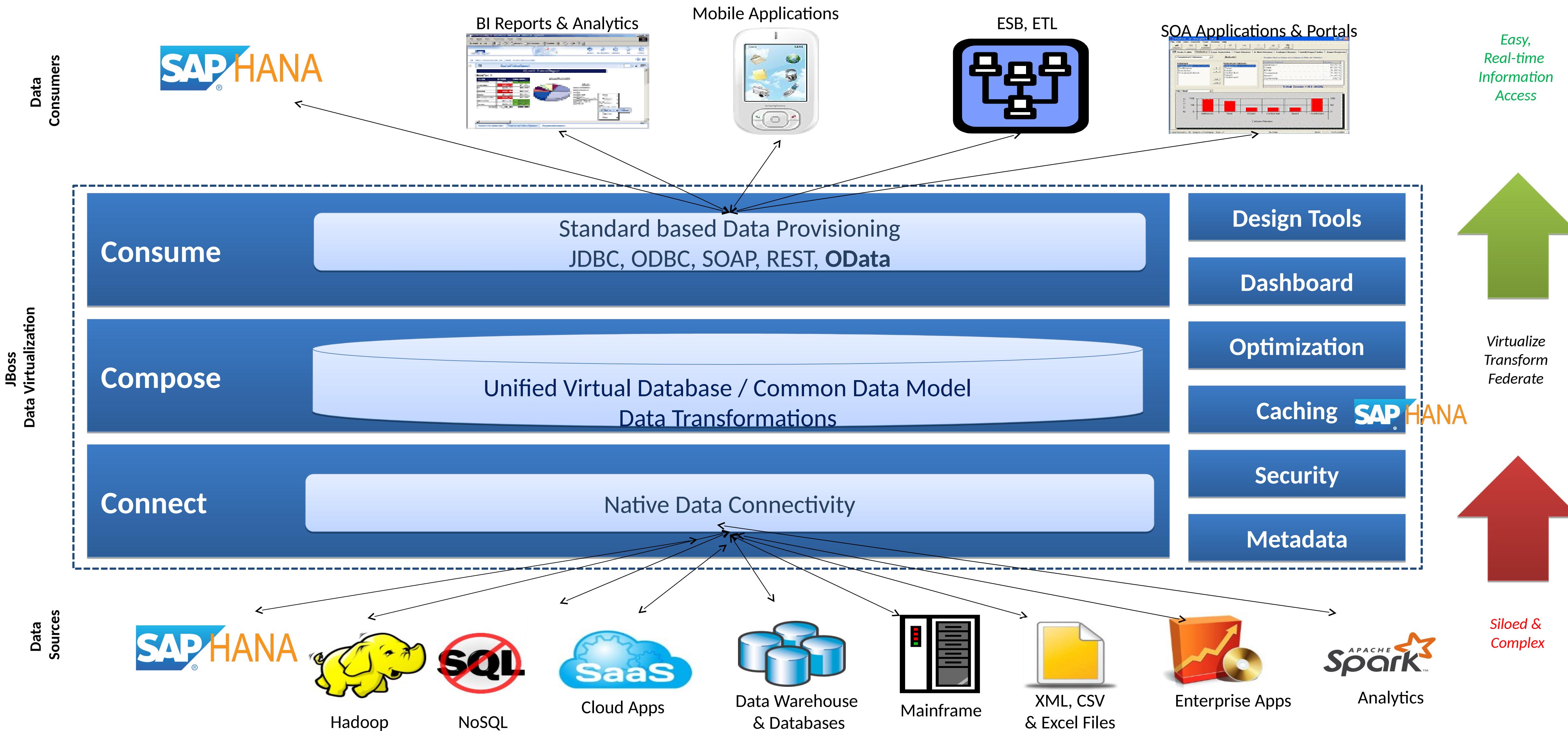
HOW DOES JBOSS DATA VIRTUALIZATION WORKS RIGHT TIME INTEGRATION & DATA AS A SERVICE

- Contextual view of disparate source data
- Single point of access
- Standard based interfaces
- Shareable integration and transformation logic
- Reusable data services

But you cannot achieve this by writing more application code...



Turn Siloed Data into Actionable Information



JBoss Data Virtualization

Key Business Values

Increase ROA

- Improved utilization of data assets
- Derive more value from existing investments
- Complements existing systems

Boost Agility

- Faster, less costly than batch data movement
- Data virtualization provides loose coupling

Improve Productivity

- Better/faster than hand coding
- Right data at the right time to the right people
- Decision support, BI with a complete view of information

Better Information Control

- Powerful security, Auditing, Data Firewall
- Avoid data silo proliferation
- Central data access and policy, Compliance

JBoss Data Virtualization: Supported Data Sources

Enterprise RDBMS:

- Oracle
- IBM DB2
- Microsoft SQL Server
- Sybase ASE
- MySQL
- PostgreSQL
- Ingres

Enterprise EDW:

- Teradata
- Netezza
- Greenplum

Office Productivity:

- Microsoft Excel
- Microsoft Access
- Google Spreadsheets

Big Data:

- Apache
- HortonWorks
- Cloudera
- Apache Spark
- *More coming...*

In-Memory:

- JBoss Data Grid
- SAP HANA
- HP Vertica

Specialty Data Sources:

- ModeShape Repository
- Mondrian
- MetaMatrix
- LDAP

NoSQL:

- JBoss Data Grid
- MongoDB
- Cassandra
- *More coming...*

Enterprise & Cloud:

- Salesforce.com
- SAP
- Amazon RedShift

Technology Connectors:

- Flat Files, XML Files, XML over HTTP
- SOAP Web Services
- REST Web Services
- OData Services

WORK SMARTER INSIGHTS YOU NEED, WITHIN THE APPLICATION YOU USE

Continuous Optimization Loop

Observe - Collect Data

- Data Services and Mashups
- JBoss Data Virtualization
- Event Stream
 - JBoss A-MQ
 - Apache Kafka

Orient - Put in Context

- Data Analysis
 - Apache Spark, Hadoop
- In-Memory Data Mgmt
 - JBoss Data Grid
 - Apache Cassandra

Decide - Select course of Action

- Data Driven Reasoning, Decisions Models and Optimization
 - JBoss BRMS

Act - Do it

- Process Workflow Orchestration and Exception Management
 - JBoss BPM Suite
 - JBoss Fuse

Platform-as-a-Service
• Red Hat OpenShift

INSIGHTFUL APPLICATIONS POWERED BY RED HAT

Open | Modular | Embeddable | Cloud Ready

SAP HANA and SAP SDA

SAP HANA – Overview and Introduction to Smart Data Access

Aleksandra Aleksic
SAP HANA Product Management

June 2016



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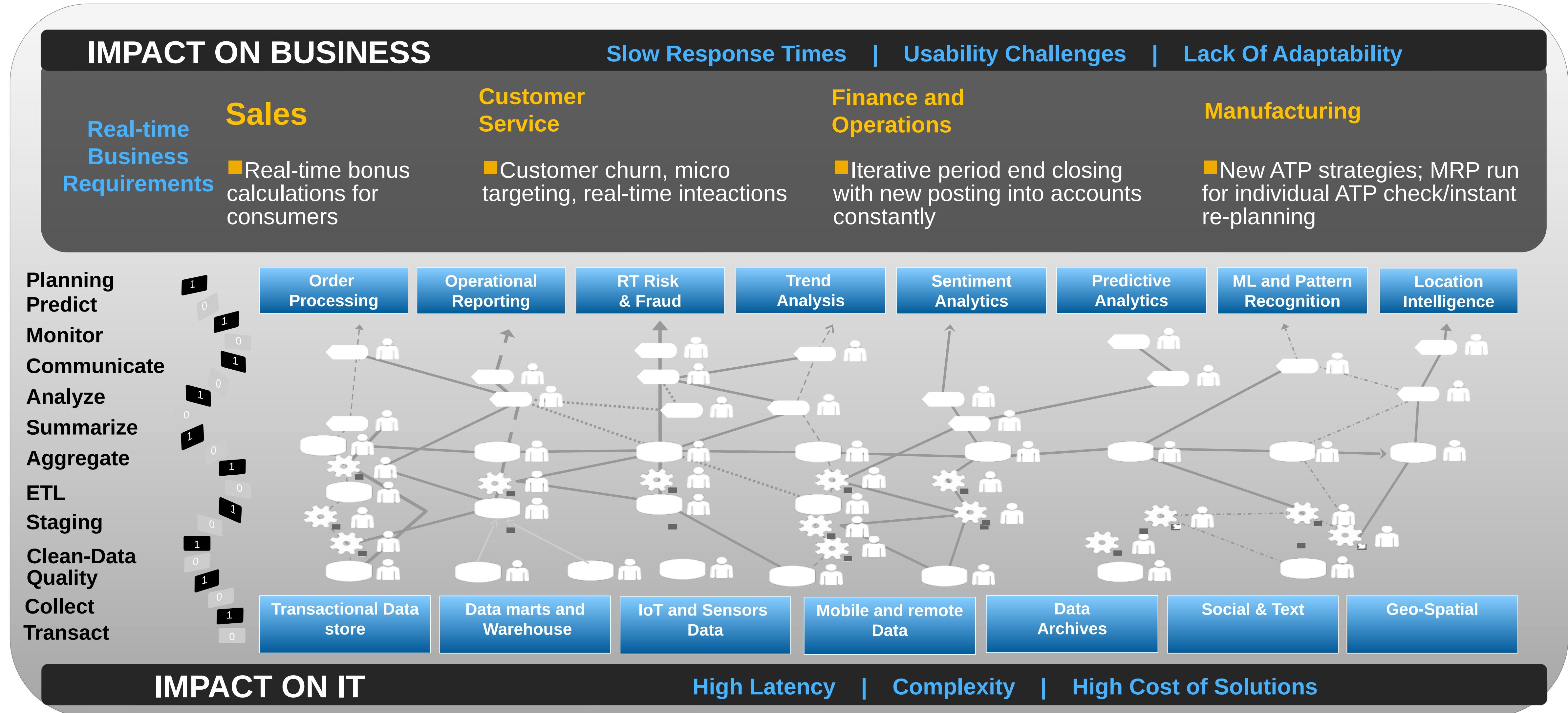
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SAP HANA – Introduction

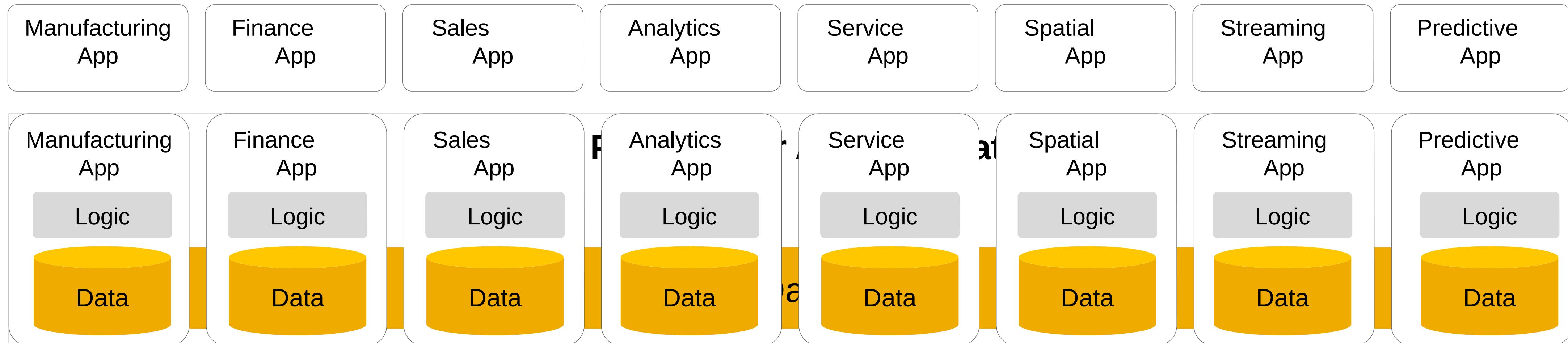
The issue: Data and system interconnectivity becomes the bottleneck

Point optimizations is no longer enough for modern application development and deployment



The solution: Make all data readily available to all applications

Reduce data movement and data latency – improve business agility & innovation

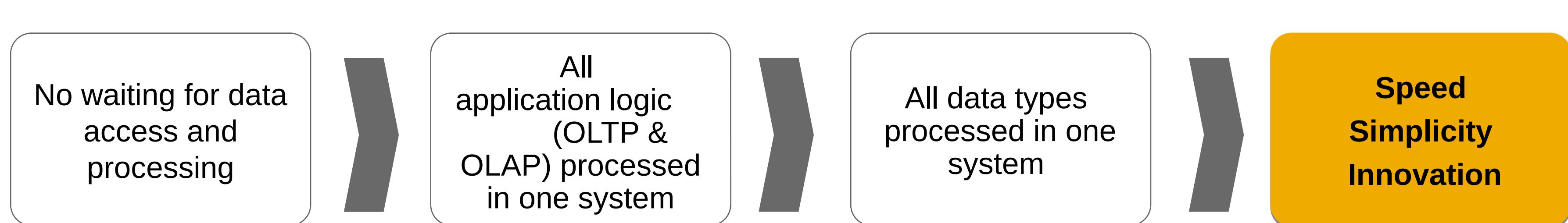
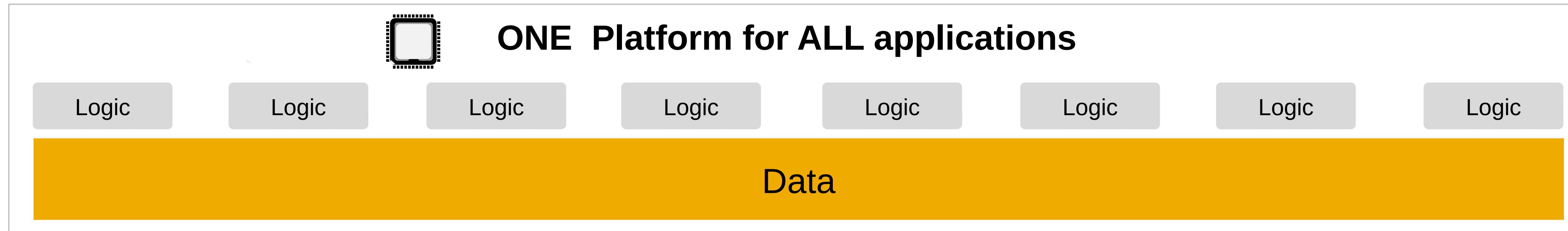
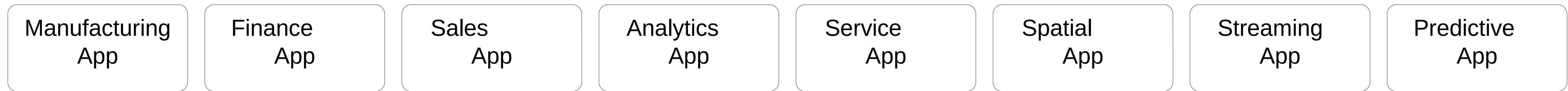


Unified application workloads
Unified data – single copy
Real-time processes

Complete business view
Ability to react in real-time
Ability to innovate

The solution is only possible with in-memory data management

Only data in-memory enables all applications to become real-time



SAP HANA Platform – foundation for Modern Applications

SAP HANA PLATFORM

ON-PREMISE | CLOUD | HYBRID

Application Services



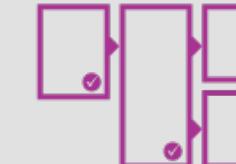
Web Server



JavaScript



Fiori UX



Graphic Modeler

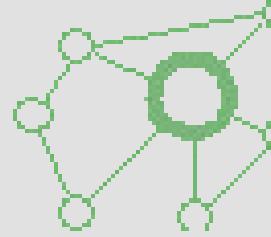


Application Lifecycle Management

Processing Services



Spatial



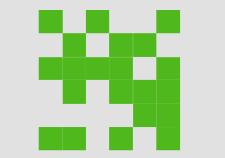
Graph



Predictive



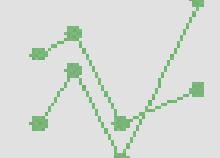
Search



Text Analytics



Streaming Analytics



Series Data



Business Functions

Integration & Quality Services



Data Virtualization



ELT & Replication



Data Quality



Hadoop & Spark Integration

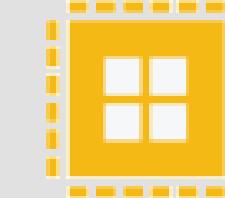


Remote Data Sync

Database Services



Columnar
OLTP+OLAP



Multi-Core &
Parallelization



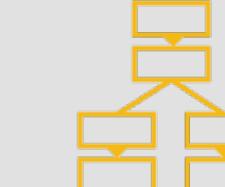
Advanced
Compression



Multi-
tenancy



Multi-Tier
Storage



Data
Modeling



Openness



Admin &
Security



High Availability &
Disaster Recovery

Platform for Startups & ISVs

A single platform powering next generation of applications

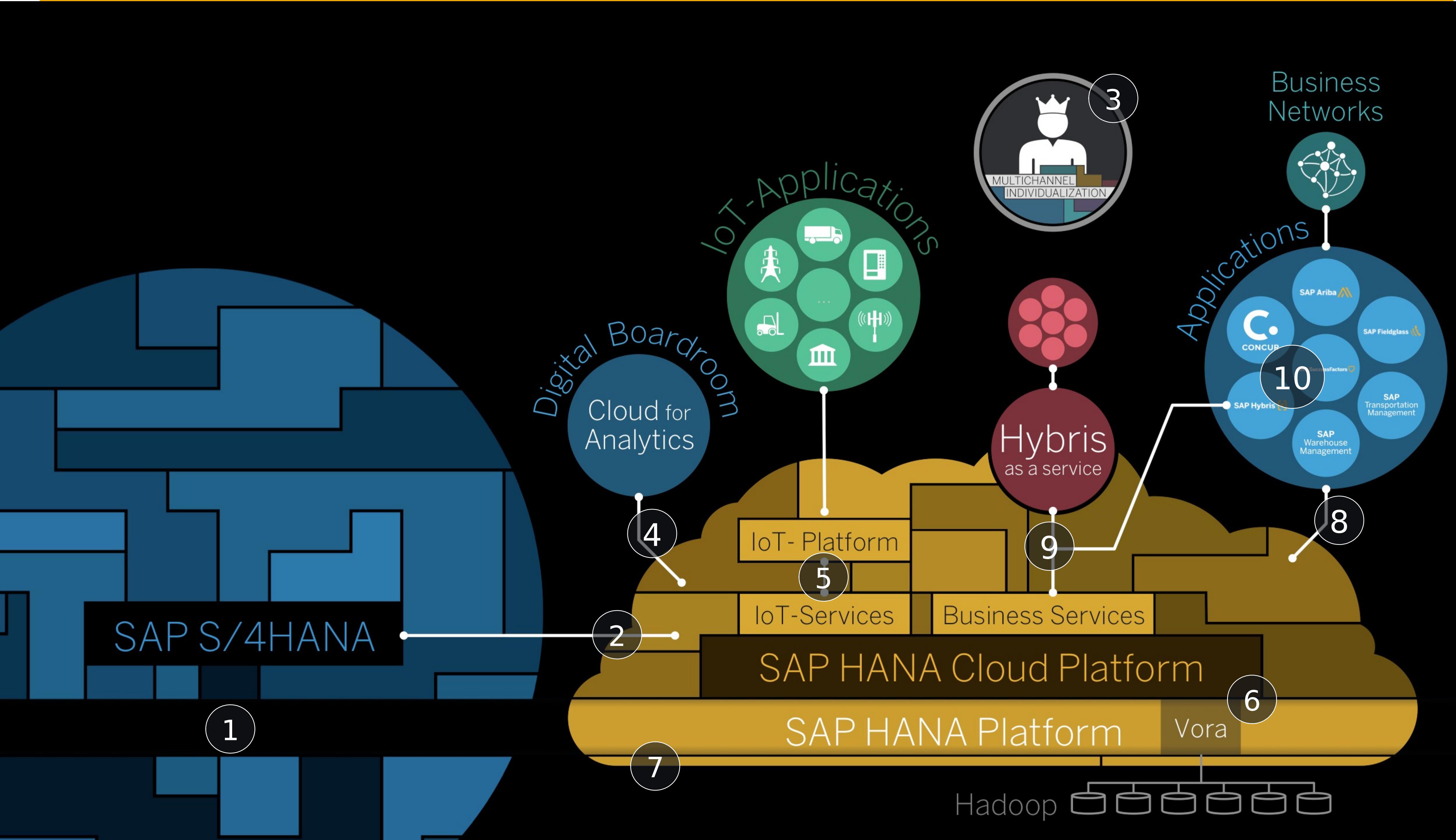


DRIVING ADOPTION

- Platform to imagine new generation of applications
- Simple consumption model – lowering barriers to entry
- Rapid commercialization of innovation

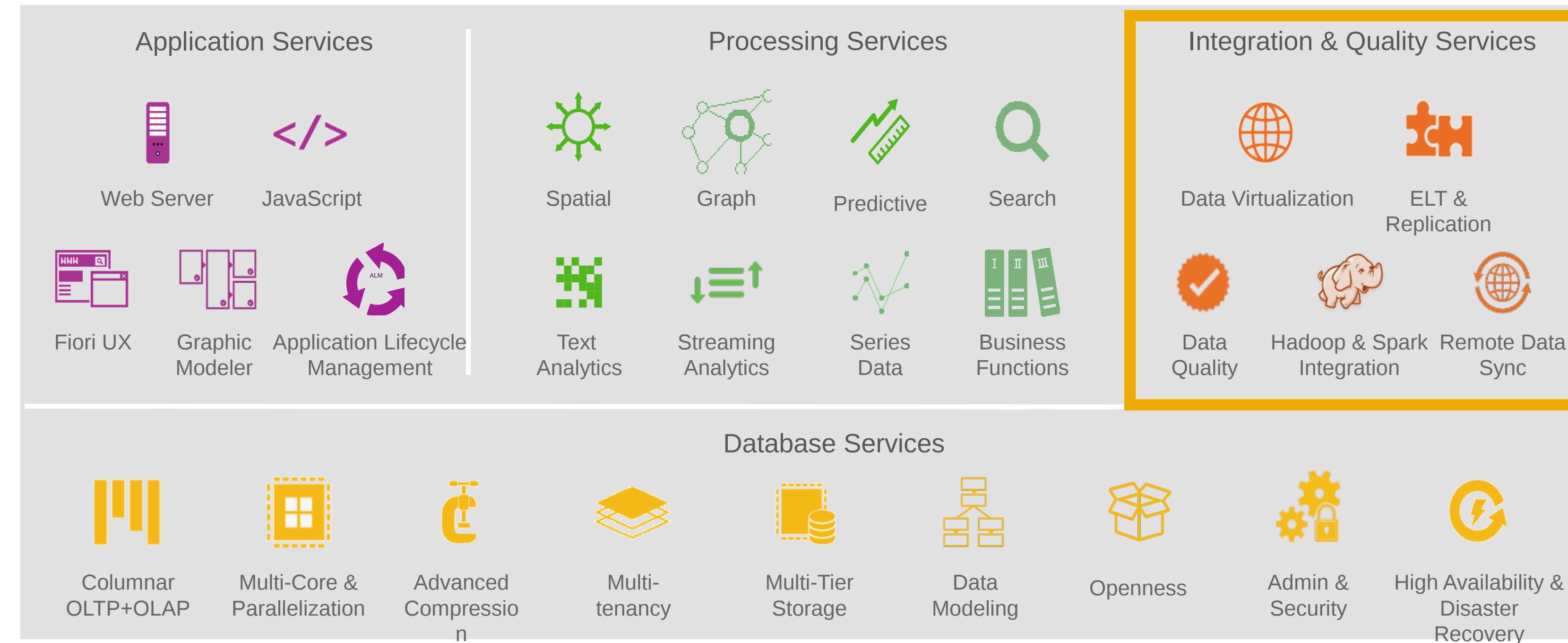
RECENT PROJECTS

- Industry solutions - Healthcare, Capital Markets
- Consumer and enterprise applications
- startups.sap.com (3000+ Startups & ISVs)



SAP HANA Platform – Integration Services

Data from any source for a complete view of the business



- Access information stored in data silos while keeping the data in place
- Replicate and move any type of data in real-time to the cloud and on-premise
- Capture and analysis live data streams and route to appropriate storage or dashboard
- Synchronize data between HANA and thousands of remote databases (SQL Anywhere, UltraLite)
- Multiple access points from HANA to Hadoop data: thru Spark, Hive, HDFS & Map Reduce



SAP HANA – Smart Data Access

Motivation

Issue

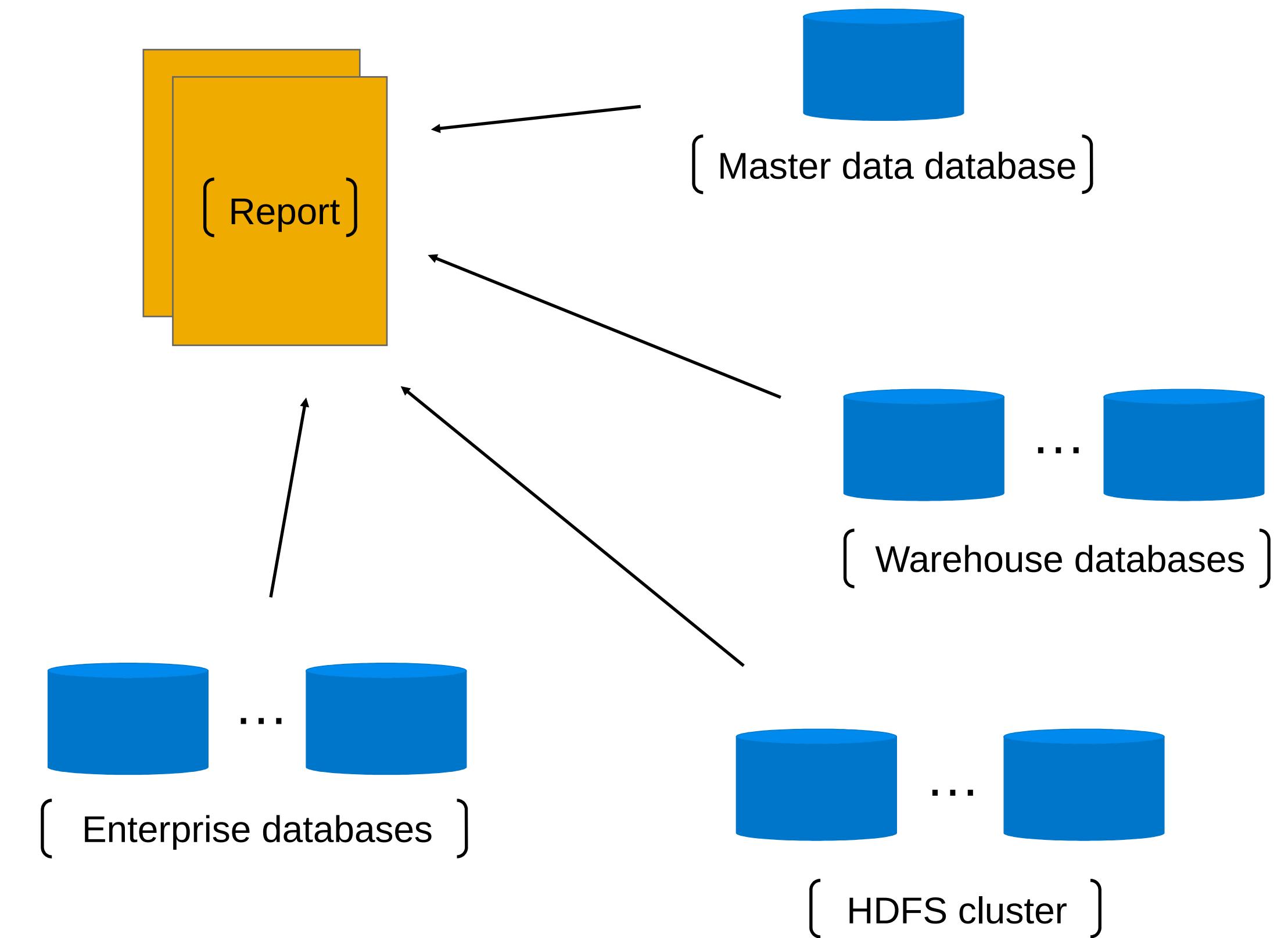
Customers are facing a heterogeneous system landscape across different locations, storing huge amount of data in different formats

Requirement

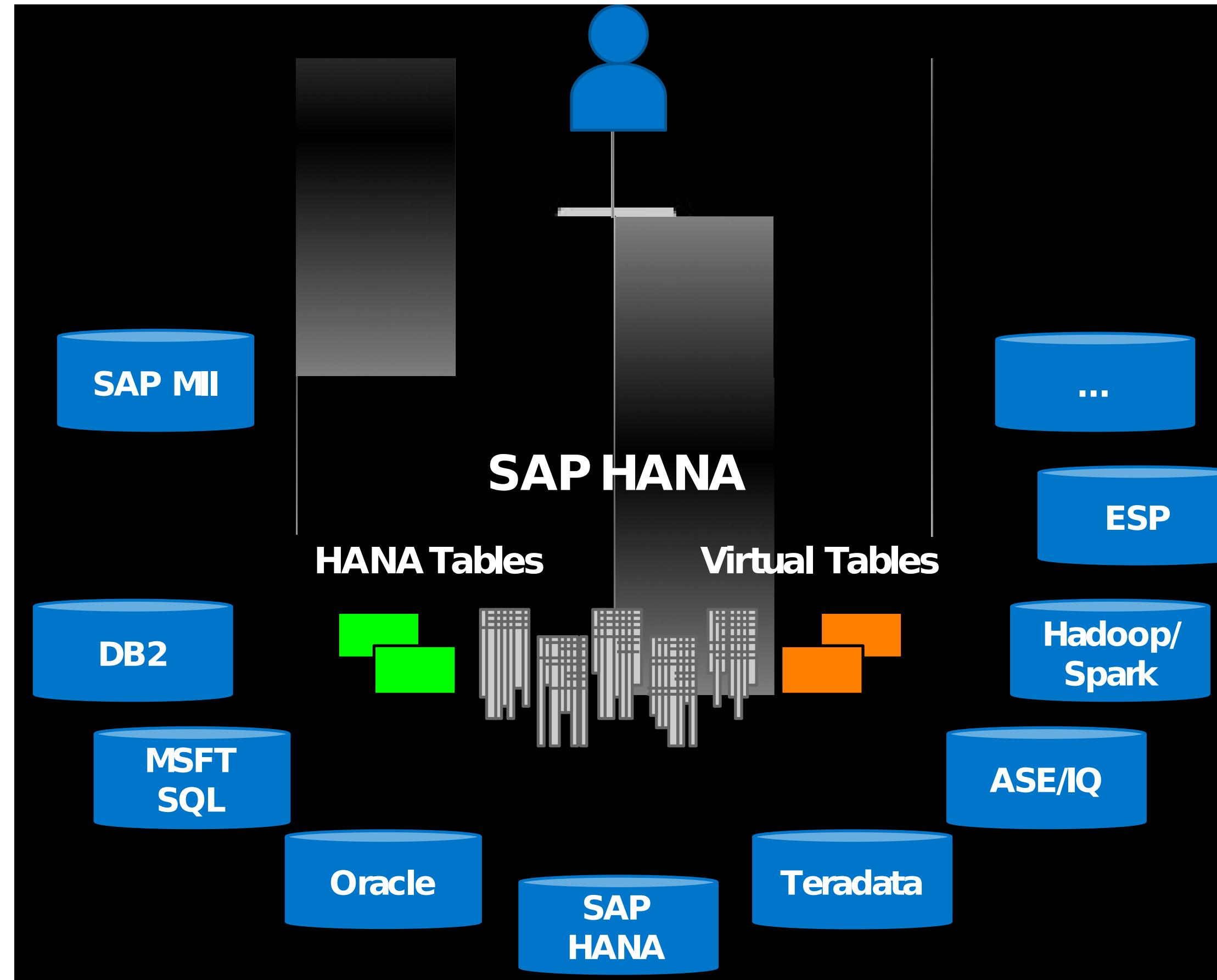
Customers require a cost-efficient, easy-to-deploy solution to get real-time data visibility across their fragmented data sources, e.g. for operational reporting, monitoring, predictive analysis, search



Virtualized Access



SAP HANA Smart Data Access: Overview

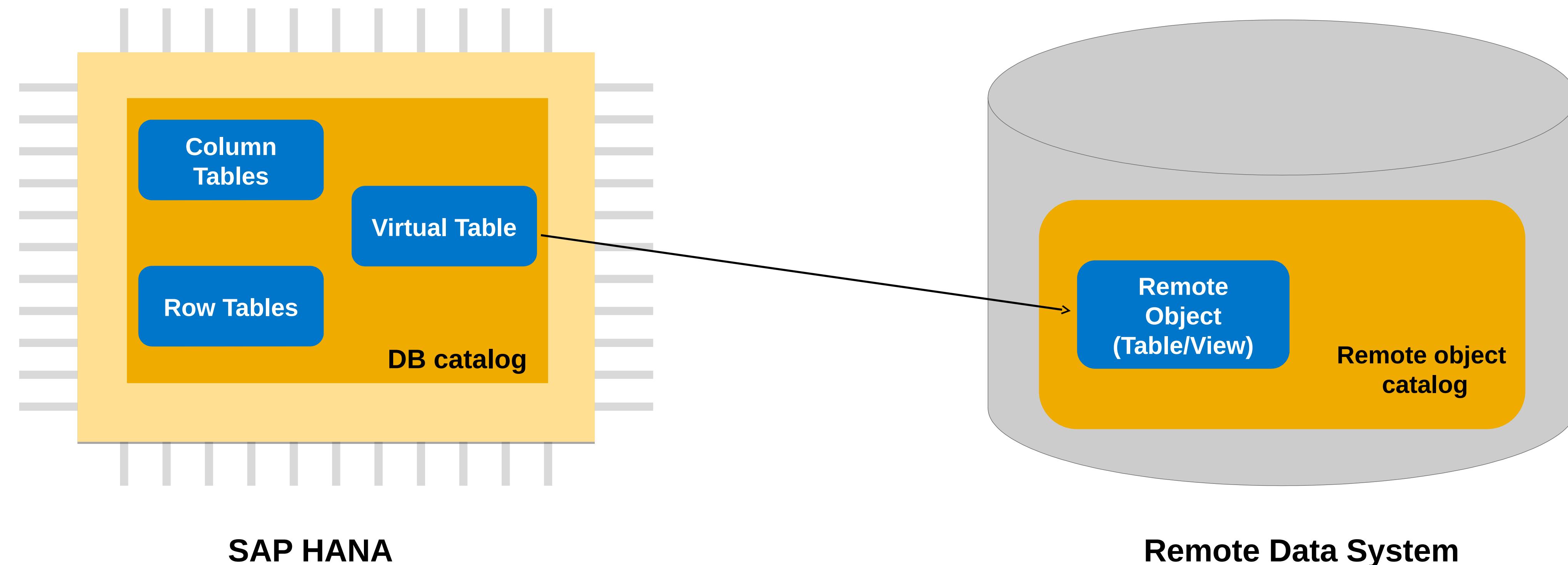


Key value proposition:

- Enables access to remote data just like “local” table
- Smart federated query processing
- Supports data location agnostic development
- No special syntax to access heterogeneous data sources
- Cost savings
- Benefit from HANA functionality without moving all data to HANA
- Rapid deployment of high-performance, data intensive transactional and analytical applications

Key Concept: Virtual tables

SAP HANA smart data access is based on local virtual tables that map to an existing object at the remote data source site



Additional Information Sources

SAP Public Web

hana.sap.com : SAP HANA Product home page

<http://scn.sap.com/community/hana-in-memory> : SAP HANA SCN community page

SAP Education and Certification Opportunities

SAP HANA academy (free!) : <http://www.saphana.com/community/hana-academy>

SAP HANA openSAP courses (free!) : <http://open.sap.com/courses>

SAP HANA Education and Certifications : www.sap.com/education

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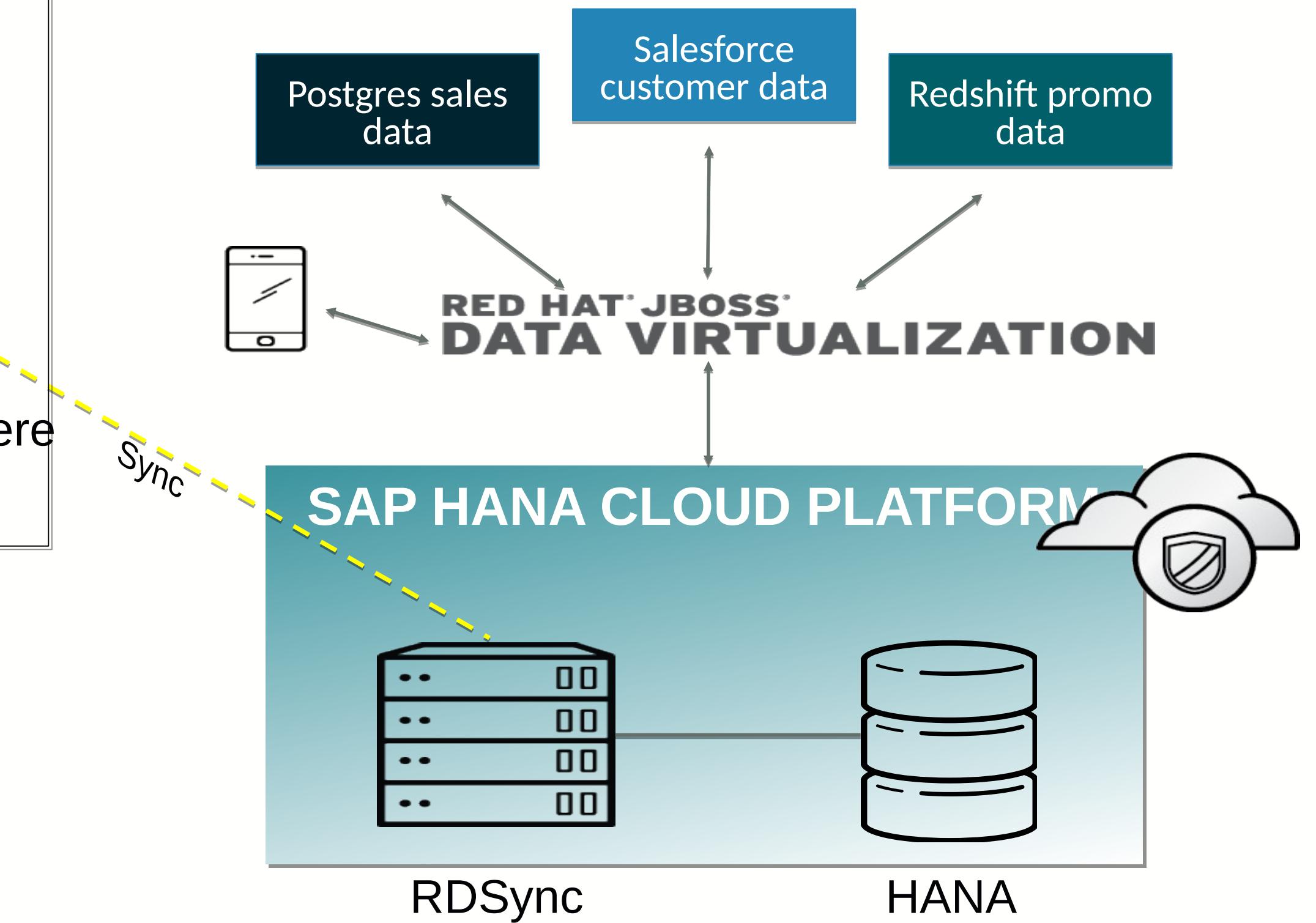
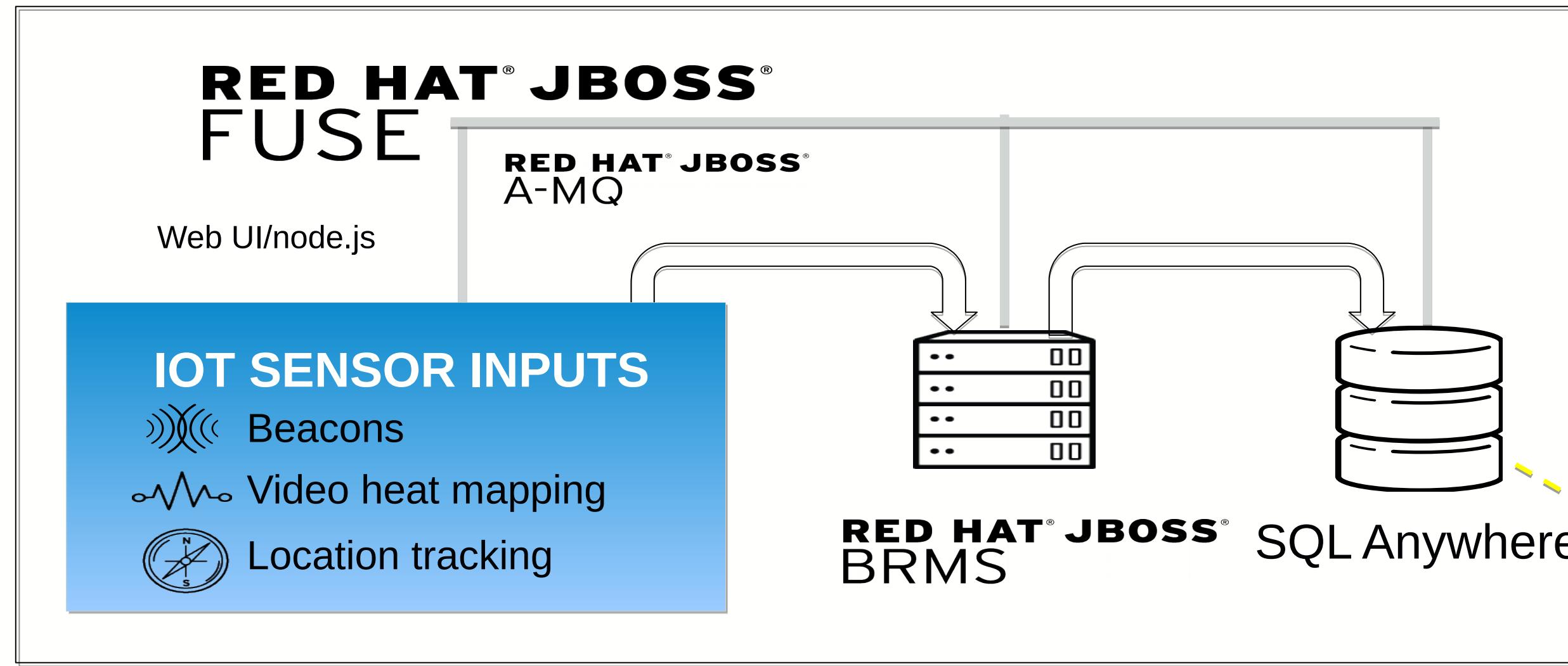
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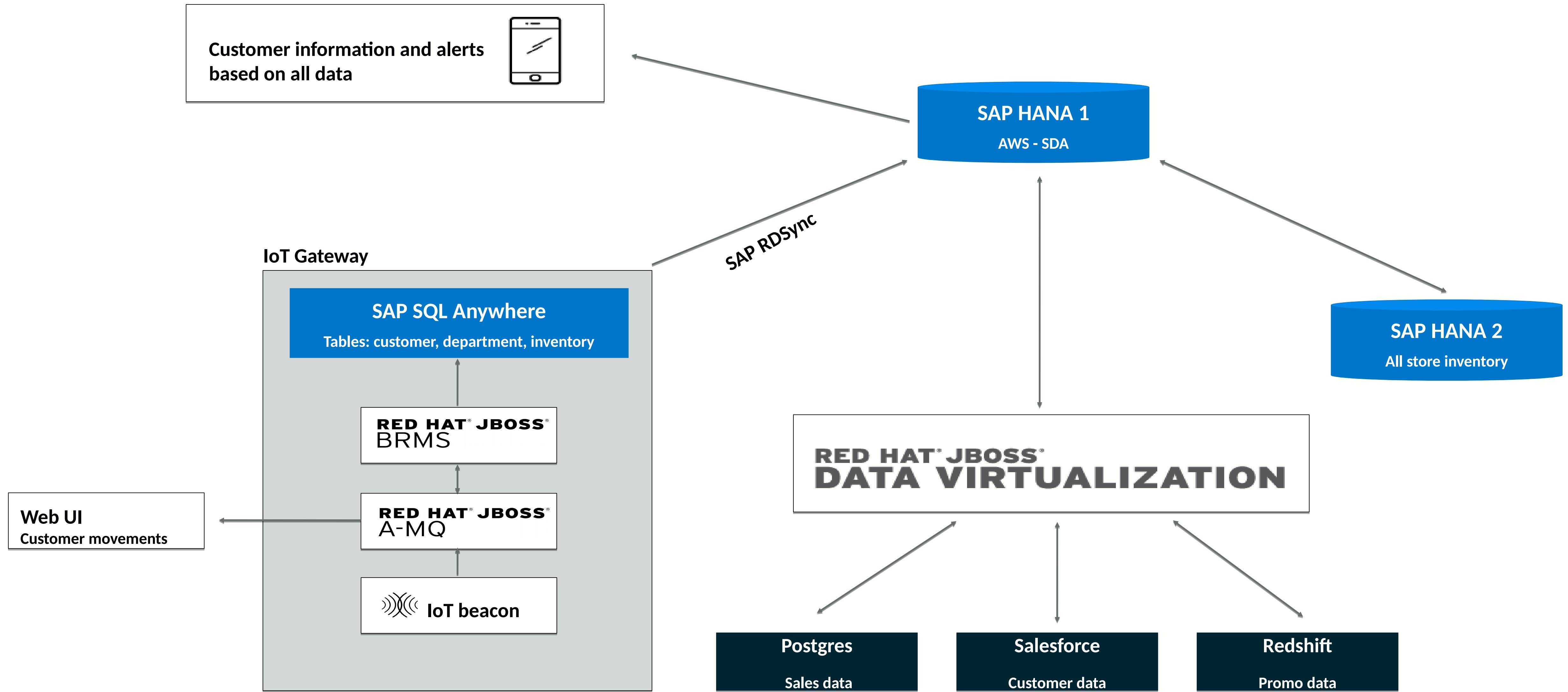
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Demo – Retail Beacon





Benefits Red Hat and SAP

Open architectures where customers can combine complementary technologies and use their product of choice

SAP HANA and SDA with JBoss Data Virtualization

In an IOT architecture, HANA can act as the performance booster and a data virtualization server can provide the required agility. In other words, deploying both technologies complement each other to produce a highly performant and agile architecture for IOT and Big Data.

RDSync

Asynchronous communication between the gateway and data center

SQL Anywhere

Very lightweight, feature rich, flexible data source

A-MQ

Asynchronous, scalable, transport for IOT data on the edge with MQTT and AMQP protocols

BRMS

Filter Data at the gateway and take quick action where necessary

Session Title	Date and Time
Integration Roadmap: iPaaS, API Management, Red Hat JBoss Fuse, Data Virtualization, and more	Tuesday, Jun 28 10:15 am - 11:15 am
Data-driven decision-making: How Red Hat uses data to improve its products and customer experiences	Tuesday, Jun 28 10:15 am - 11:15 am
Anatomy of a big data application in containers	Tuesday, Jun 28 11:30 am - 12:30 pm
Think differently with real-time data	Tuesday, Jun 28 3:30 pm - 4:30 pm
Big data DevOps: Apache Spark streaming on OpenShift Enterprise by Red Hat	Tuesday, Jun 28 4:45 pm - 5:45 pm
Using predictive analytics to manage infrastructure risk	Wednesday, Jun 29 4:45 pm - 5:45 pm
Unifying analytics across data sources with Red Hat JBoss Data Virtualization	Wednesday, Jun 29 4:45 pm - 5:45 pm
IoT and big data with Red Hat JBoss Middleware and SAP HANA	Wednesday, Jun 29 4:45 pm - 5:45 pm
Real-time data services with Red Hat JBoss Data Virtualization and Red Hat JBoss Data Grid	Thursday, Jun 30 11:30am - 12:30pm
The intersection of business rules management and big data	Thursday, Jun 30 3:30 pm - 4:30 pm
Big data processing and analytics in Red Hat JBoss Data Grid 7	Thursday, Jun 30 4:45 pm - 5:45 pm



RED HAT
SUMMIT

POWER UP PARTY DOWN

YOU HAVE THE POWER.
WE HAVE THE PARTY.

WED. JUNE 29 | 9PM - 12AM

**POWER UP and PARTY DOWN
with Red Hat Mobile,
Middleware and OpenShift.**

Wednesday evening 9PM - 12AM

Pick up your invitation for the
party that beats all parties at:
**Mobile, Middleware or
OpenShift demo pods in the
Red Hat Booth, Partner
Pavilion**

