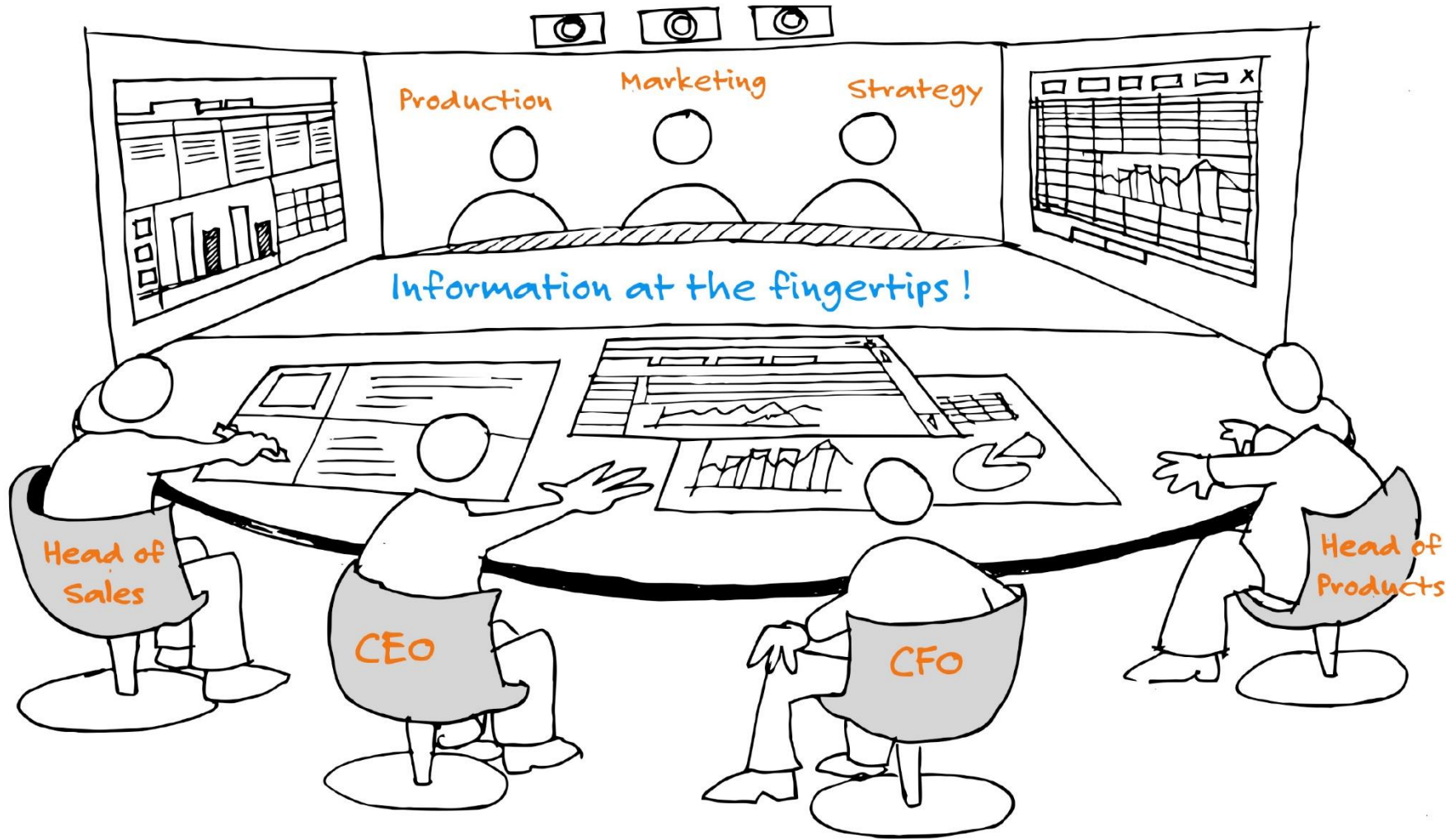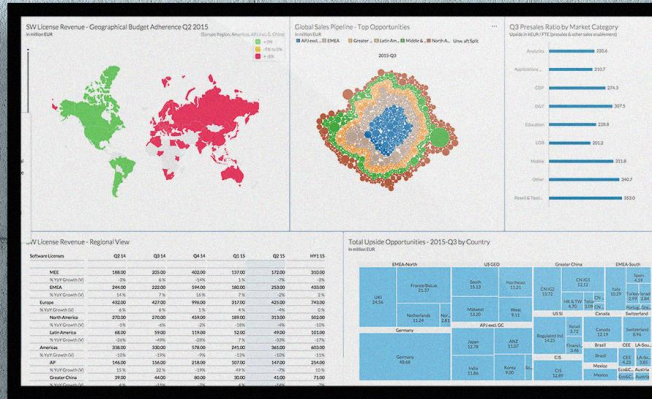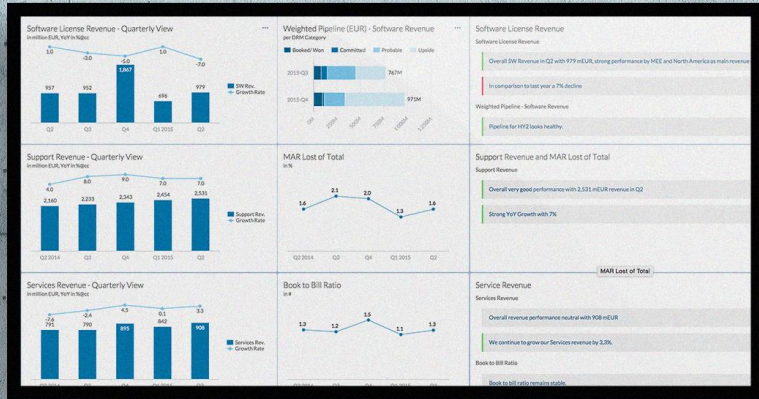# SAP HANA Platform
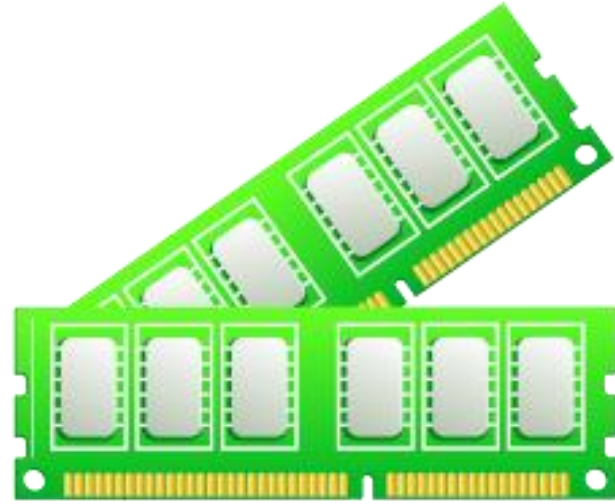## The real-time platform for all applications

Artur Gornik
Cloud and Platform Technology ☐ SAP Middle & Eastern Europe

PUBLIC

Production   Marketing   Strategy

Information at the fingertips !

Head of Sales

CEO

CFO

Head of Products

SAP

Order	Country	Product	Sales
456	France	corn	1000
457	Italy	wheat	900
458	Italy	corn	600
459	Spain	rice	800

456	France	corn	1000
457	Italy	wheat	900
458	Italy	corn	600
459	Spain	rice	800

456	France	corn	1000
457	Italy	wheat	900
458	Italy	corn	600
459	Spain	rice	800

Σ

Transactions | OLTP | ETL | OLAP | Analytics

11001
01010
10001

Replication   Replication

Transactions | SAP HANA Platform OLAP + OLTP | Analytics

11001
01010
10001

SAP
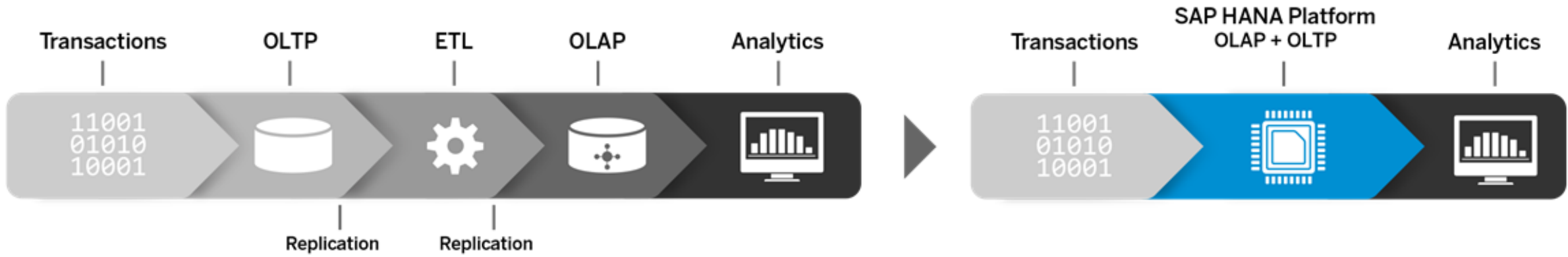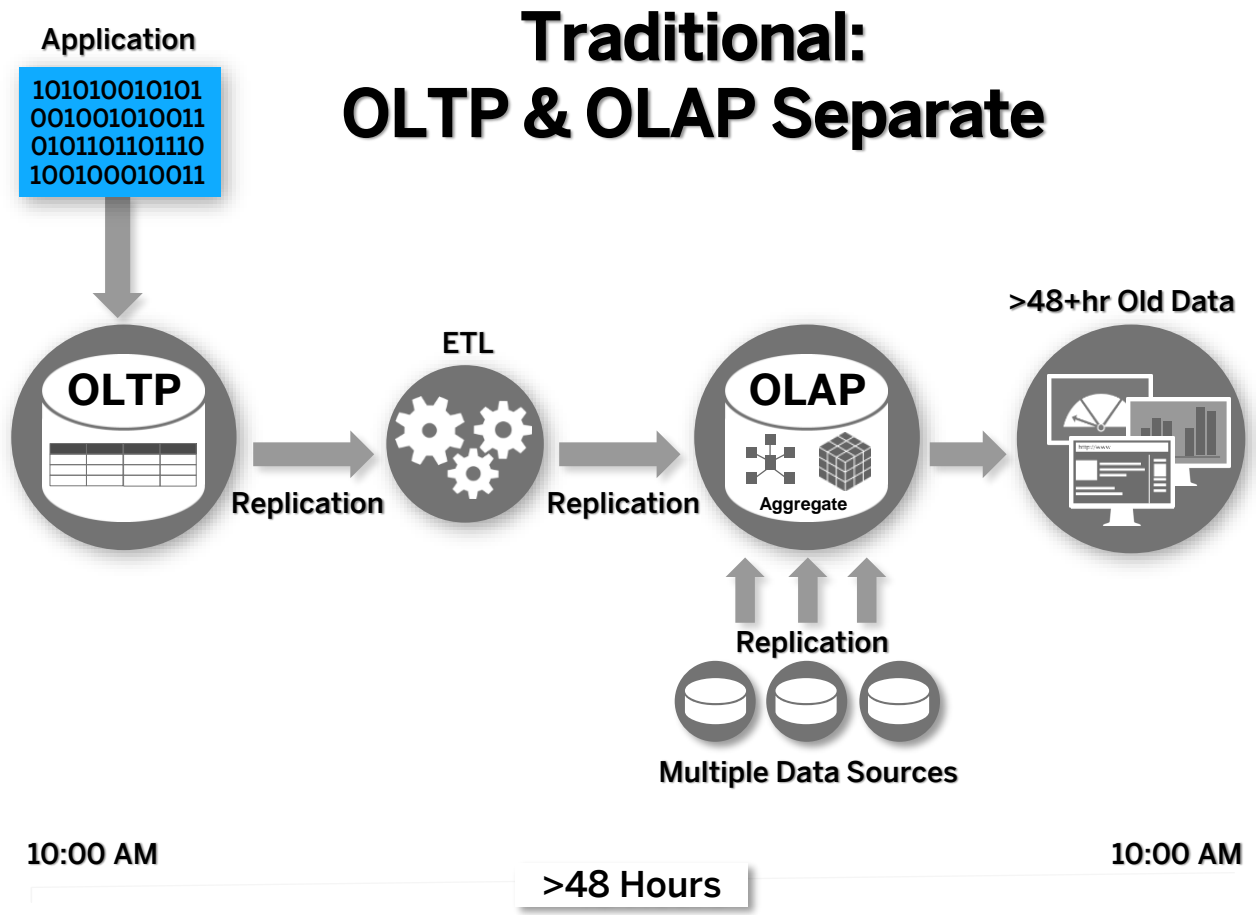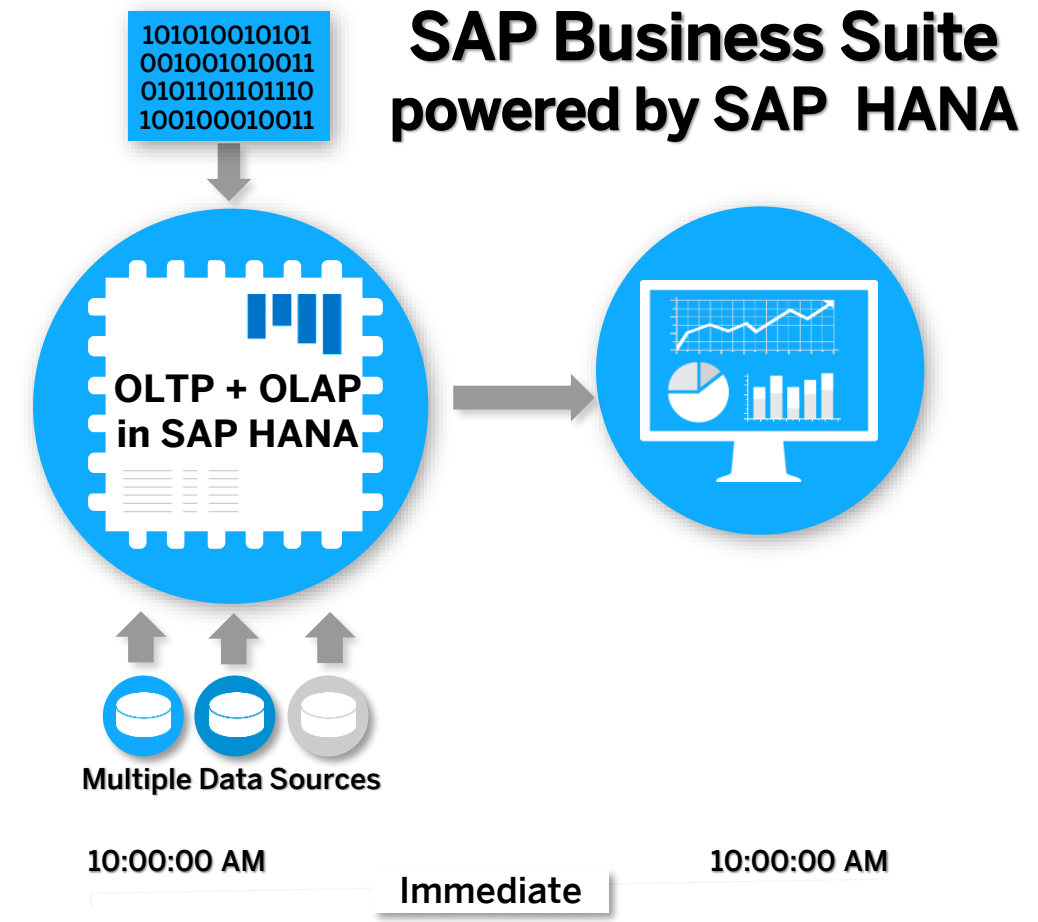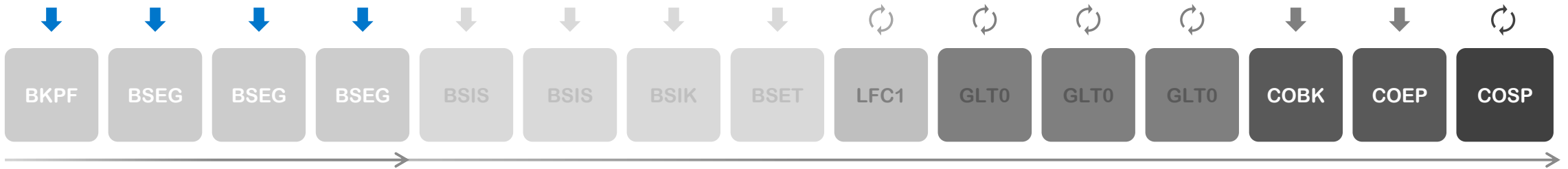
Leverage every
opportunity
from any device

SAP HANA
Enterprise Computing Platform

Data Management | EIM | Advanced Analytics | Application Services
High Availability | Disaster Recovery | Security
Flexible Deployment Options | Open

Process any data

SAP HANA SPS12   SAP HANA® 2

SAP HANA SPS12	SAP HANA 2
• Run applications without maintenance upgrade disruptions	• Run and build next-generation apps using latest technology innovations
• No new support package stacks (SPS)	• Twice-a-year support package stacks (SPS)
• Maintenance revisions for SAP HANA SPS12 is provided until **May 2021**	• Maintenance for SPS provided until next 2 SPSs are released (Example: SPS00 supported until SPS02)

Upgrade options to SAP HANA 2
Simple update. No database migration.

– Simple upgrade from SAP HANA SPS10, SPS 11 or SPS12
– Use SAP HANA capture and replay to test before going live
– Existing SAP applications may run on SAP HANA 2 after validation

Innovate without disruption   **Innovate with simplified IT**

SAP
HANA
SPS12

SAP
HANA
SPS12

SAP
HANA 2

SAP
HANA 2

Upgrade to gain
maintenance
until May 2019

Run apps without
DB maintenance
disruptions

Innovate using
latest technology

Innovate and run apps on
single system with latest
technology

The problem with current IT landscapes
Silos, delay, and complexity hinder business agility and innovation

Manufacturing App	Finance App	Sales App	Analytics App	Service App	Spatial App	Streaming App	Predictive App
Logic	Logic	Logic	Logic	Logic	Logic	Logic	Logic
Data	Data	Data	Data	Data	Data	Data	Data

ETL & Staging
Data

ETL & Staging
Data

ETL & Staging
Data
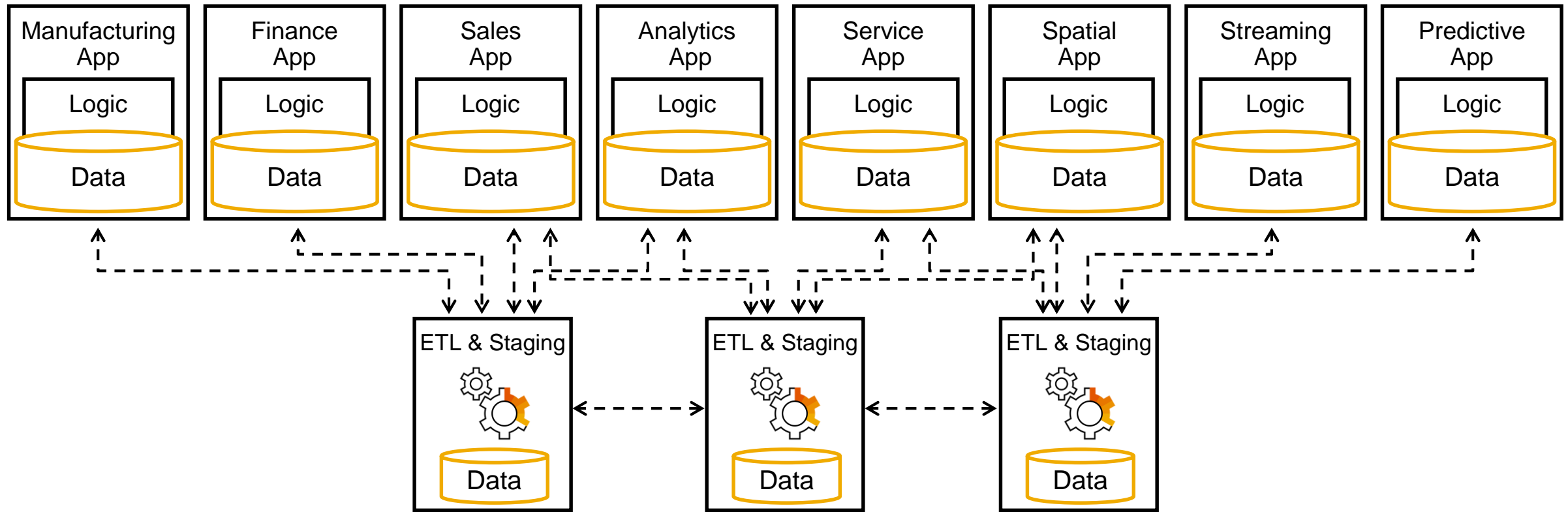
Application silos

Multiple data copies

Batch processing

Partial business view

No real-time insights

Limited ability to innovate

The solution: Make all data readily available to all applications
Reduce data movement and data latency – Improve business agility and innovation

Manufacturing App	Finance App	Sales App	Analytics App	Service App	Spatial App	Streaming App	Predictive App

Manufacturing App	Finance App	Sales App	Analytics App	Service App	Spatial App	Streaming App	Predictive App
Logic	Logic	Logic	Logic	Logic	Logic	Logic	Logic
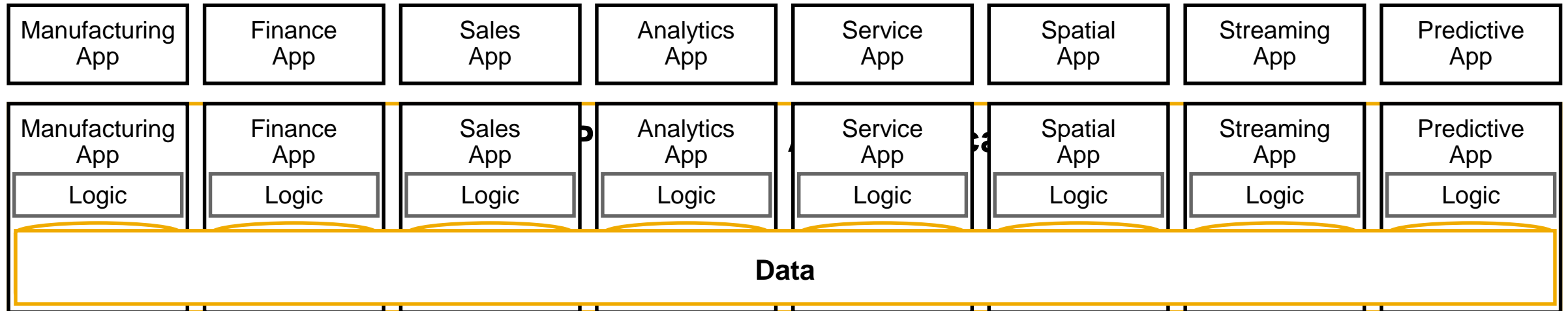
Data

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

| Manufacturing App | Finance App | Sales App | Analytics App | Service App | Spatial App | Streaming App | Predictive App |

ONE Platform for ALL Applications

| Logic | Logic | Logic | Logic | Logic | Logic | Logic | Logic |
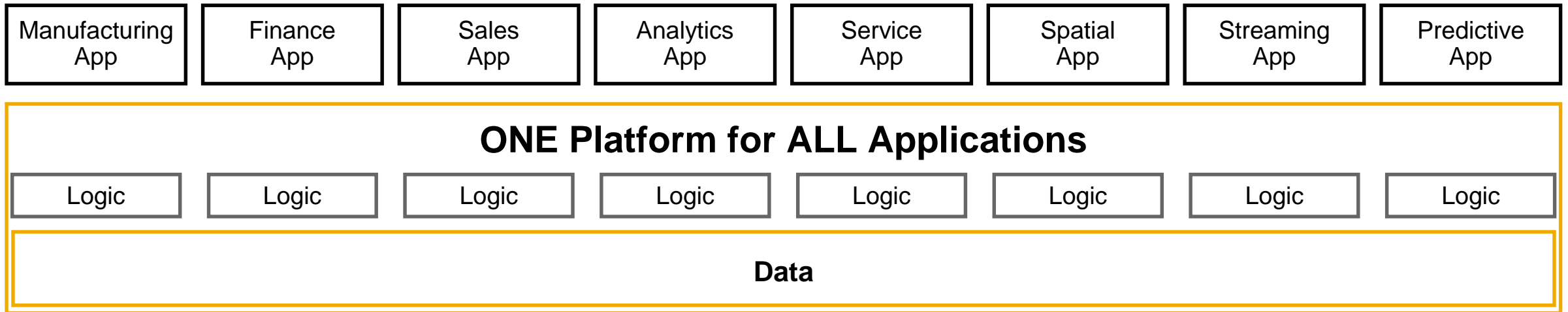
Data

No waiting for data access and processing　〉　All application logic (OLTP and OLAP) processed in one system　〉　All data types processed in one system　〉　**Speed Simplicity Innovation**

SAP HANA Platform
The in-memory data platform for digital business

— All Devices —

— SAP, ISV and Custom Applications —
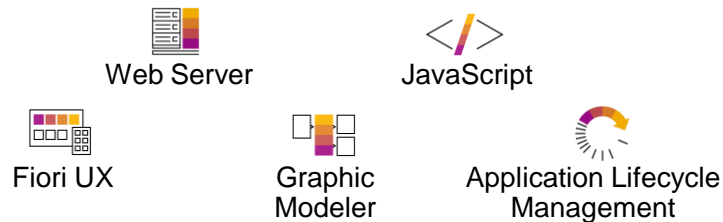
S A P   H A N A   P L A T F O R M

APPLICATION DEVELOPMENT

- Web Server
- JavaScript
- Fiori UX
- Graphic Modeler
- Application Lifecycle Management

ADVANCED ANALYTICAL PROCESSING

- Spatial
- Graph
- Predictive
- Search
- Text Analytics
- Streaming Analytics
- Series Data
- Business Functions

DATA INTEGRATION & QUALITY

- Data Virtualization
- ELT & Replication
- Data Quality
- Hadoop & Spark Integration
- Remote Data Sync

DATABASE MANAGEMENT

- Columnar OLTP+OLAP
- Multi-Core & Parallelization
- Advanced Compression
- Multi-tenancy
- Multi-Tier Storage
- Data Modeling
- Openness
- Admin & Security
- High Availability & Disaster Recovery
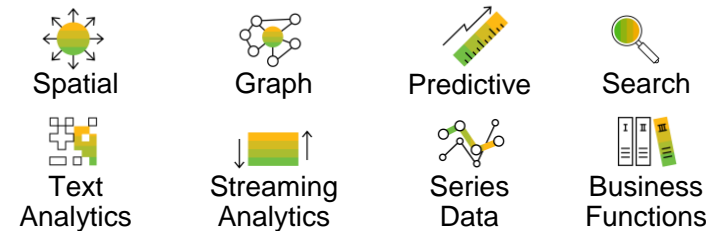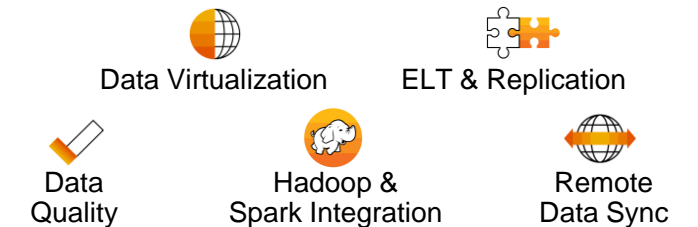
ONE Open Platform   **OLTP + OLAP**   **ONE Copy of the Data**

Choice of deployment: Cloud and On-Premises

CONCUR

SAP Ariba

SAP Hybris

SAP Fieldglass

SAP SuccessFactors

SAP S/4 HANA	SAP BW/4 HANA	SAP Apps	3rd-Party Apps
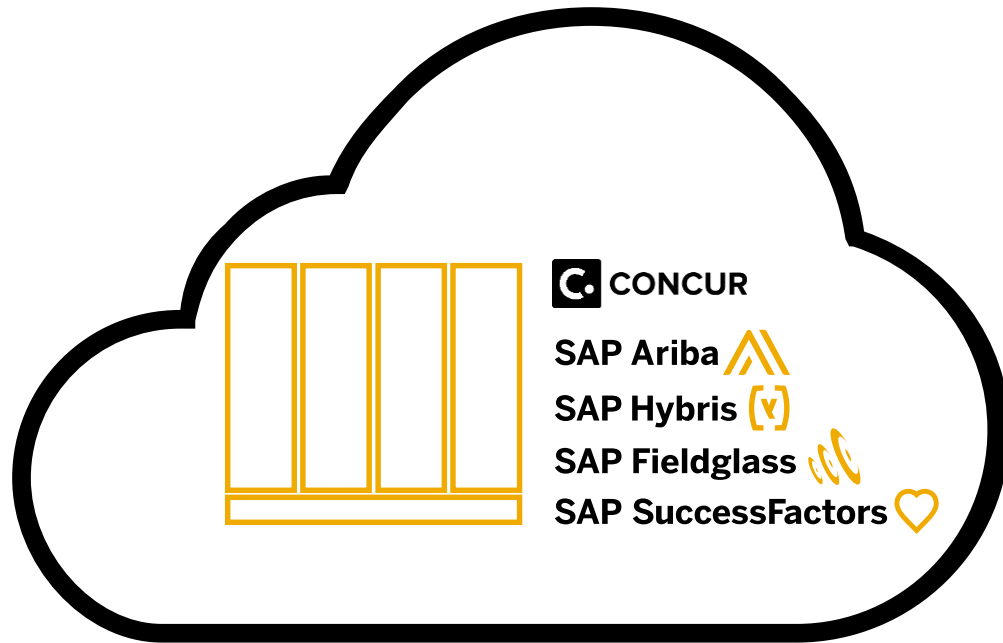
Cloud
Run all applications
in the cloud
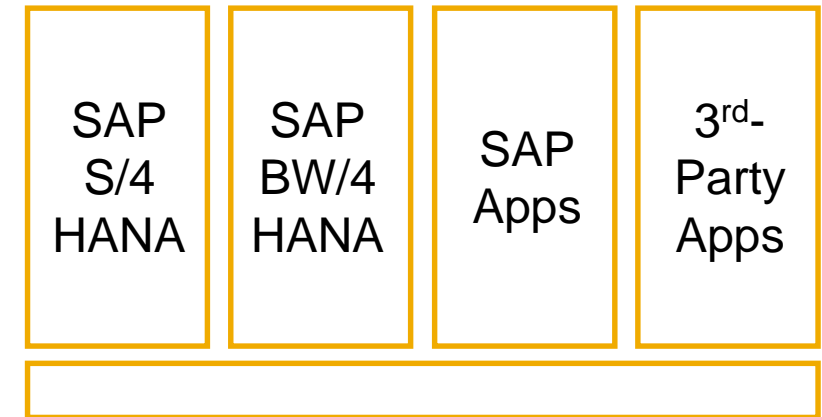
On-Premises
Run all applications
on-premises

Choose the right cloud deployment option

Public Cloud

SAP HANA One

SAP HANA on IaaS

- Pay per hour for SAP HANA license
- Build native SAP HANA applications

- Bring your own SAP HANA license
- Build native SAP HANA applications and run SAP apps

SAP certified IaaS providers

Managed Private Cloud

SAP HANA Enterprise Cloud

- Faster time to value with fully managed and secured cloud that offers elasticity and flexibility
- Run SAP Business Suite and SAP BW powered by SAP HANA and custom applications on SAP HANA
- Deliver maximum performance, security, high availability, and disaster recovery

Platform-as-a-Service

SAP Cloud Platform

- Open platform-as-a-service with in-memory DB and application services
- Build new applications or extend SAP cloud and on-premises applications
- Integrate cloud and on-premises applications seamlessly and securely
- Create, deploy, and manage enterprise-ready mobile applications

Choose the right on-premises deployment option

Appliance

S A P   H A N A   S Y S T E M

Software Server Network Storage	Software Server Network Storage	Software Server Network Storage
Node 1	Node 2	Node n
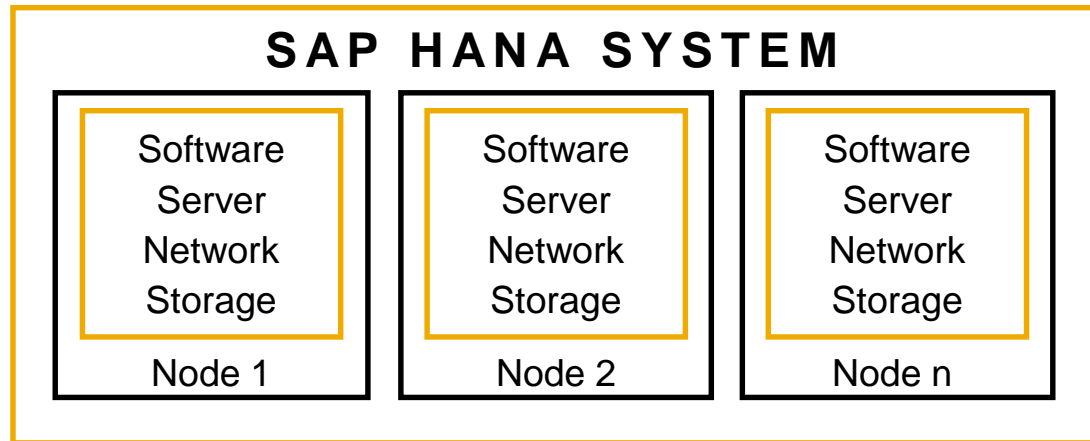
All-in-one box by certified partners
(1,100+ configurations – 64 GB to 20 TB)

Tailored Data Center Integration

S A P   H A N A   S Y S T E M

Software	Software	Software
Server	Server	Server
Network	Network	Network
Storage	Storage	Storage
Node 1	Node 2	Node n
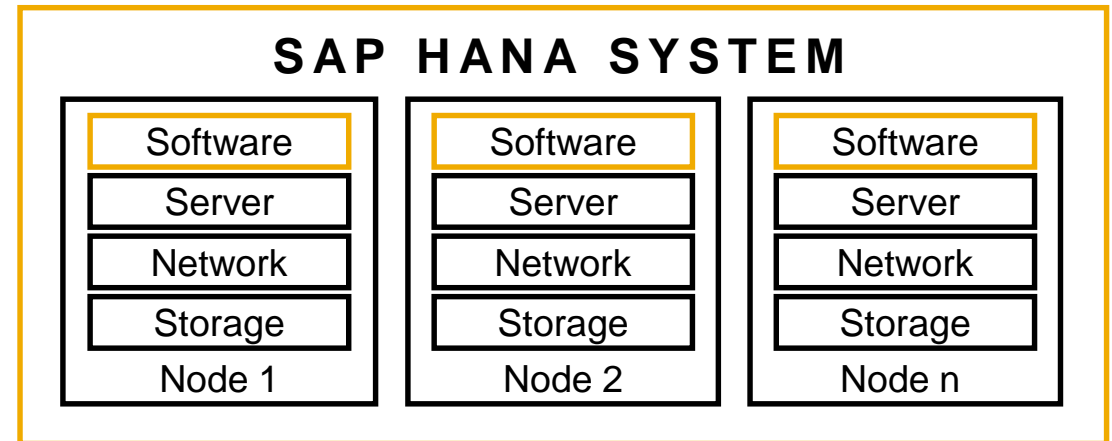
Choice of components that meet SAP
requirements from different vendors

All SAP applications run better on SAP HANA Platform
SAP HANA is central to SAP strategy

Core Business Processes	Data Warehouse and Data Marts	Operational Reporting, BI	Advanced Analytics	Cloud Solutions	Business Network	Big Data	IoT
S/4HANA	BW/4HANA	HANA Live, Lumira	BPC, S&OP, CO-PA	Successfactors, Sales, Service and Marketing	Ariba	Customer Engagement Intelligence	Predictive Maintenance
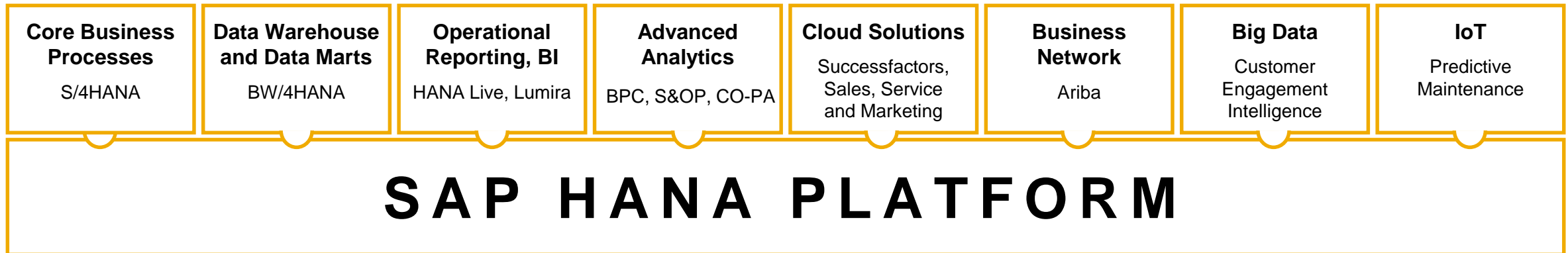
SAP HANA PLATFORM

- Every product from SAP already runs in/will soon be optimized for SAP HANA
- SAP HANA powers both on-premises and cloud applications
- SAP HANA enables managed private cloud (SAP HANA Enterprise Cloud) and SAP Platform-as-a-Service (SAP Cloud Platform)
- SAP HANA is available in third-party public clouds (Amazon AWS, Microsoft Azure, Google Cloud Platform, Huawei, IBM Bluemix)

Run core business processes and operational reporting on SAP HANA Platform

```
┌──────────────────────────┐   ┌──────────────────────────┐
│                          │   │  Operational Reporting   │
│      SAP S/4HANA         │   │  (SAP BusinessObjects,   │
│                          │   │       3rd-Party)         │
└────────────┬─────────────┘   └──────────────▲───────────┘
             │                                │
┌────────────│────────────────────────────────│──────────┐
│            │    S A P   H A N A   P L A T F O R M        │
│            │        ┌───────────────────────│────────┐  │
│            │        │      Reporting Views           │  │
│            │        └────────────────────────────────┘  │
│            ▼                                             │
│   ┌──────────────────────────────────────────────────┐  │
│   │        SAP S/4HANA Physical Tables               │  │
│   └──────────────────────────────────────────────────┘  │
└─────────────────────────────────────────────────────────┘
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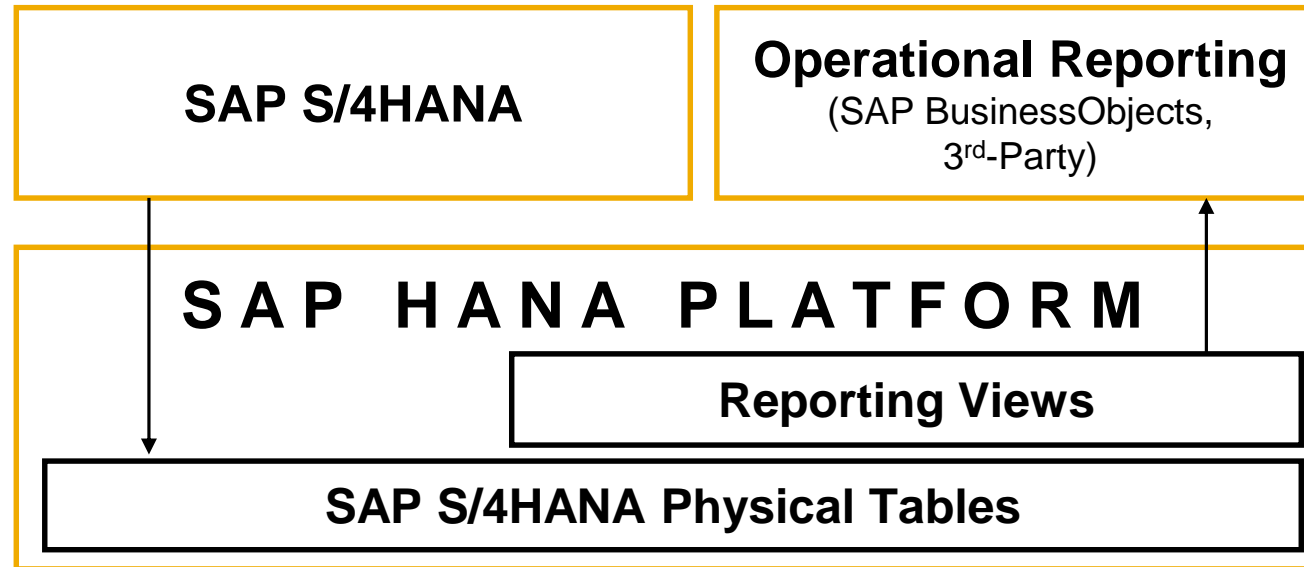
- Simplified user interface
- Simplified data model – No data redundancies, no data duplication
- Real-time operational reporting on fresh data with 2,000+ views
- Faster response time – Data intensive business logic run inside SAP HANA

Run SAP BW/4HANA

Gain real-time insights from any data in your enterprise
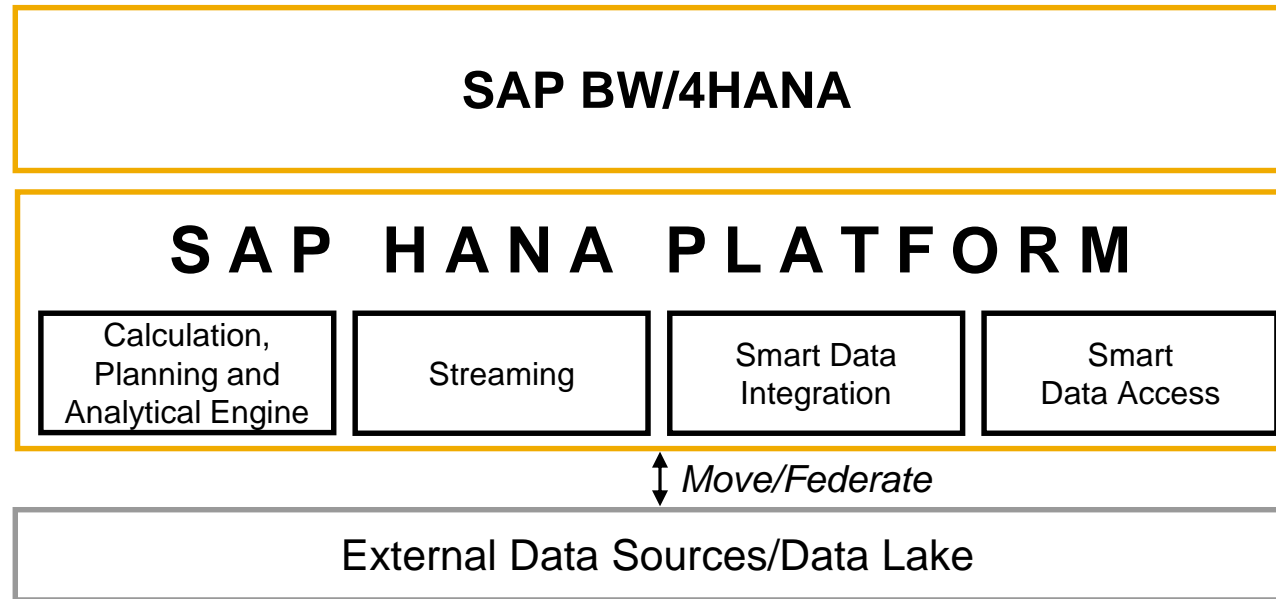
- Simplified data structures, data flows, and data integration from many sources
- Modern user interface for business users, modelers, and administrators
- Delivers high performance with in-memory speed, calculation pushdown, and built-in advanced analytics
- Supports unlimited data volumes with built-in data lifecycle management
- Allows access to SAP BW/4HANA objects and logic with native SQL in SAP HANA
- Available on-premises or in the cloud

Build value-added applications on SAP HANA Platform

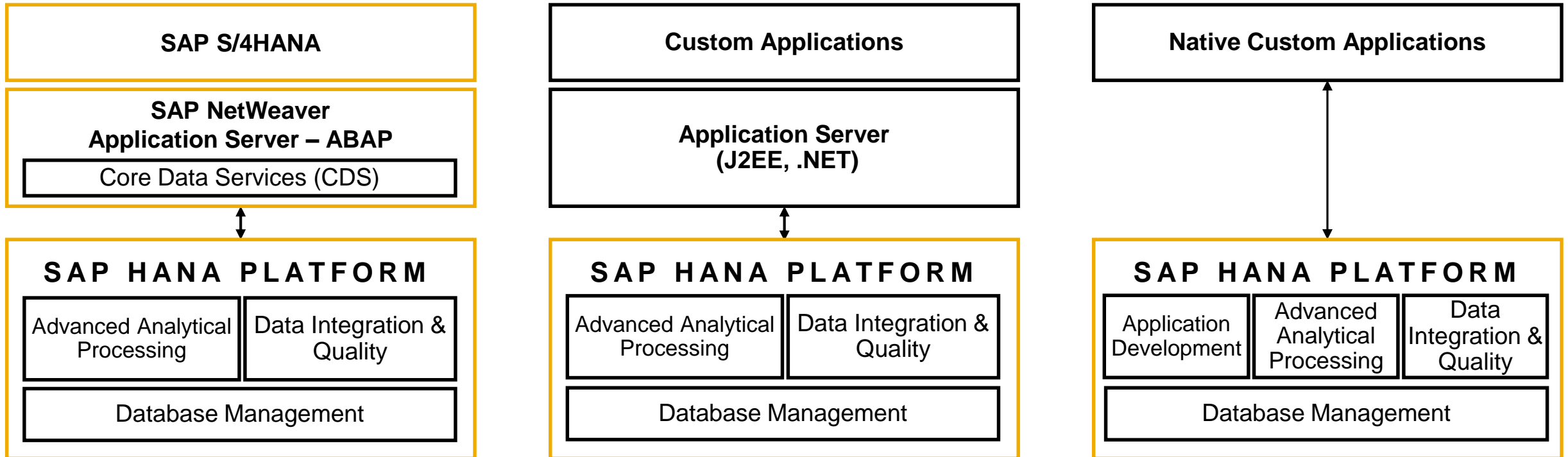| SAP Applications	Ad-hoc Reporting Applications	Planning and Optimizing Applications	Big Data Analytics Applications	IoT Applications	Predictive Applications

S A P   H A N A   P L A T F O R M
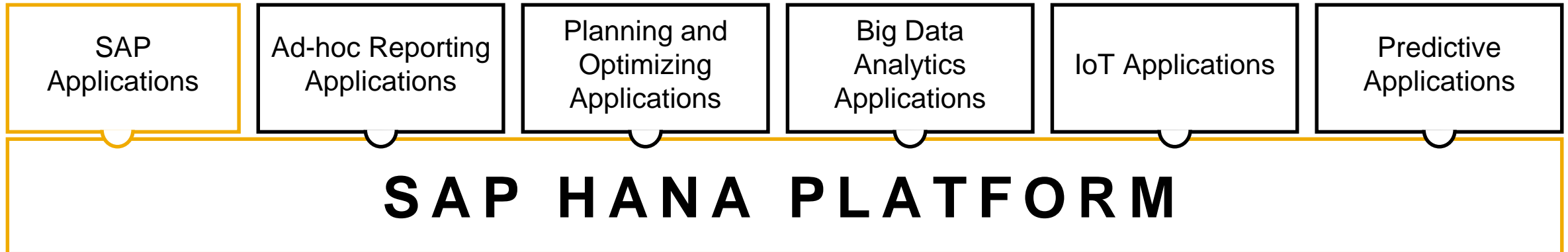
- Build custom applications for unique business needs leveraging SAP and non-SAP data
- Accelerate application development with prepackaged business functions and algorithms
- Build beautiful user interfaces with SAP Fiori framework, and access from any device
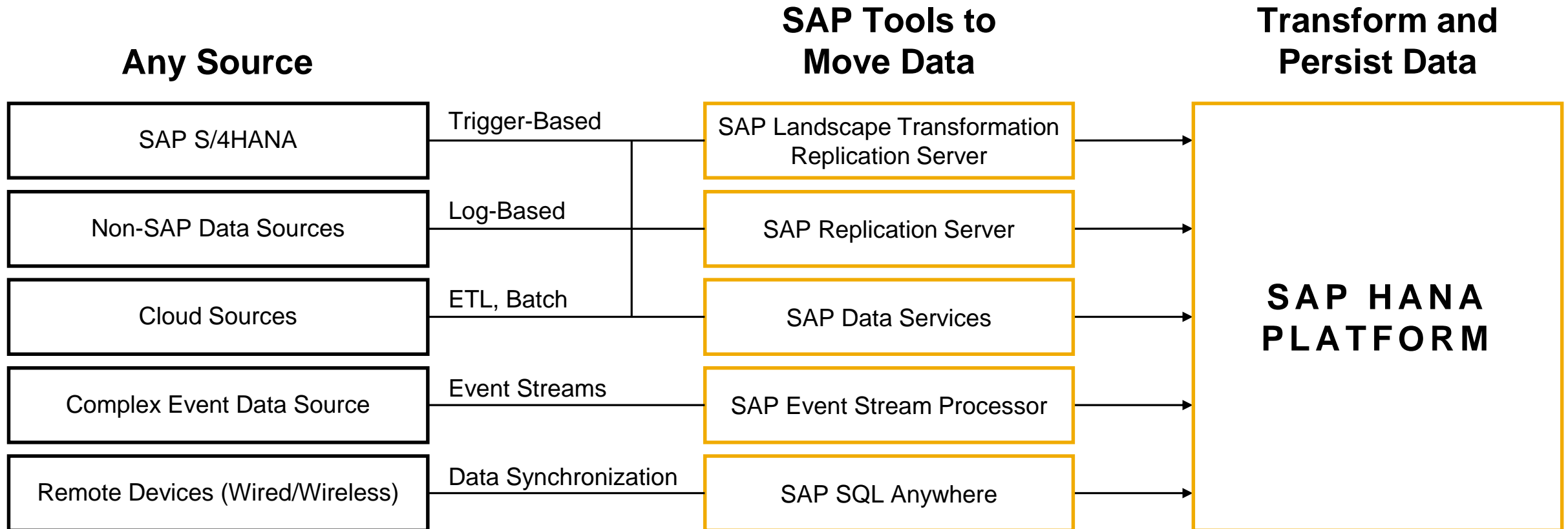
Choice of application architecture
Leverage existing assets and skills

SAP S/4HANA	Custom Applications	Native Custom Applications

SAP NetWeaver Application Server – ABAP	**Application Server (J2EE, .NET)**	
Core Data Services (CDS)		

S A P   H A N A   P L A T F O R M

Advanced Analytical Processing	Data Integration & Quality
Database Management	

S A P   H A N A   P L A T F O R M

Advanced Analytical Processing	Data Integration & Quality
Database Management	

S A P   H A N A   P L A T F O R M

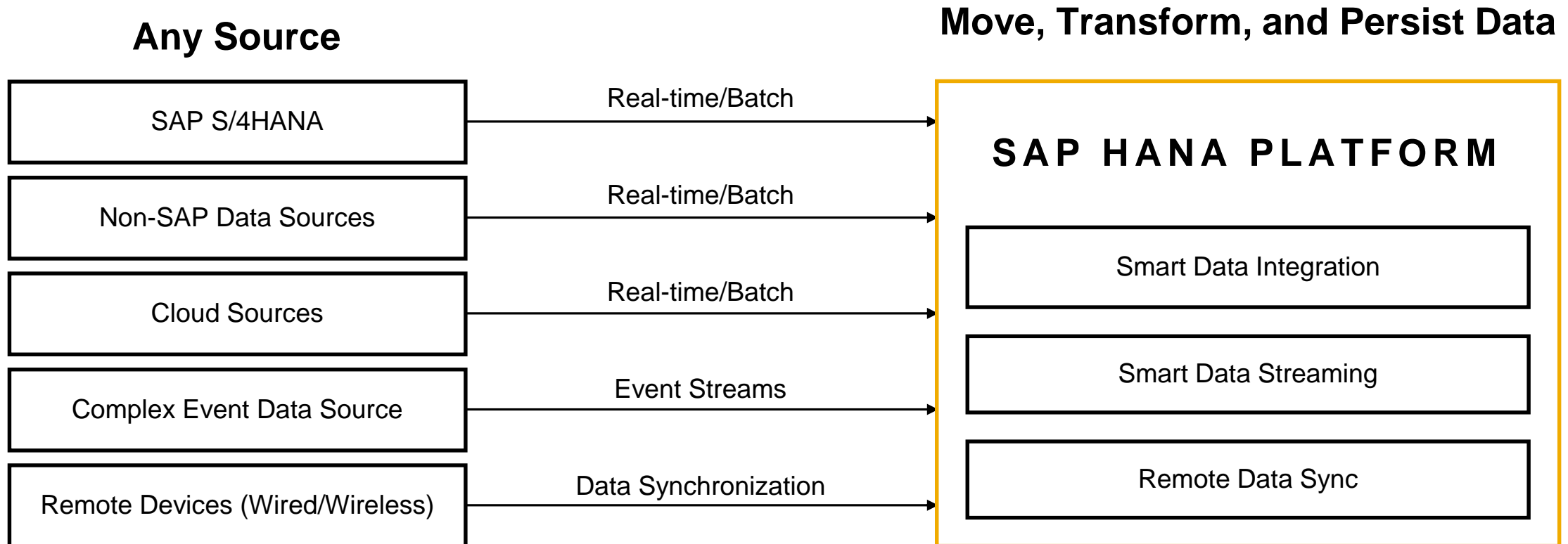| Application Development	Advanced Analytical Processing	Data Integration & Quality
Database Management		

- ABAP developers use CDS and Open SQL to leverage SAP HANA without coding SAP HANA objects
- Custom application developers choose any application server and any database interface
- SAP HANA-native application developers use SAP HANA application server inside the platform

Traditional data integration solutions

Any Source		SAP Tools to Move Data	Transform and Persist Data
SAP S/4HANA	Trigger-Based	SAP Landscape Transformation Replication Server	
Non-SAP Data Sources	Log-Based	SAP Replication Server	
Cloud Sources	ETL, Batch	SAP Data Services	**SAP HANA PLATFORM**
Complex Event Data Source	Event Streams	SAP Event Stream Processor	
Remote Devices (Wired/Wireless)	Data Synchronization	SAP SQL Anywhere	

SAP HANA Platform: Integration services
Simplification thru native data integration solutions

Any Source

Move, Transform, and Persist Data

SAP S/4HANA	→ Real-time/Batch →

Non-SAP Data Sources	→ Real-time/Batch →

Cloud Sources	→ Real-time/Batch →

Complex Event Data Source	→ Event Streams →

Remote Devices (Wired/Wireless)	→ Data Synchronization →

SAP HANA PLATFORM

- Smart Data Integration
- Smart Data Streaming
- Remote Data Sync

SAP HANA Platform common use cases

**Optimizing
Business Operations**

Get instant insights into real-time transactions to optimize business operations

**Operational Reports,
Dashboards, and Analytics**

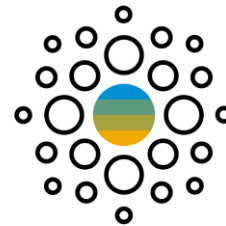Analyze and visualize operational details to support your
day-to-day activities

**Real-time
Operational Intelligence**

Run queries against operational data, streams, and events to deliver real-time insights

**Data Warehouse
and Data Mart**

Deliver actionable insights on enterprise-wide or departmental data

Big Data

Uncover the value in large, complex, and rapidly growing data sets

**Decision Support,
Simulation, and Automation**

Streamline and automate business processes with advanced analytics

Introducing SAP HANA, express edition
Build applications from anywhere

- Streamlined version of SAP HANA optimized for fast and continuous application development

- Available for download on a laptop, personal computer, server, or available in the cloud for flexible development and deployment options

- Offered for free, enabling you to try and innovate next-generation applications
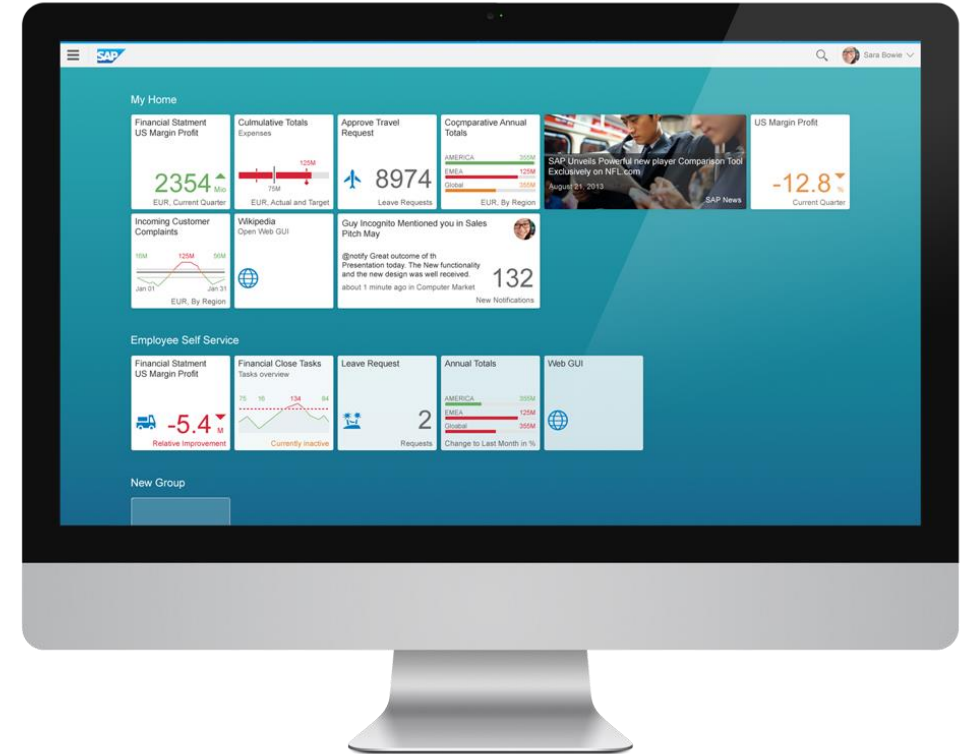
Try Express Edition for free

sap.com/sap-hana-express

SAP HANA 2.0 SPS 02
new enhancements included in the latest service pack stack

SPS 02: Database Enhancements

High availability and disaster recovery (HA/DR)

- Gain flexibility with the ability to copy/move tenant databases across different multi-tenant environments while system replication is still running.

- Expand your SAP HANA high availability landscape with the flexibility to deploy multi-tier system replication chains - beyond 2 secondary systems.

- Simplify active/active, read-enabled access to your data assets through a closer integration with cluster managers.

Administration and Monitoring

- Improve efficiency and productivity by assigning administrators to specific user groups and taking advantage of a simplified way to manage user groups, encryption, and database copies within the SAP HANA Cockpit.

- Enforce best practices across your landscapes by applying standard parameters across SAP HANA systems for centralized control.

Workload Management

- Reduce administration efforts and ensure that important workloads get appropriate resources with SAP HANA's ability to automatically manage incoming database requests according to assigned priorities and enforce limits on the cumulative memory and CPU resources that each user / application / workload class consumes.

SAP HANA 2.0 SPS 02
new enhancements included in the latest service pack stack

SPS 02: Advanced Analytics Processing

Predictive Analytics and Machine Learning

- Empower users with smarter recommendations from fresh intelligence with a broader support for real-time scoring and with integration to external machine learning frameworks - now including Tensorflow™.

- Accelerate predictive application development with a simplified way to invoke algorithms and the ability to use SAP Web IDE for SAP HANA for developing predictive and machine learning models using SAP HANA Predictive Analytics Libraries (PAL).

Text Analysis, Graph and Geospatial data processing

- Speed up the deployment of text analysis assets with a simplified end-to-end process all managed through SAP Web IDE for SAP HANA - now including the custom configuration for different data domains and the automatic generation of language-specific inflections for custom dictionaries.

- Gain faster insight from your connected data sets with new GraphScript extensions to facilitate navigation and manipulations of sub-graphs, inverted graphs, and more.

- Increase the accuracy and depth of insight from geospatial data with improved validation of geometric objects.

SAP HANA 2.0 SPS 02
new enhancements included in the latest service pack stack

SPS 02: Application Development and Tools Enhancements

Tools and languages

- Innovate faster with new and enhanced SQLScript and SQL functions, simplified XML and JSON document handling, and more efficient support for SQL hierarchies.

- Streamline application development with a more efficient Python driver and a newly released Go driver.

SAP HANA, express edition

- Get instant access to a modern data platform to develop real-time applications that combine analytics and transactions on any data, at no cost with SAP HANA express edition – now featuring high-speed data provisioning, bulk data movement, and federation through SAP HANA smart data integration.

SAP HANA 2.0 SPS 02
new enhancements included in the latest service pack stack

SPS 02: Data Management Enhancements

Enterprise landscape management

- Simplify data and process management across your enterprise landscape with SAP Enterprise Architecture Designer Edition for SAP HANA. Now you can import models from SAP Solution Manager, represent native Datastore Objects, and deliver a comprehensive data movement view across data sources and targets.

Data integration and federation

- Get a broader view of your business with an improved integration of external data sources that brings increased performance for data provisioning adapters and a simplified configuration for third-party databases adapters.

- Streamline the setup and management of federated data access to remote sources with the automatic creation of virtual tables, and ensure the continuous access to remote data with automatic system failover.

Multi-tier storage

- Enhance system availability and deliver continuous access to all your data with the support for 2-tier and 3-tier system replication in SAP HANA dynamic tiering.

- Gain instant access to the data your business needs at a lower cost with faster data transfers from extended stores to memory, and a simplified management through enhanced diagnostic tracing and troubleshooting.