



TEC102

A Comprehensive Introduction to SAP HANA



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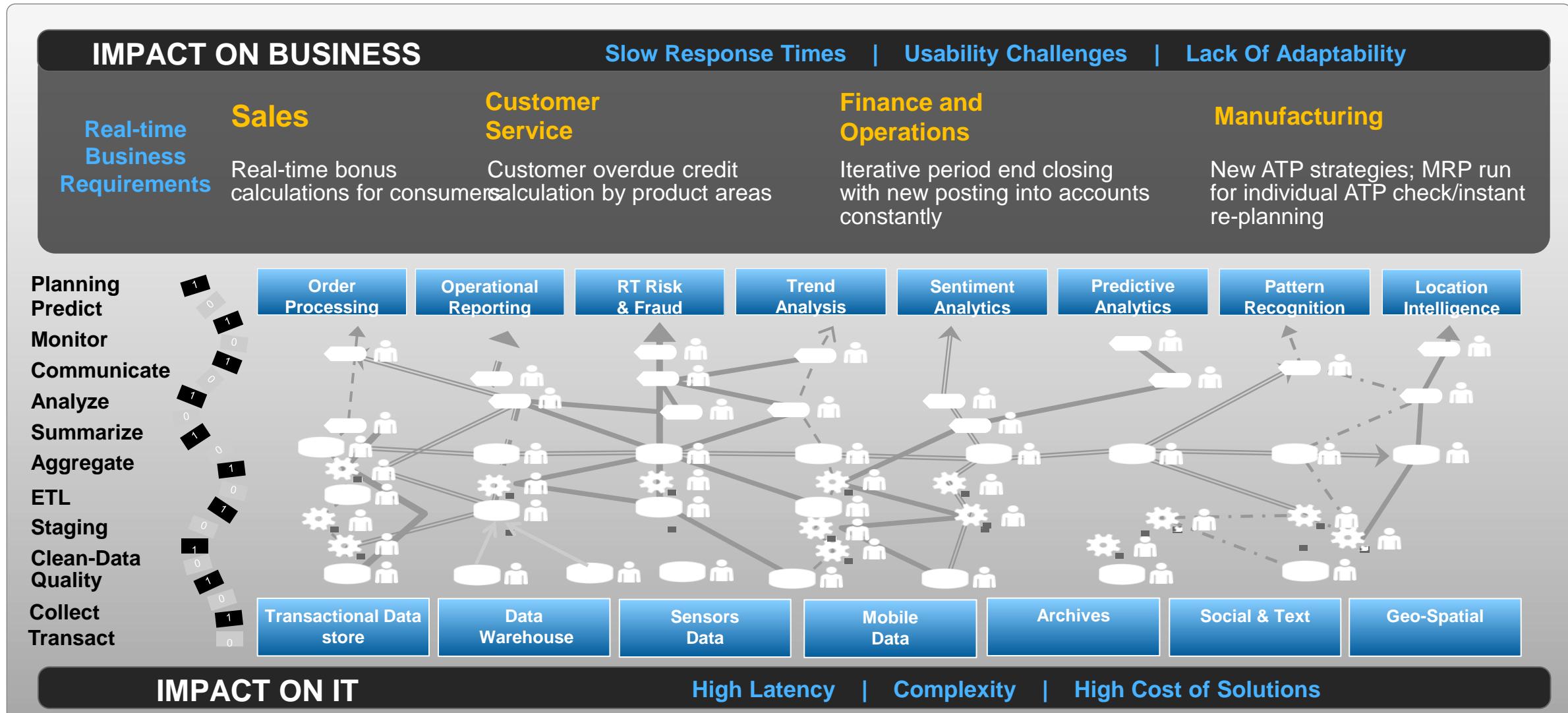
Agenda

- Why?
- Use Cases
- What does it do?
- Roadmap
- Additional Info sources

SAP HANA – Why?

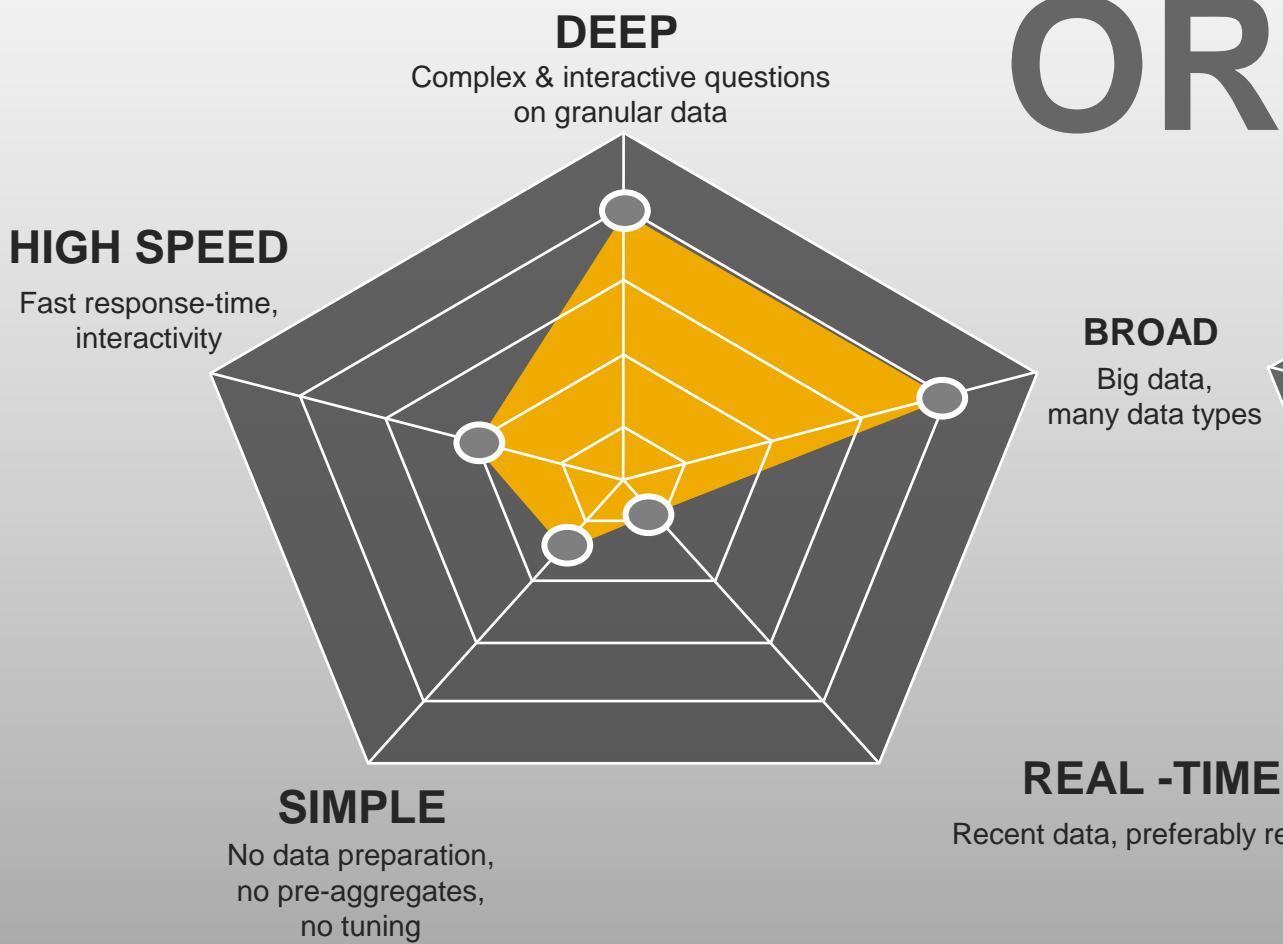
Data and Information Processing is at a critical inflection point

Point optimization is no longer enough for real-time business

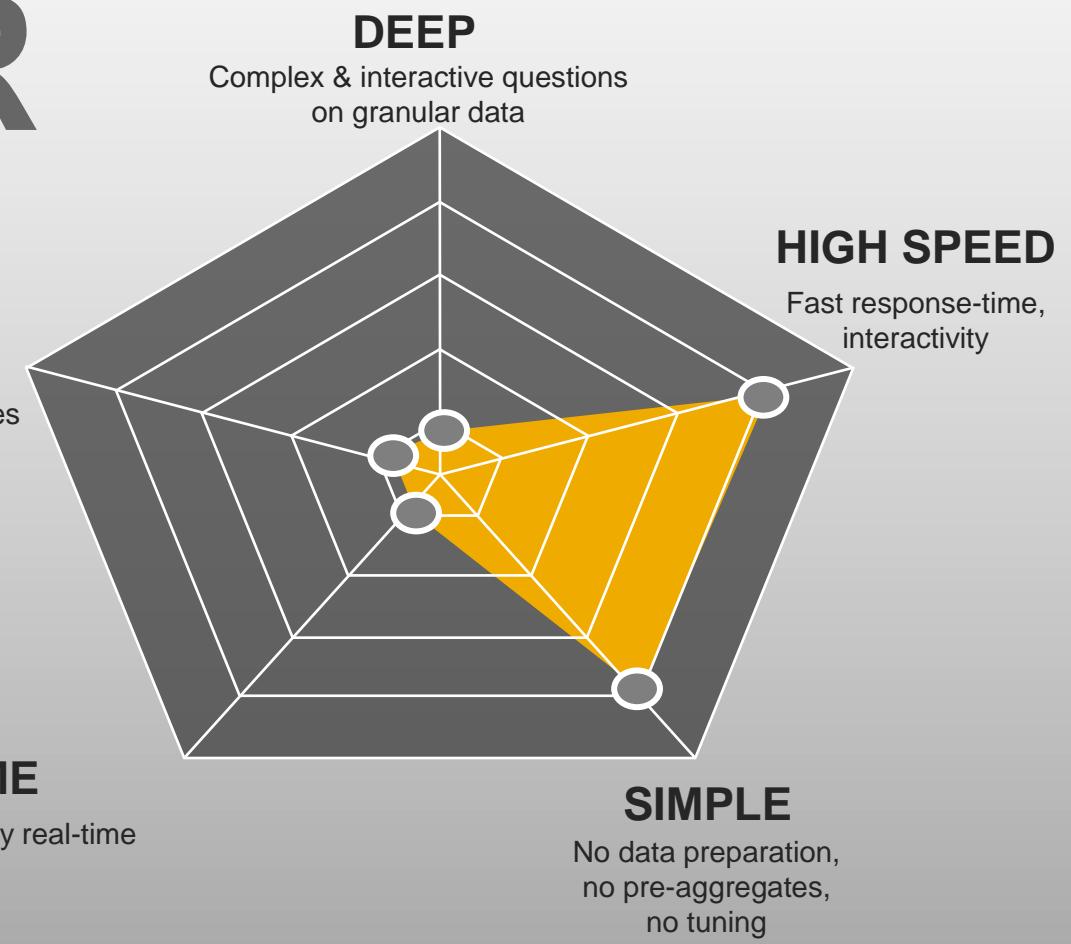


Technology today requires tradeoff

A breakthrough in today's information processing architecture is needed



OR

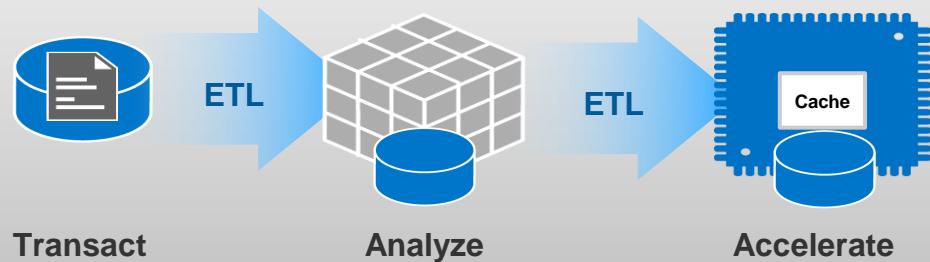


Re-think Data Management for Real-time Business

Need to eliminate redundant data copies, materialization and models

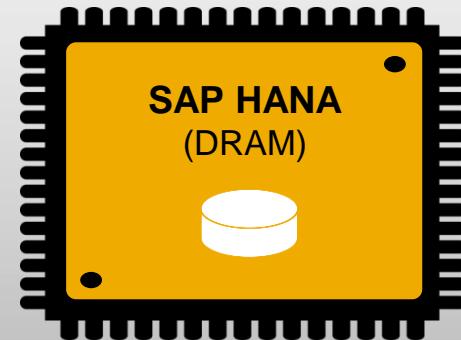


Separated Transactions + Analysis + Acceleration processes



- 3 copies of data in different data models
- Inherent data latency
- Poor innovation leading to wastage

One atomic copy of data for Transactions + Analysis, All in Memory

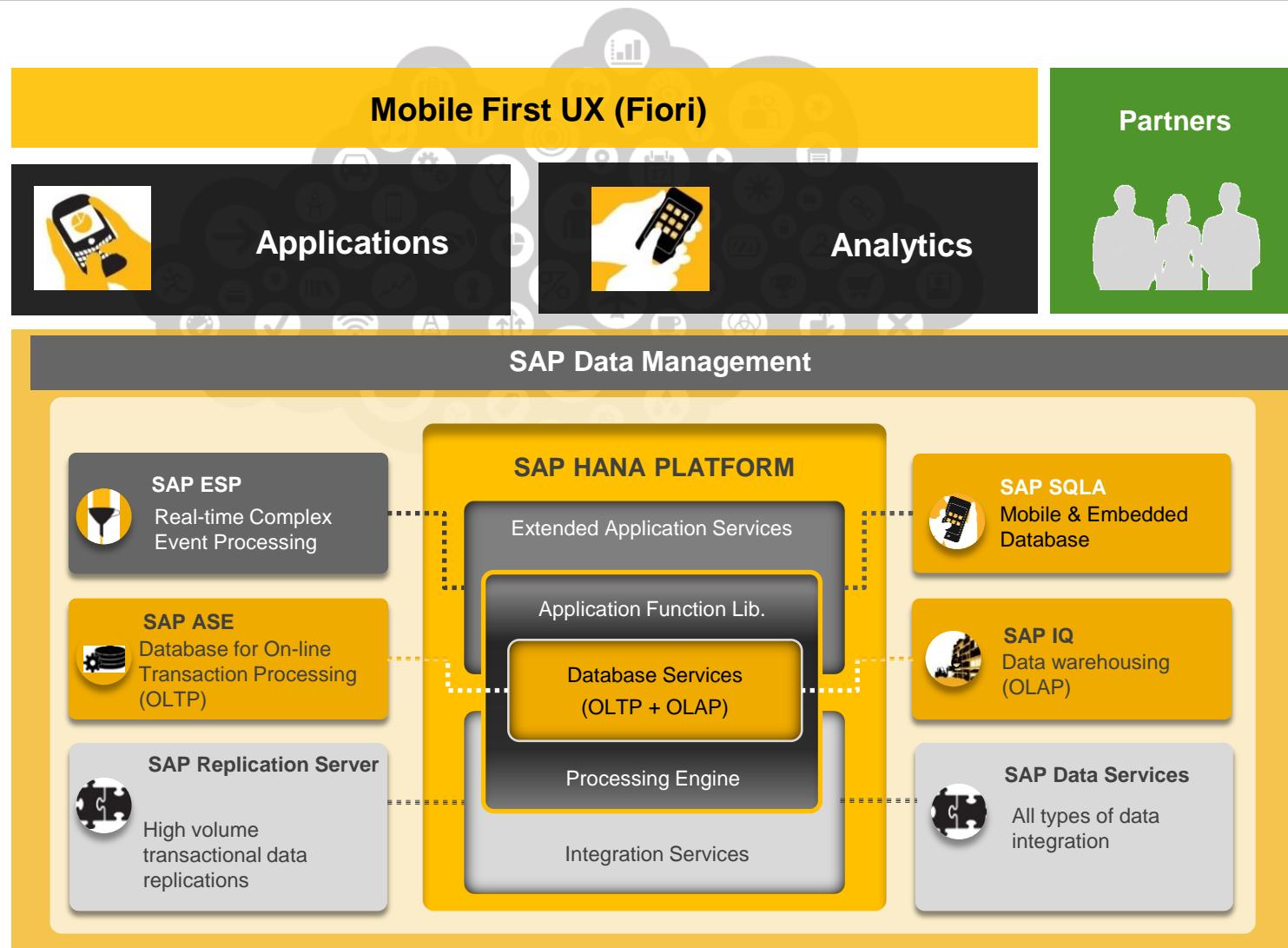


VS

- Eliminate unnecessary complexity and latency
- Less hardware to manage
- Accelerate through innovation and simplification

SAP Data Management provides real time data for all applications and analytics

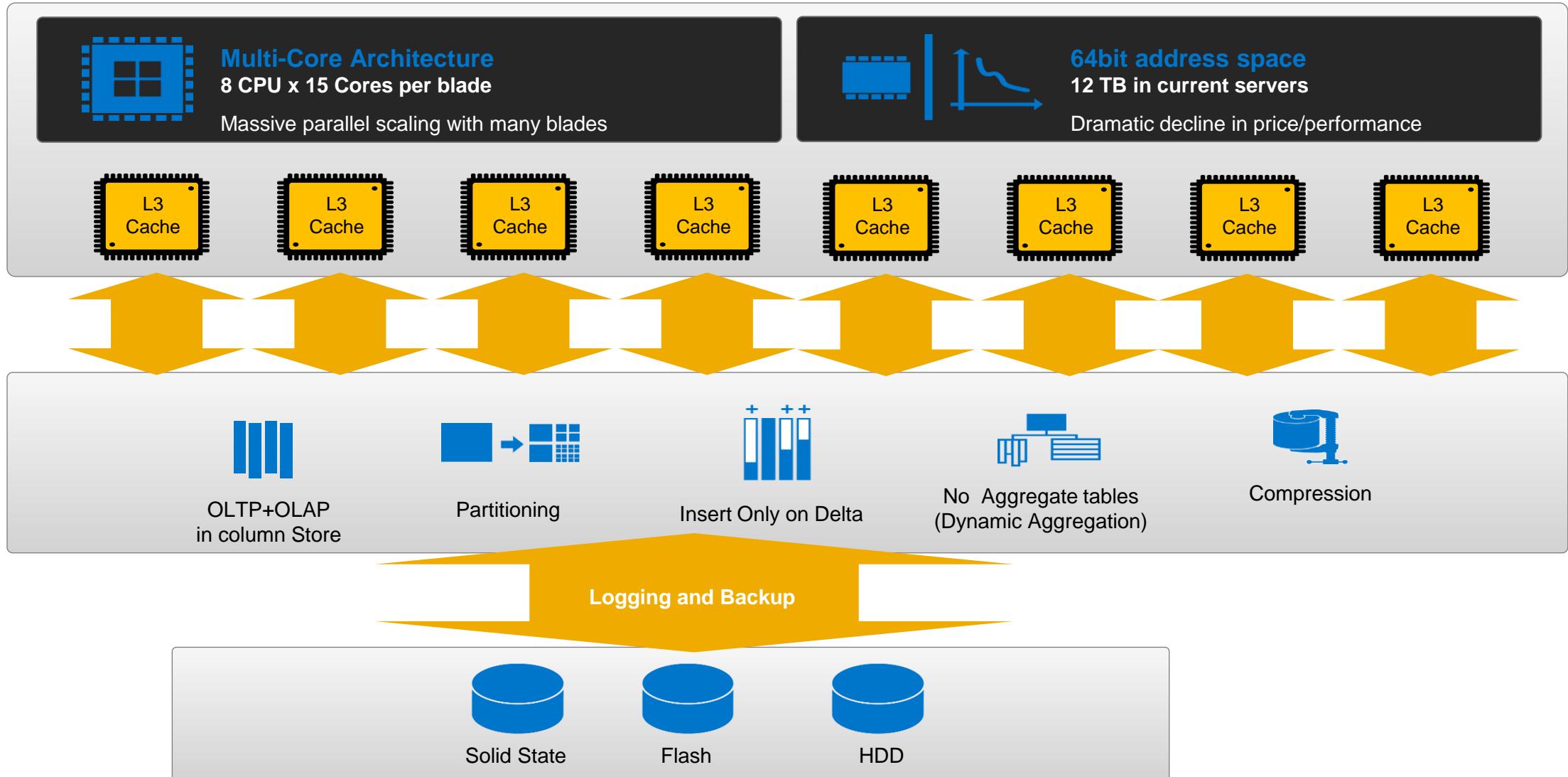
Innovation combined with proven reliability, and lower total cost of ownership



- **Innovation :** In-memory & event driven architecture for end-to-end real-time data management driving all applications, analytics and user experience
- **Lower Risk:** System availability 24x7 even through technical network and system disruptions.
- **TCO:** Lower total cost of ownership while driving innovation

Modern Hardware and Software Architecture

Provided Opportunities to Re-Design DBMS to Reduce Latency

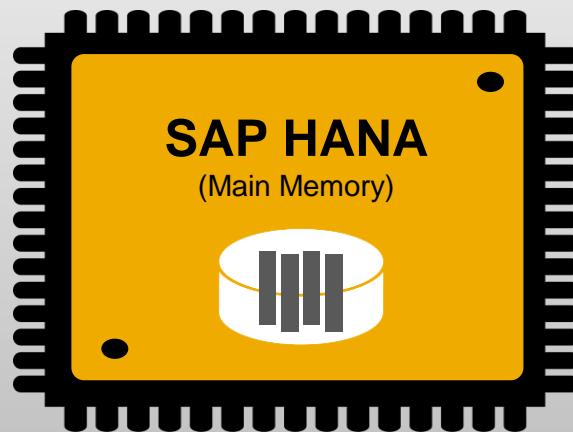


Simplify Data & Application Processing

Enabling real-time computing design patterns across entire software architecture

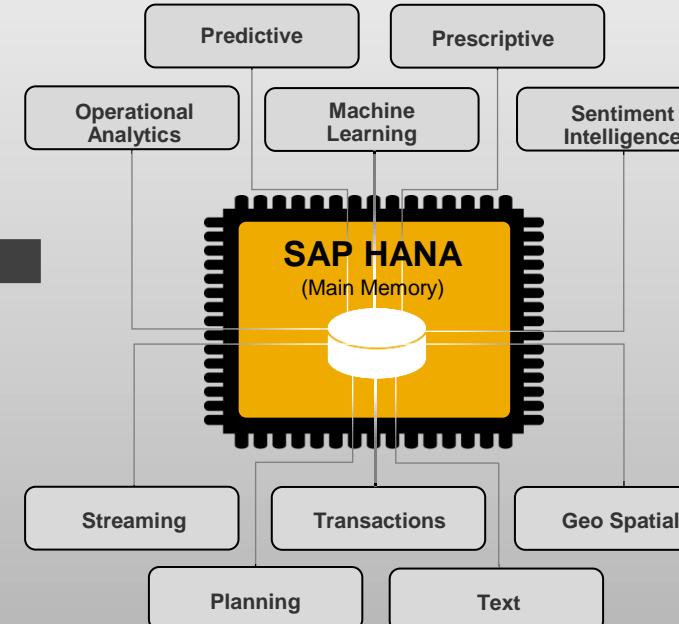
SIMPLIFIED

OLTP + OLAP
in Columnar database



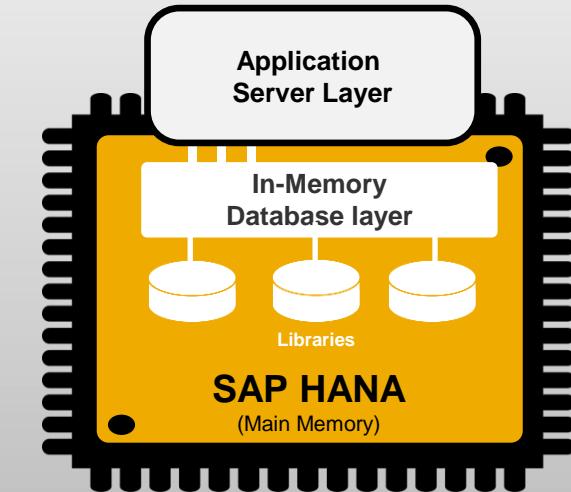
CONVERGED

End-to-end
Data Processing



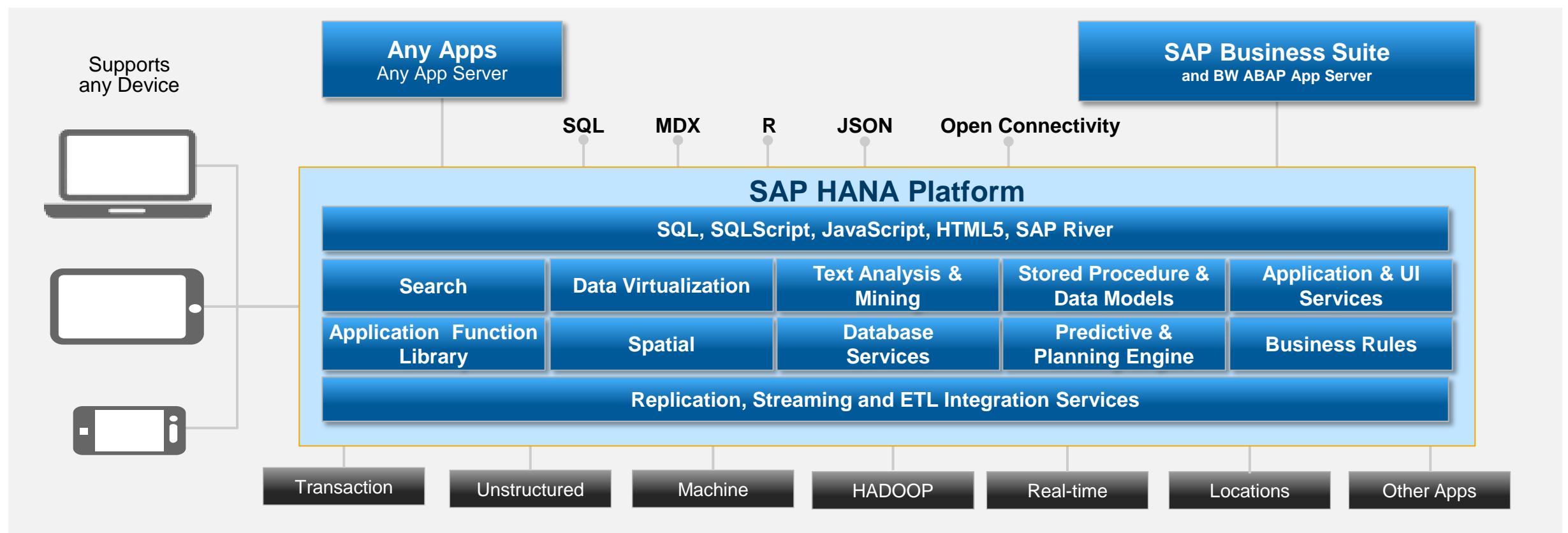
OPTIMIZED

Application
Processing



- Database & data processing engines
- Application Server
- Planning, Calculation engine
- Libraries of statistical, predictive and business functions

SAP HANA Platform – More than just a database

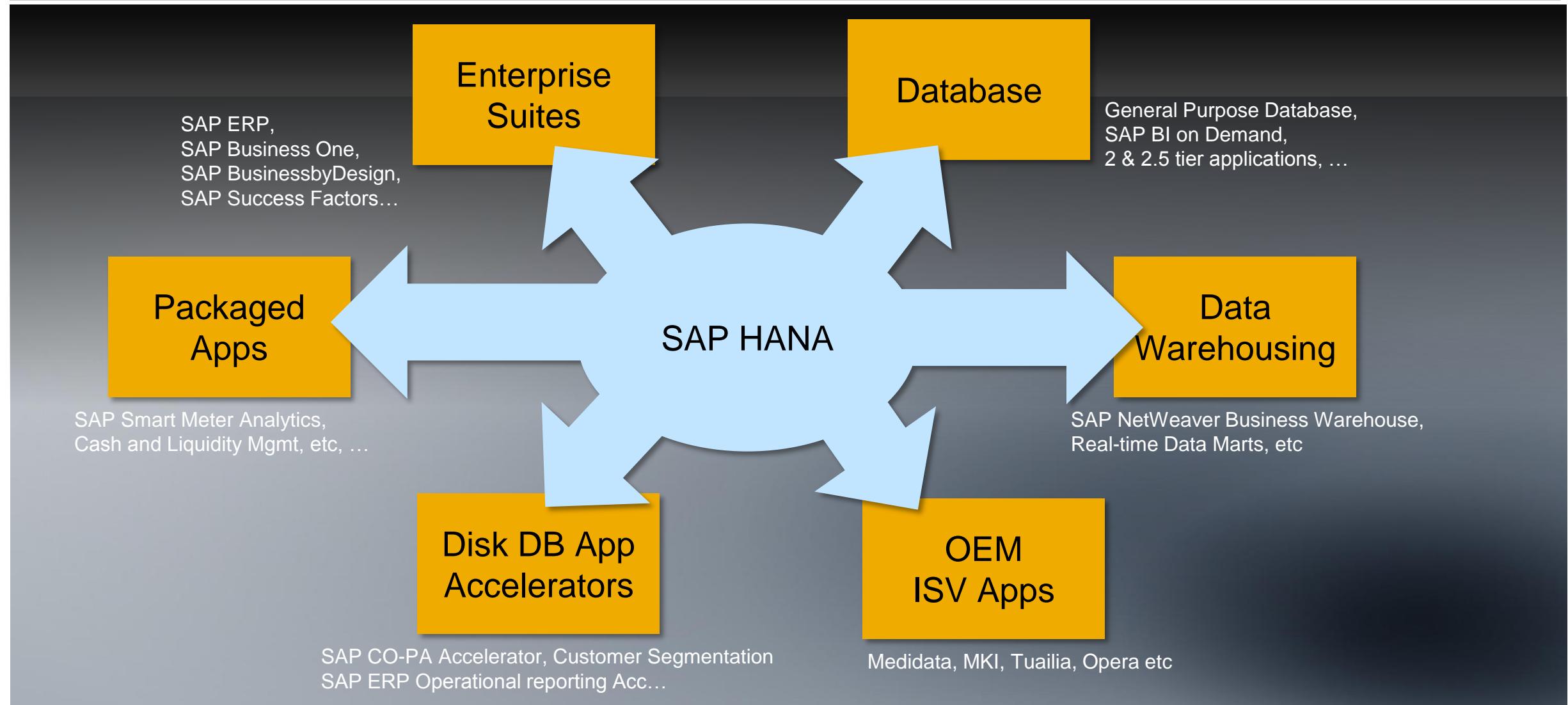


SAP HANA Platform Converges Database, Data Processing and Application Platform Capabilities & Provides Libraries for Predictive, Planning, Text, Spatial, and Business Analytics to enable business to operate in real-time.

SAP HANA Use Cases

SAP HANA Use cases

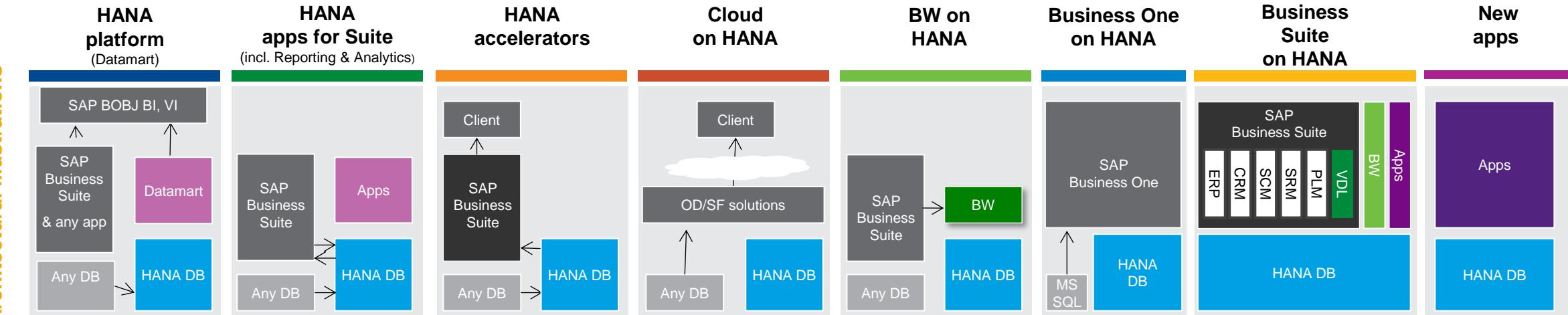
What is this being used for?



SAP HANA Use cases

Architecture illustrations & HANA offerings from SAP

Architectural illustrations



Side-by-side scenarios

Integrated scenarios

New frontiers

HANA offerings

<ul style="list-style-type: none">SAP HANA DBCustom datamart/any appBOBJ BIVisual IntelligenceText & predictive analysis	<ul style="list-style-type: none">Sales analysis for retailLiquidity risk managementERP operational reportingSocial sentiment intelligenceSales pipeline analysis	<ul style="list-style-type: none">CRM customer segmentationCOPAFinance & controlling	<ul style="list-style-type: none">Business Intelligence on demandSales & operations planningSupplier InfoNetDeveloper Access via Amazon Web Services (AWS)	<ul style="list-style-type: none">BW powered by HANABusiness planning & consolidation on HANA	<ul style="list-style-type: none">Business One on HANASAP Business One Analytics on HANAHANA new analytics	<ul style="list-style-type: none">Business Suite on HANAHANA new analytics	<ul style="list-style-type: none">Smart Meter AnalyticsPrecision retailingCash forecastingStandalone app from partners
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And much more from SAP, ISVs and start-ups

Platform for Startups & ISVs

A single platform powering next generation of applications



DRIVING ADOPTION

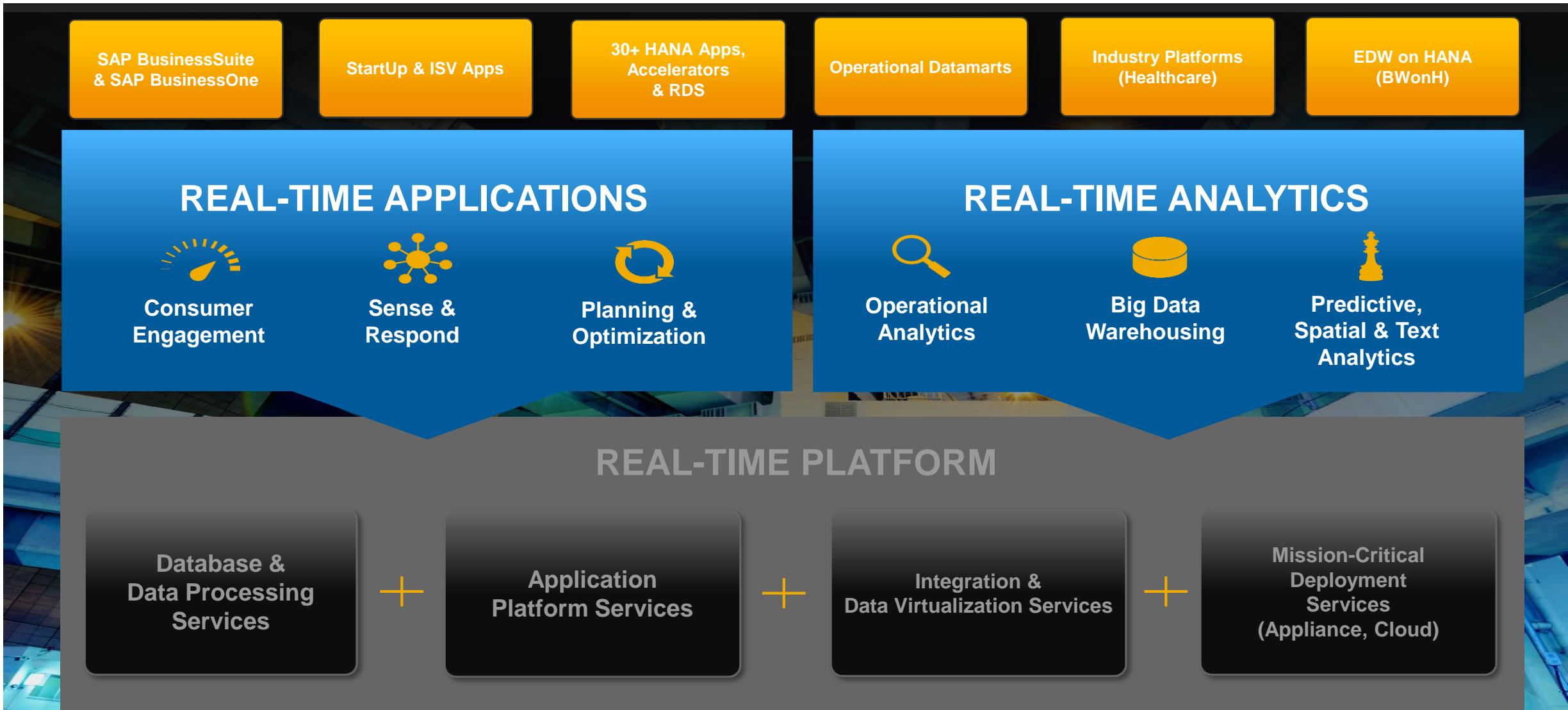
- Platform to imagine new generation of applications
- Simple consumption model – lowering barriers to entry
- Rapid commercialization of innovation

RECENT PROJECTS

- Industry solutions - Healthcare, Capital Markets
- Consumer and enterprise applications
- www.startups.saphana.com (1000+ Startups & ISVs)

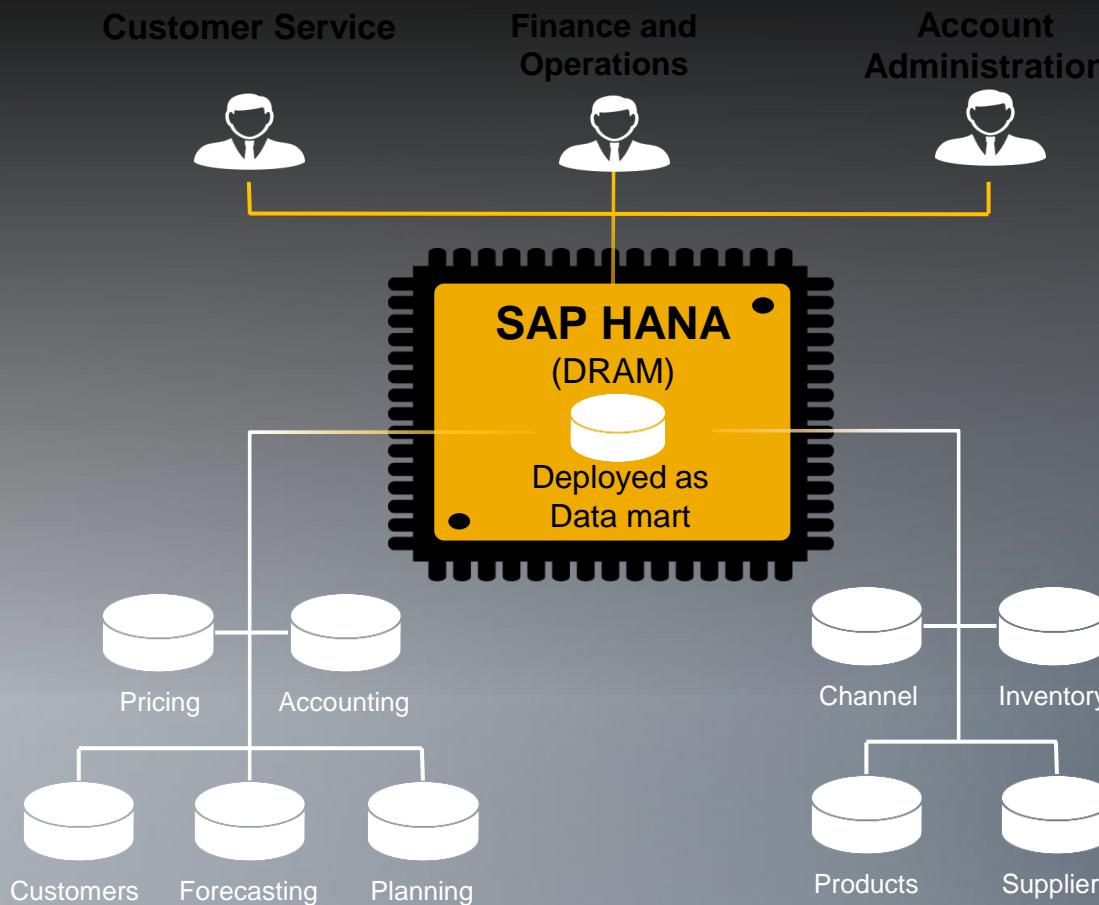
SAP HANA – What does it do?

SAP HANA: Renovate existing systems while enabling future breakthroughs



Operational ad-hoc analytics and monitoring

Real-time insight into the in-the-moment business situations



- Accelerate business decisions
Provide vision across entire business process
- Empower front-line employees
Provide POS data analysis as interactive session with drill-down information
- Implement real-time
fraud detection, risk management and monitoring

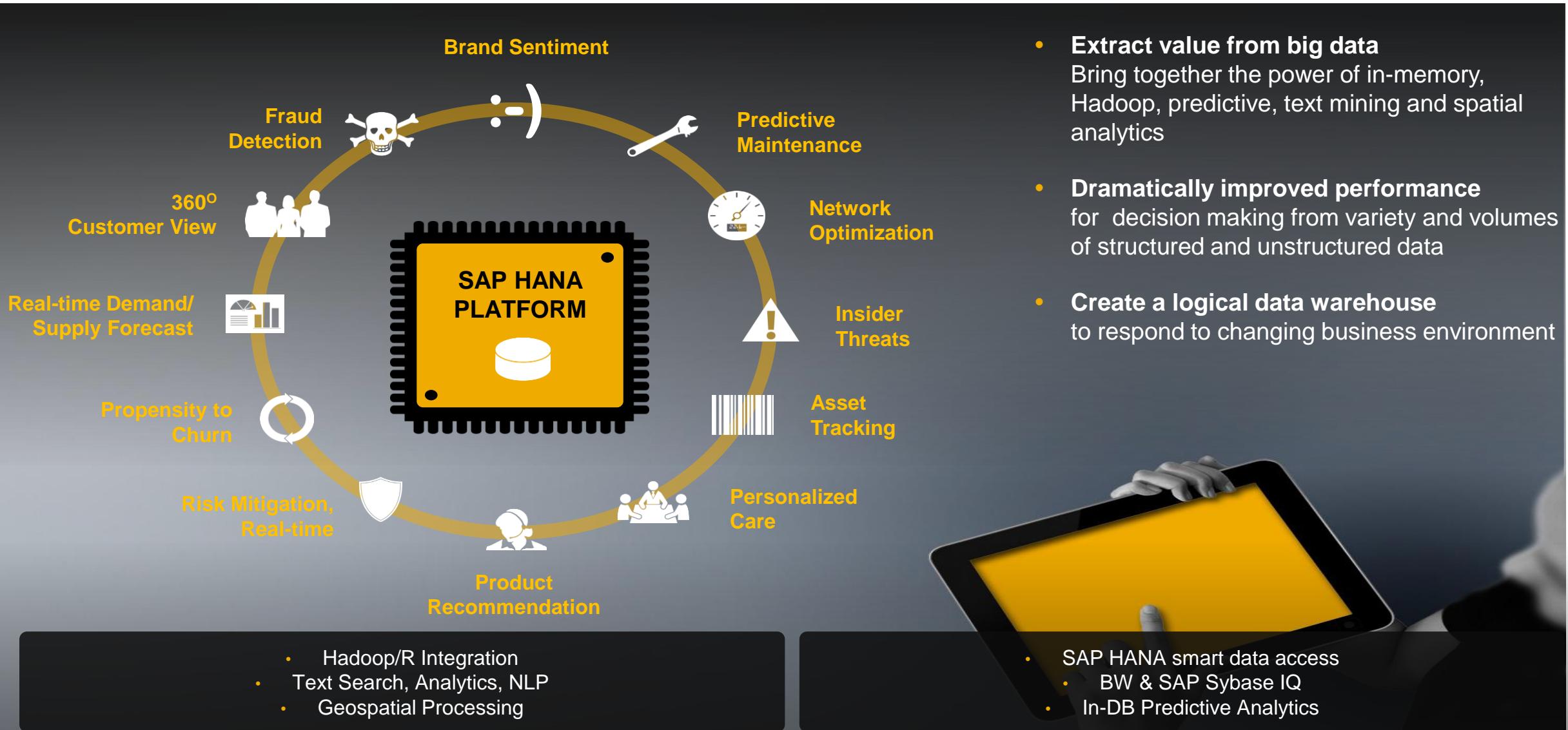


- OLTP + OLAP Processing
 - SAP HANA Live
- Smart Data Access data virtualized “In-memory Data Fabric”

- Real-time data integration (Replication, Streaming)
 - Unified data modeling
 - Single-query access to data

Big Data Warehousing and Big Data Apps drive big business

Deeper insights into customer needs and wants



SAP Business Warehouse

Powered by SAP HANA

QUERY REPORTING ANALYTICS

SAP BOBJ Business Intelligence or 3rd Party BI

DATA MODELING

SAP NetWeaver BW

SAP HANA PLATFORM

Analytical /
Planning
Engine

“In-Mem Data Fabric”
Smart Data Access

Data
Management

Data Storage

Dramatically Improved Performance

Improved decision making, faster reporting, and the most up-to-date information

Simplified Administration and Streamlined Landscape

Reduced administration and lower TCO

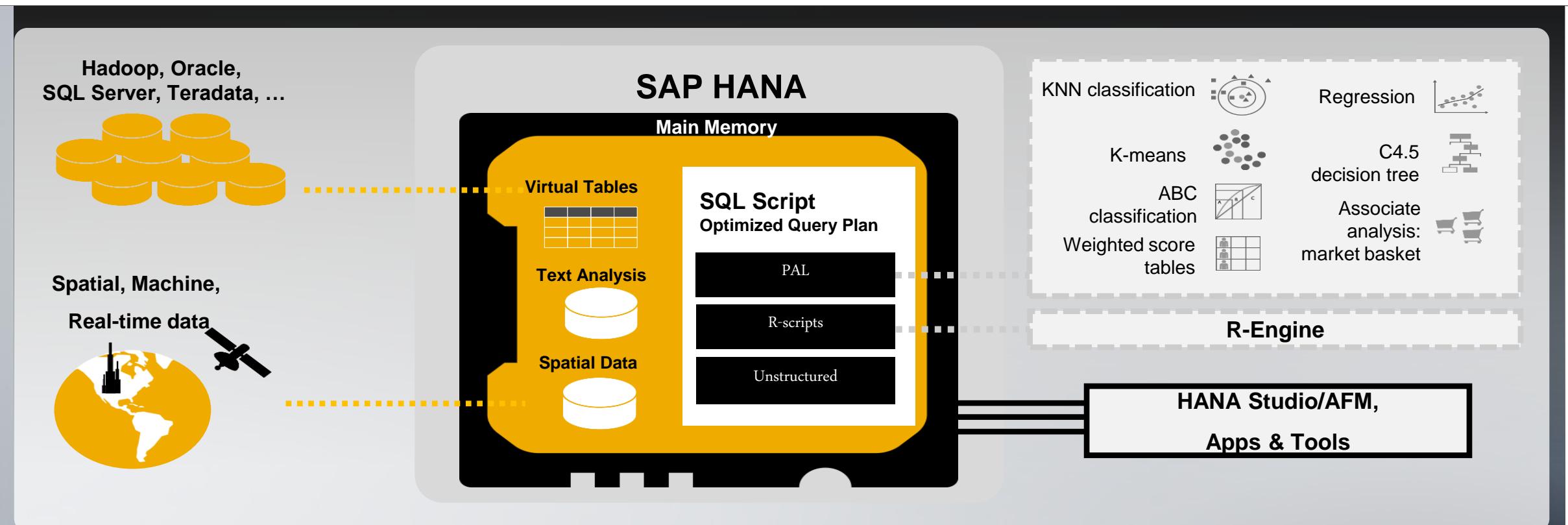
Unlock The Power of Your Data Across The Enterprise

Self-service access to all information at the most granular level



Predictive Analytics & Machine Learning

Transforming the Future with Insight Today



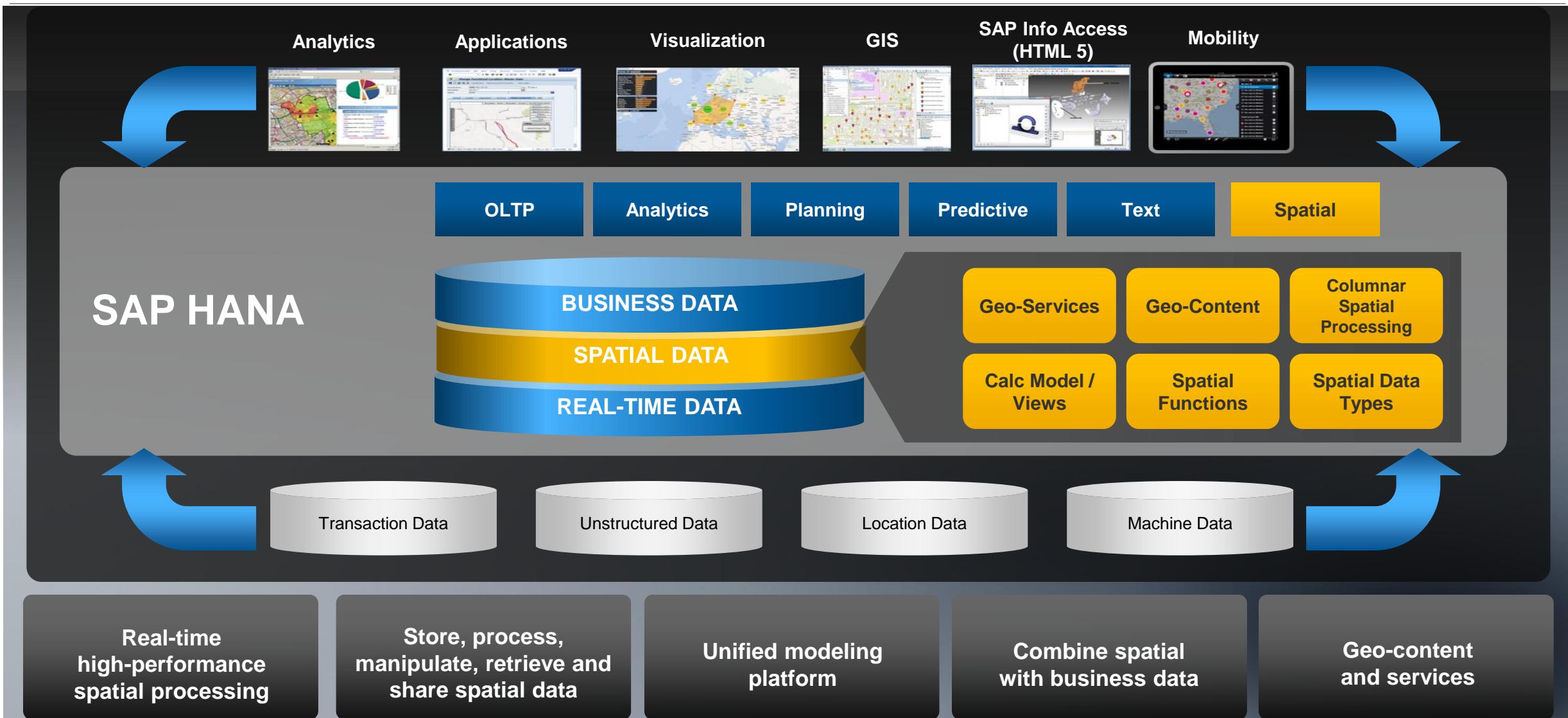
Accelerate predictive analysis and scoring with in-database algorithms delivered out-of-the-box.
Adapt the models frequently

Execute R commands as part of overall query plan by transferring intermediate DB tables directly to R as vector-oriented data structures

Predictive analytics across multiple data types and sources.
(e.g.: Unstructured Text, Geospatial, Hadoop)

SAP HANA Spatial Processing

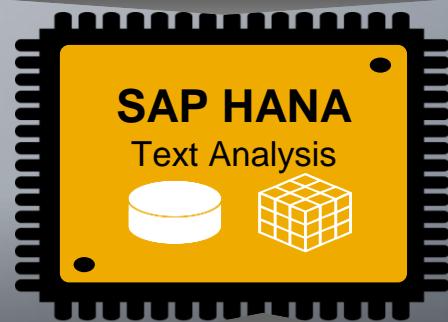
Develop and deploy spatially-enabled analytics and applications



SAP HANA Text Analysis

Extract information from documents. Perform text analysis on unstructured data

The screenshot shows a search results page for "breast cancer in women" on SpringerLink. The left sidebar includes a search bar, a "Highlights" section with counts for Medical Term (50), Search Term (1), Concepts (275), Person (190), and Year (42), and sections for References and Recommendations. The main content area displays a document titled "Epidemiology of Breast Cancer in Women" by Yasmin Cypel and Steven S. Coughlin, published in 2013. A callout box highlights the "Medical Term" entry for "cancer". The abstract discusses the importance of environmental and genetic risk factors for breast cancer, mentioning its role as a cause of human suffering and mortality.

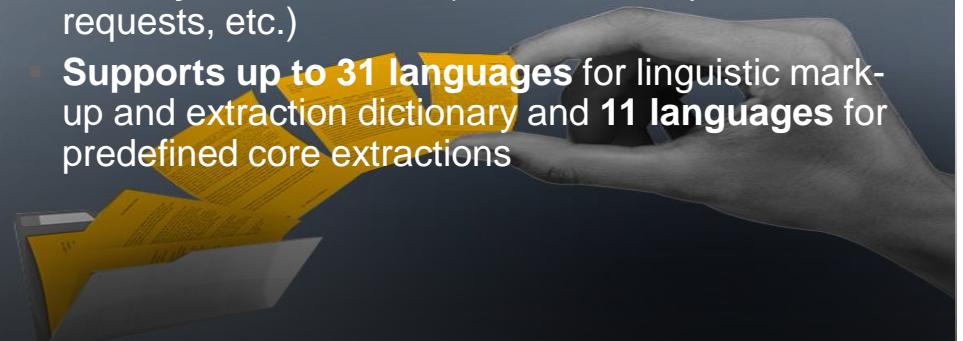


▪ File Filtering

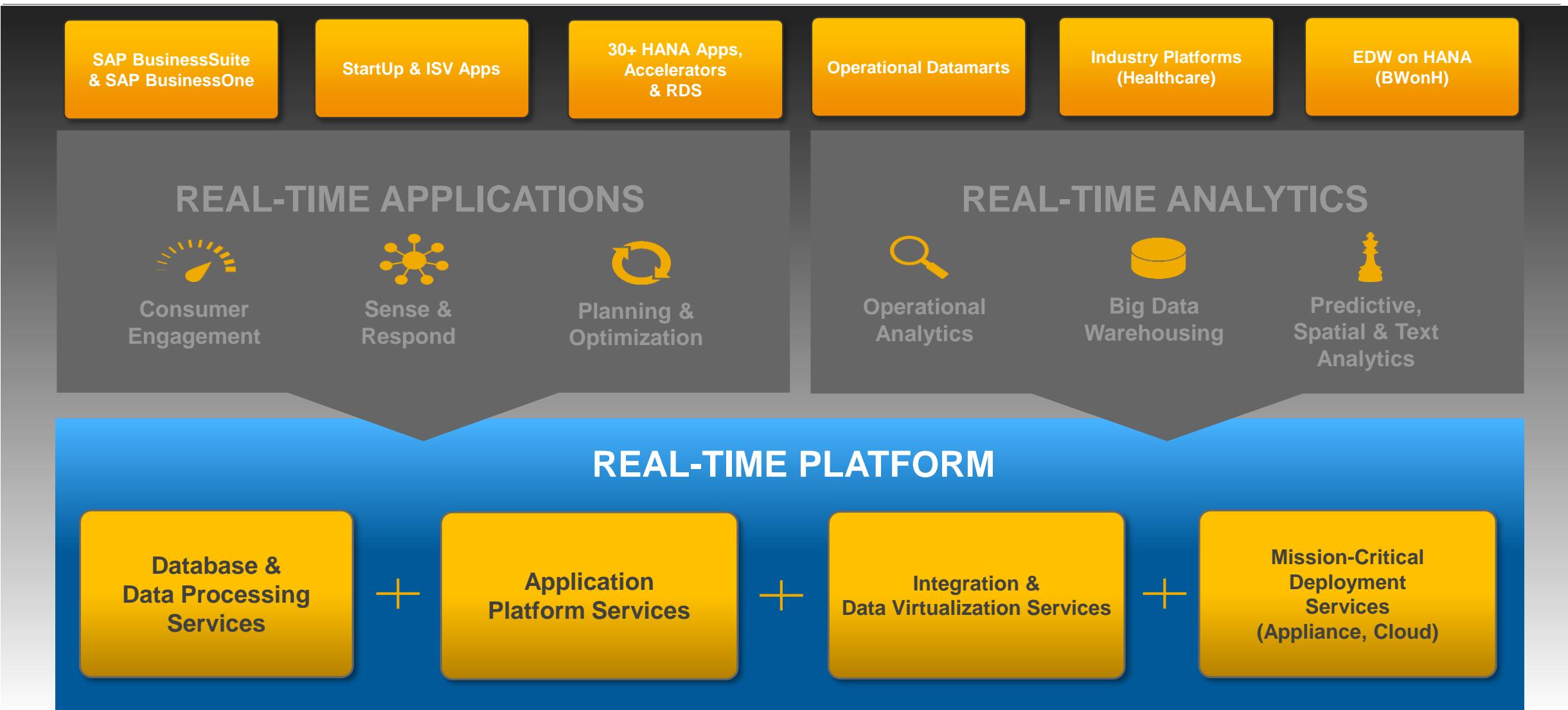
- Unlock text from **binary documents**
- Ability to **extract and process** unstructured text data from various file formats (txt, html, xml, pdf, doc, ppt, xls, rtf, msg)
- Load binary, flat, and other documents directly into HANA for **native text search and analysis**

▪ Native Text Analysis

- Give structure to unstructured textual content
- **Expose linguistic markup** for text mining uses
- **Classify entities** (people, companies, things, etc.)
- **Identify domain facts** (sentiments, topics, requests, etc.)
- **Supports up to 31 languages** for linguistic markup and extraction dictionary and 11 languages for predefined core extractions

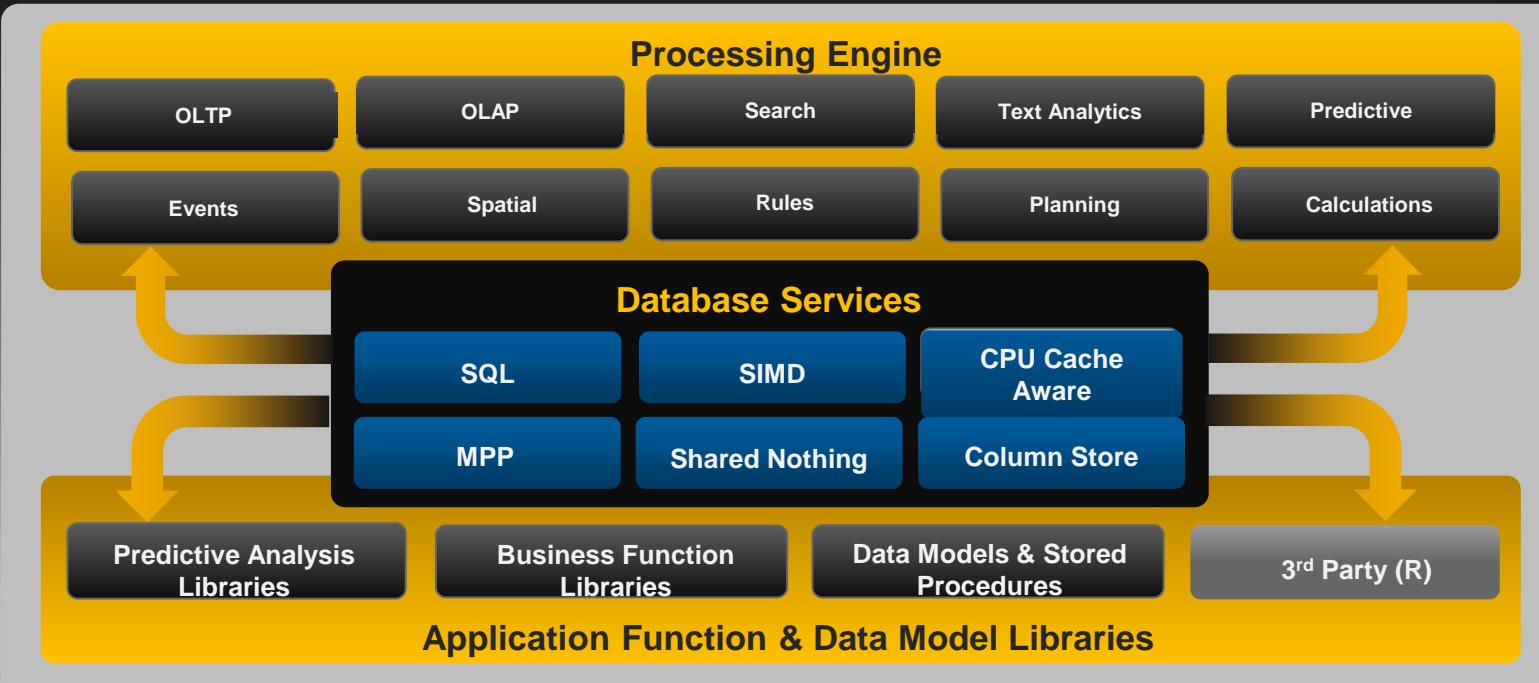


SAP HANA: Renovate existing systems while enabling future breakthroughs



Database & Data Processing Services

SAP HANA PLATFORM



* - based on Intel Westmere EX

Single Atomic Data Copy
shared across multiple data processing engines to eliminate redundancy & latency

Process data and application logic in parallel (MPP)
Using all cores in a multi-core architecture, by effectively partitioning data.

Avoid unnecessary compensation during application execution
(e.g.: buffering, data duplication)

Eliminate disk I/O
by keeping all data in memory using column store, and by significantly compressing data

- Fully ACID compliant, In-memory, columnar, massively parallel processing database platform
- Includes In-memory function libraries, data models and stored procedures
- Integrated data processing for end to end analytic processing

Scan

3.2 billion integer/sec/core*

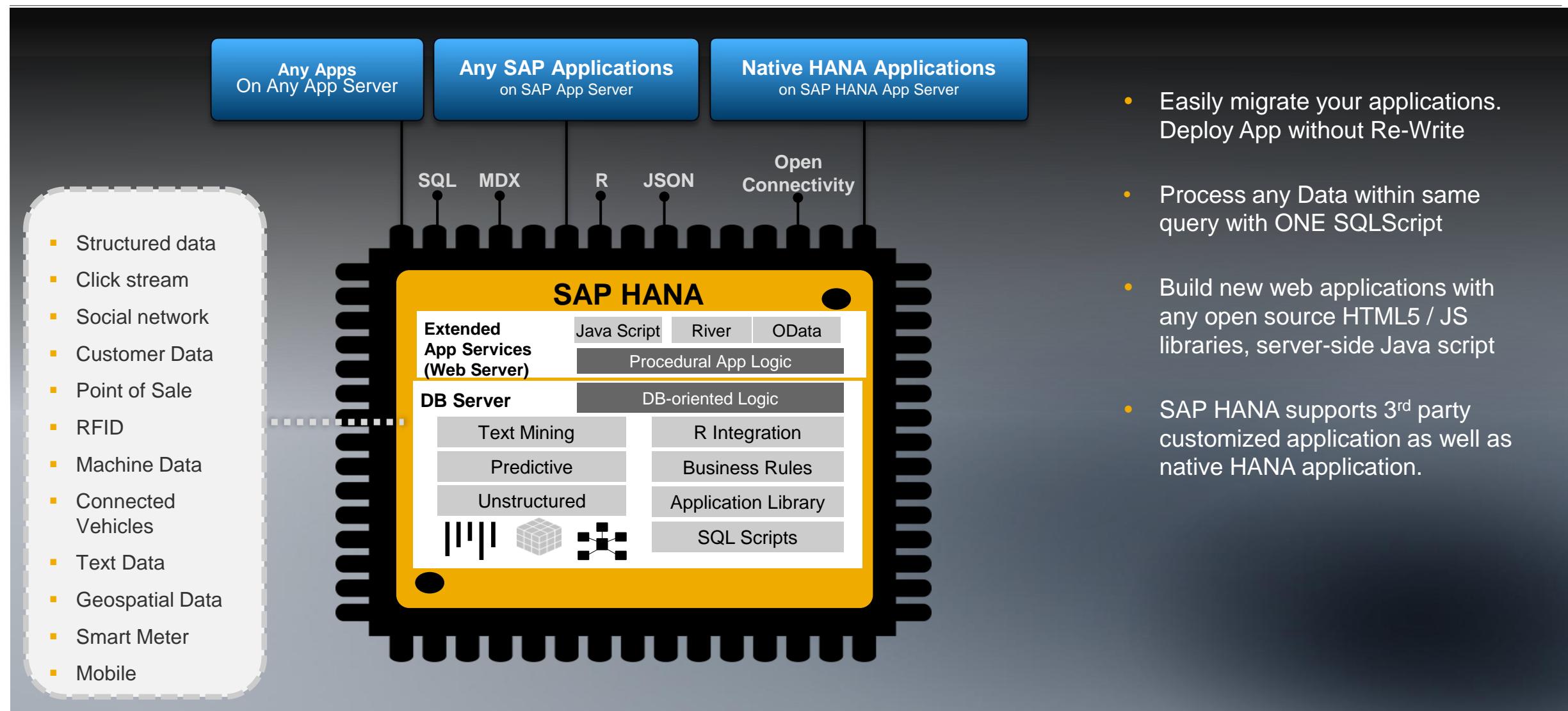
12.5 million aggregates/sec /core *

Ingest

1.5 million records/sec/node*

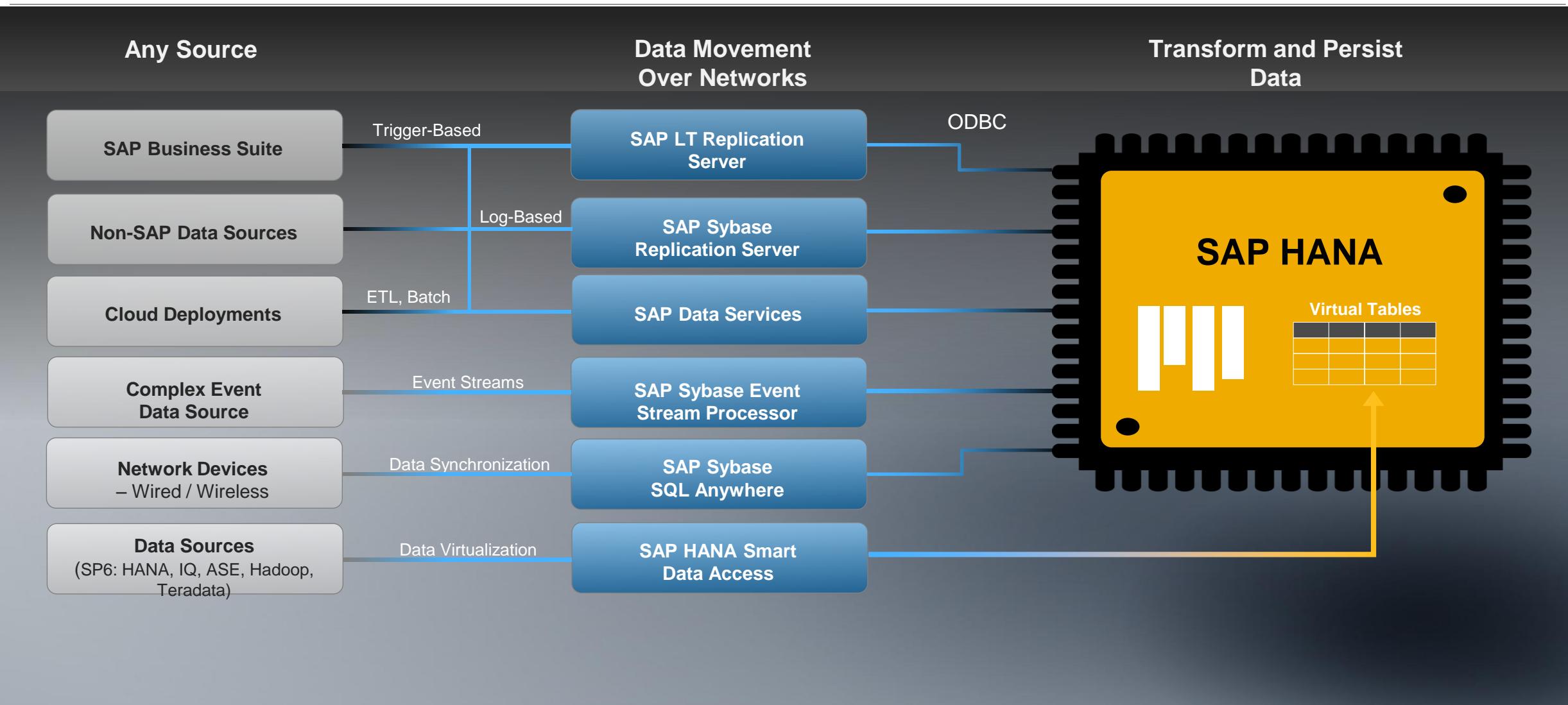
Application Platform Services

Migrate Existing or Build New Application to Process Any Data



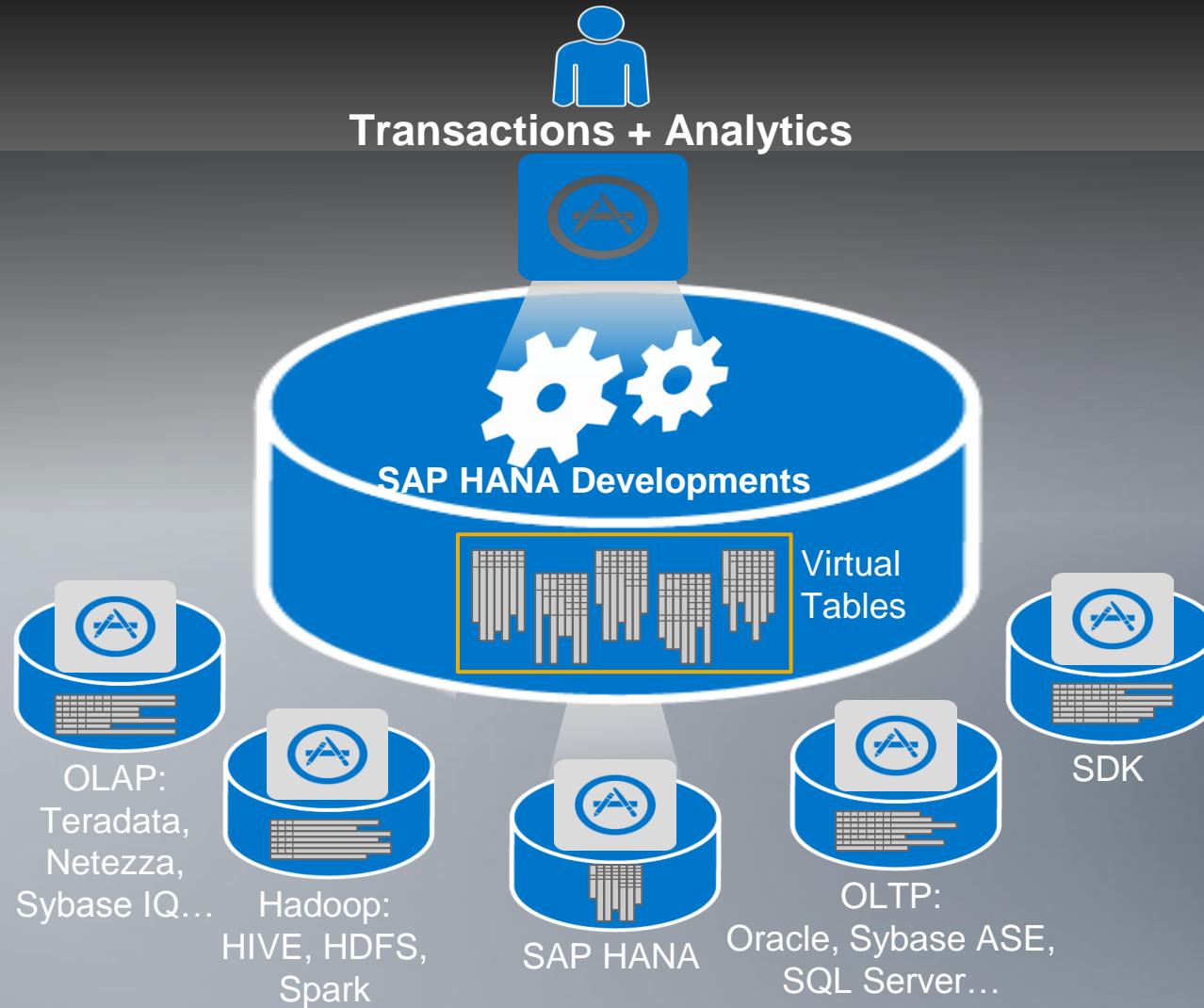
Integration and Data Virtualization Services

Real-time high volume data integration from any source



SAP HANA Smart Data Access

Data virtualization for on-premise and hybrid cloud environments



Benefits

- Remote real-time query processing
- Smart continuously self-tuning system
- Secure access to heterogeneous data sources

Heterogeneous data sources

- SAP HANA
- Hadoop
- OLTP: Oracle, SQL Server, ...
- OLAP: Teradata, Netezza, ...
- SAP Sybase ASE, SAP Sybase IQ
- SDK for custom data sources and rapid certification of new sources

Deployment Services

Provides security, privacy, and availability

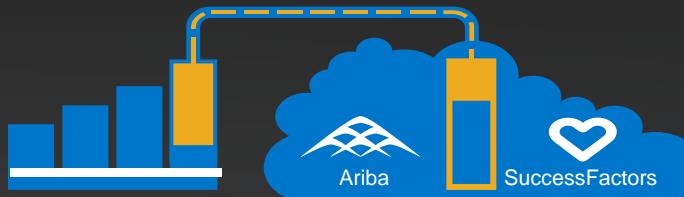
Choose and change your deployment options anytime



On Premise

Run All SAP Solutions on SAP HANA

- Build or deploy your own solutions on SAP HANA
- Maintain all within your firewall
- Upgrade or leverage existing infrastructure



Hybrid

Leverage SAP Cloud

- Migrate some solutions to the cloud
- Create or deploy new SaaS apps in the cloud
- Use cloud hosting and managed services
- Deploy via SAP HANA Enterprise Cloud or public cloud



Cloud

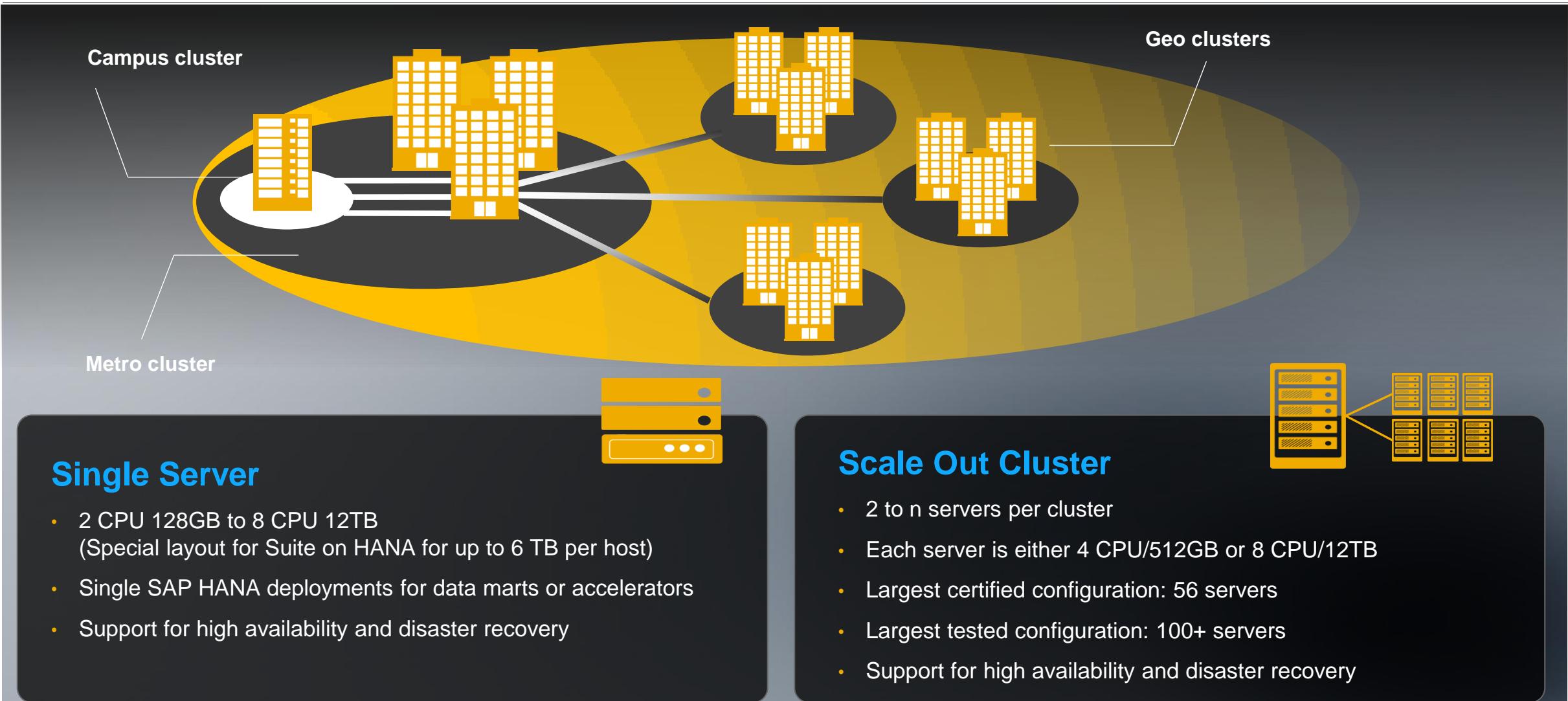
Build, Run, Deploy all Applications in the Cloud

- Consider Virtual Private Cloud option
- Enable faster innovations
- Simplify landscape
- Migrate or build new applications in SAP HANA Enterprise Cloud



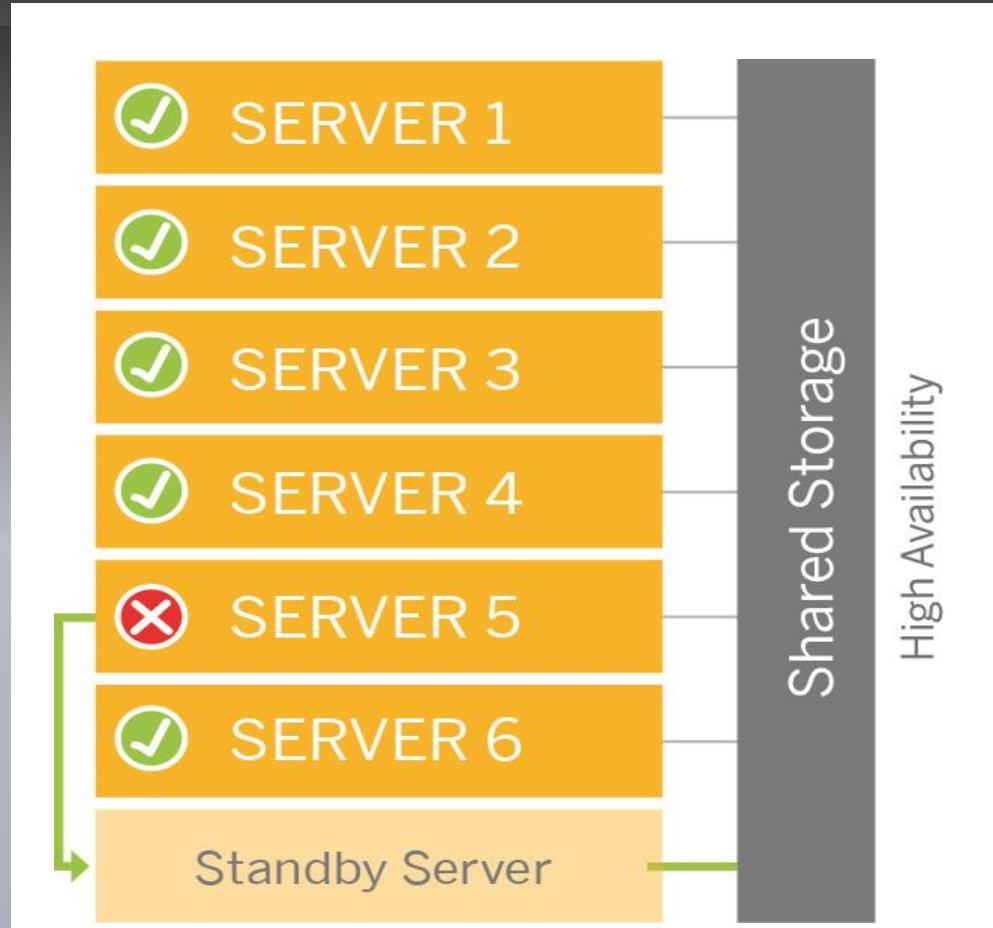
Mission-critical infrastructure

Ensuring most demanding service-levels



Ready for Mission-Criticality

Full High Availability, Reliability, Disaster Recovery, and Supportability



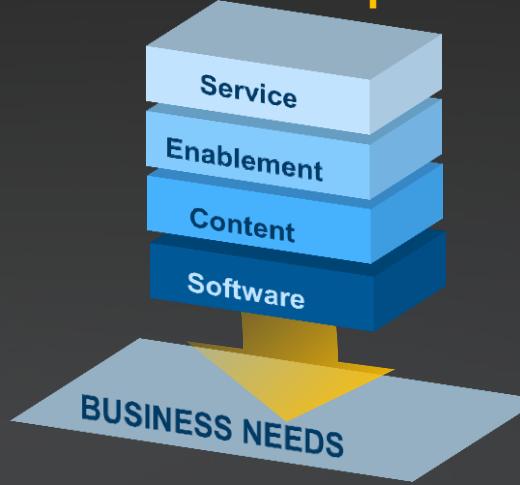
- SAP HANA offer scale out configuration with fail-over nodes
 - If a node fails for any reason a backup node will take over. The fail-over node is available immediately and data will load as queries require it.
- SAP HANA also supports disaster recovery via either synchronous or asynchronous native replication.
 - Allows the secondary SAP HANA systems to be located continents away providing protection from any natural or political disasters.
 - There are many options for DR that can allow for near zero down time upgrades or use of the secondary system for use as test and dev.
 - Log shipping can be another DR option and efficient use of hardware
- Reuse of External Storage Mediums that are already DR capable can leverage that through SAP HANA Tailored Data Center Integration

Deploy at your own speed

From optimizing your landscape to transforming your business

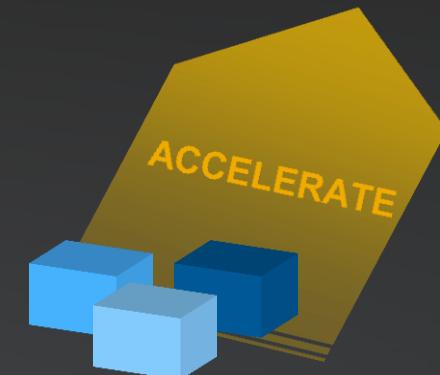
SAP HANA scenarios can be consumed from days to weeks to months

Optimize your Current Landscape



- **Experience 2-3x faster** data analysis even using your current environment
- Take advantage of preconfigured software and implementation services - **Rapid Deployment Solutions (RDS)** to accelerate your implementation

Consolidate and Accelerate



- **Consolidate** your applications and analytical legacy systems into a modern landscape
- **Leverage** SAP Predictive Analytics and HADOOP integration to extract value from Big Data scenarios
- **Create** real-time visibility into your business

Unleash the Power of Imagination to Rethink your Business

imagine. create. innovate.
DESIGN THINKING



- **Engage** SAP Design Thinking to identify opportunities to re-think your business
- **Validate** opportunities by assessing desirability, viability, and feasibility
- **Develop** a proof of concept to start executing on your vision immediately
- **Expand** your reach, re-define your Industry



Open Platform with hardware and services partners



ARISTA

Atos



Deloitte.

FUJITSU

HITACHI



IBM



kt

lenovo

NEC



vmware

Hardware and
Hosting Partners

Implementation
Partners

Solution
Providers

SAP HANA
Enterprise Cloud

Leverages x86 Based Commodity Hardware

Delivered as Appliance or as Tailored Data Center Integration Options

SAP HANA runs on standard Intel x86 HW and is available from 10+ Server H/W vendors, and available with 10+ cloud infrastructure companies.



- SAP HANA runs on “commodity” components assembled by our hardware partners to the minimum specifications given to them by SAP
 - Co-innovation with partners and unique architectural design keep overall costs low.
 - SAP HANA runs on inexpensive, commodity hardware and requires no proprietary add-on components.
- To leverage from the commodity platform, SAP HANA enlists the partnership of not one but several of the world’s best hardware companies (for example, Cisco, Dell, Fujitsu, Hitachi, HP, or IBM), to give customers a range of choice and options in deciding which system to select.

At a high-level, SAP HANA is made up of the following:

► Each node Intel Westmere or Ivy Bridge EX E7 V2 system(s) with 2, 4 or 8 Sockets of CPUs (20, 40, 80, 120 cores)
128GB up to 12TB per node

► Scale out by clustering multiple nodes together (with option for stand-by nodes for HA).

► Log storage - usually PCI3 SSD, Fusion-I/O or similar in single node solutions. Local/shared storage for scale out.

► Data storage - either local or SAS storage or network storage depending on the configuration.

SAP HANA – Roadmap

SAP HANA

SAP HANA specific product road map overview – key themes and capabilities

- Business Suite on SAP HANA
- SAP BW on SAP HANA
- Application Development Enablement
- “R” integration
- Unstructured text search & Text Analytics
- Streaming and Complex Event Processing integration
- Application development and runtime
- Enhanced openness for 3rd parties tool integration and certification
- Enhanced HA and DR capabilities
- Smart Data Access – Data virtualization
- Spatial support and Geo-Content
- Virtualization support
- Tailored Data Center Integration
- Cloud delivery models – SAP HANA Enterprise Cloud, SAP HANA One

Today

(up to SPS7 Release – Nov 2013)

- Ivy Bridge Server certifications
- Production Virtualization support
- Monitoring & operations enhancements
- SAP HANA Studio usability & productivity enhancements
- Web IDE enhancements
- SAP HANA Studio support for OSX
- Web IDE and SAP River enhancements
- Geo-spatial innovations & ESRI support
- Security enhancements
- Smart Data Access support for IBM data sources
- SAS integration with SAP HANA
- Application Function Library SDK
- ADO .Net client connectivity
- SAP Business Suite and SAP BW application specific enhancements
- New DR Synchronous Mode - Full Sync

Recent Innovations

(SPS8 Release - Rev 80 - May 31st 2014)

- Dynamic Data Tiering
- Multi-Tenancy
- Graph Engine capabilities
- New Data time series features
- Native IM - Data Provisioning, streaming, replication and data quality capabilities
- Native complex event processing
- New operations, management and Lifecycle management tools
- New core engine capabilities to support Big Data and IoT applications
- Enhanced Developer tooling, interoperability, usability & migration tools
- New security, audit & compliance features
- New Hardware, OS and Tailored Data Center Integration options
- Additional 3rd party Application, tool, services, algorithm and content support

Future Direction

This is the current state of planning and may be changed by SAP at any time.

Additional Information Sources

SAP Public Web

www.saphana.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

Watch SAP TechEd Online

www.sapteched.com/online



Thank you

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Thank you

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SAP d-code Virtual Hands-on Workshops and SAP d-code Online

Continue your SAP d-code education after the event!

SAP d-code Virtual Hands-on Workshops

- Access hands-on workshops post-event
- Starting January 2015
- Complementary with your SAP d-code registration

<http://sapdcodehandson.sap.com>

The screenshot shows the SAP d-code Virtual Hands-On Workshops website. The main navigation includes 'Virtual Hands-On Workshops' and 'Content Archive'. The homepage features a large banner for 'Virtual Hands-On Workshops' with a yellow cloud graphic and a windmill icon. Below the banner, there's a section titled 'Content Archive of SAP d-code' with a 'View 2013/2014 Content Archive' button. The content archive page displays a grid of workshop thumbnails with titles like 'Custom Development (CD)', 'SAP d-code Global', 'Get to Know Virtual Hands-On Workshops', and 'Content Archive'. A sidebar on the left lists various SAP modules such as Customer Relationship Management (CRM), Enterprise Asset Management (EAM), and Manufacturing (MFG).

SAP d-code Online

- Access replays of keynotes, Demo Jam, SAP d-code live interviews, select lecture sessions, and more!
- Hands-on replays

<http://sapdcode.com/online>

The screenshot shows the SAP d-code Online website. The main navigation includes 'Global SAP TechEd', 'SAP d-code Global Home', 'Sessions', 'SAP d-code News', and 'Past Events'. The homepage features a large banner with the text 'Crack the code' and a video player showing a person speaking. Below the banner, there's a section titled 'Introducing the new SAP d-code conference' with a 'Learn more' button. The page also includes sections for 'EDUCATIONAL SESSIONS' (with a video player showing a group of people in a classroom), 'Meet Our Speakers' (with a list of speakers and their profiles), and 'Demo Jam: Call for Demos'.

Feedback

Please complete your session evaluation for
TEC102.

Thanks for attending this d-code session.

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