Accelerated BI with SAP HANA

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Agenda

Introduction to SAP HANA
Why the need for Accelerated BI
SAP BusinessObjects BI 4.0 and SAP HANA
Customer Case Studies
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Introduction to SAP HANA
What is SAP HANA?

1. A flexible, data source agnostic **in-memory analytic appliance** to quickly process and analyze large volumes of transactional data in real-time.

2. A **modern platform** that serves as the foundation to develop a new class of real-time applications.

3. **In-Memory Database** that runs under SAP NetWeaver BW for a super-charged Data Warehouse.

![SAP HANA Diagram](image-url)
What is SAP HANA?
3 Common Use Cases

1. A flexible, data source agnostic in-memory analytic appliance to quickly process and analyze large volumes of transactional data in real-time.

2. A modern platform that serves as the foundation to develop a new class of real-time applications.

3. In-Memory Database that runs under SAP NetWeaver BW for a super-charged Data Warehouse.
SAP HANA
Ideal Platform for Real-Time Analytics

1. Revolutionary in-memory platform
   - Real-time analytics on detailed data on the fly
   - In-memory calculations
   - Real-time replication to eliminate data latency
   - No aggregates, tuning of data for performance

2. Empowers you to interrogate data
   - Wizard-driven data modeling for business
   - Fast & easy creation of ad-hoc views
   - Optimized for SAP BusinessObjects BI
   - Open platform for other clients

3. Powerful predictive analytics
   - Embedded data mining algorithms for predictive analytics
   - Bring decision support capabilities to the business users through simplified experience and pre-built scenarios

4. High data quality
   - Real-time replication and faster loading
   - Tight integration with data quality capabilities
Accelerated Business Intelligence with SAP HANA

**Business Intelligence**
Access and analyze large volumes of transactional data in real-time

**Data Processing**
Incredible fast processing of large data volumes
Create views and calculations on data in a visual modeling environment
Based on in-memory technology

**Data Capture**
Real time based off of large volumes of transactional data
SAP HANA Information Composer
Flexible modeling tool for the business user

For business users who are not familiar with data modeling to upload data into SAP HANA using a spreadsheet to blend private data with centrally published data for fast analytics

Key Benefits
Quick time to value with virtual data mart
- Create design-time analytical view without impacting underlying data model
- No need to prep data to accelerate performance

Simple way to add or enhance data model
- Wizard-driven data modeling & acquisition
- Cleanse, preview, and upload local data

Comply with central security & access rights
The Need for Accelerated BI
Achieving Real-Time Business Insight is Difficult
You Need an Agile Approach

<table>
<thead>
<tr>
<th>Business Demands Agility</th>
<th>Existing Approach is Slow</th>
<th>…&amp; Not Future-roof</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Changing markets require frequent / fast changes</td>
<td>- Changes to EDW needs expertise modeling &amp; months</td>
<td>- Can you be ready without knowing the questions or the data in advance?</td>
</tr>
<tr>
<td>- Multiple and growing sources of internal and external data</td>
<td>- Database performance tuning leads to redundant data and latency from aggregates</td>
<td>- Sensitive personal, financial or legal data may have to be isolated physically</td>
</tr>
<tr>
<td>- Growing business sophistication for self-service modeling and real-time analytics</td>
<td>- Poor data quality from outdated information can impact business decisions</td>
<td>- Multi-structured data (e.g., text, events, machine) makes current EDW technology obsolete</td>
</tr>
</tbody>
</table>
Today's World

- Transactional System (OLTP)
  - Real-time posting into transactional system
  - Reporting challenges
    - High impact
  - Limited flexibility due to pre-defined data structures
    - Long query run-times
    - Loss of detail
    - Long wait times for reports

- Data Warehouse / Marts (OLAP)
  - Batch transfer to Data Warehouse
  - Analysis and insight Actions
What if This Would All Happen in Real-Time?

No Aggregation / No Data Staging / No Data Marts

'Structure' business transaction

Real-time loading into SAP HANA

High performance / large volume data processing

Fast, flexible, and detailed analytics over large volumes

Analysis and insight Actions

'Structure' business transaction

Real-life loading into SAP HANA

High performance / large volume data processing

Fast, flexible, and detailed analytics over large volumes

Analysis and insight Actions
In-memory is the name of the BI game these days when one is looking for answers at the speed of thought. Most other in-memory DBMS engines, however, have practical limitations of analyzing no more than a few hundred GBs at a time.

To address this limitation, SAP offers a highly differentiated combination of SAP BusinessObjects with its top exploration and discovery capabilities and SAP HANA in memory appliance.
Why SAP BusinessObjects BI 4.0 and SAP HANA
SAP BusinessObjects BI and SAP HANA
Highly Optimized to Ensure Seamless Integration

1. **Full suite of SAP BusinessObjects BI solutions enabled and optimized to leverage SAP HANA**
   - Reporting / Ad Hoc
   - Dashboarding / Discovery
   - Predictive / Analysis
   - Mobile BI

2. **Plug and play with optimized access to Key information models in SAP HANA**

3. **Ensure non disruptive experience when moving SAP BusinessObjects BI on top of HANA**
Data in SAP HANA stored and managed in Tables and Information models

Tables
- Row and column tables held in-memory
- Base Storage of detailed operational ‘raw’ data

Information models
- Logical views of the data that define useful business models and logic on top of tables
  - Analytic views
  - Calculation views
- Created by the SAP HANA Modeling Studio
- Information models do not store data
Plug and Play, Optimized Access to Information Models
Analysis and Exploration

Analysis
Explorer / Visual Intelligence

Native access

SAP HANA Database
Information Models
Tables
Plug and Play, Optimized Access to Information Models
Ad-hoc, dashboarding, and reporting via SAP BusinessObjects universes

Web Intelligence
Dashboards
Crystal Reports

Universe → Native access → SAP HANA Database
Information Models
Tables
Accelerate Existing SAP BusinessObjects BI Deployments with Universe Access to Tables

Web Intelligence
Dashboards
Crystal Reports

Universe

SAP HANA Database

Information Models
Tables

SQL
**Why the Need For Optimized Integration with SAP HANA?**

Access and leverage all business models and business logic now

<table>
<thead>
<tr>
<th>HANA Features/Functions</th>
<th>Value</th>
<th>BI 4.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-database computations</td>
<td>High performance</td>
<td>✔</td>
</tr>
<tr>
<td>Hierarchies*</td>
<td>Multidimensional analysis</td>
<td>✔</td>
</tr>
<tr>
<td>Variables/prompts</td>
<td>Interactive analysis</td>
<td>✔</td>
</tr>
<tr>
<td>Time intelligence</td>
<td>Time-based/historical analysis</td>
<td>✔</td>
</tr>
<tr>
<td>Predictive algorithm library</td>
<td>In-database predictive analysis</td>
<td>✔</td>
</tr>
<tr>
<td>Multi-lingual</td>
<td>Global deployments</td>
<td>✔</td>
</tr>
<tr>
<td>Currency conversion</td>
<td>Global deployments</td>
<td>✔</td>
</tr>
<tr>
<td>Row-level security</td>
<td>Compliancy</td>
<td>✔</td>
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*: support starting with SAP BusinessObjects Analysis, edition for MS Office v1.3 and BI 4.0 SP4
Unlock the Creativity of the Enterprise
SAP Visual Intelligence and SAP HANA

Self-service BI within departments
- Pull together data from a variety of corporate sources, incl. SAP HANA
- Manipulate, cleanse, enrich, and merge with personal data files
- Explore and analyze with powerful interactive visualizations

Enterprise reach with SAP HANA
- Publish as analytic/calculation views to SAP HANA for reaching out to all users
- Consume with SAP BusinessObjects Explorer on the web or mobile devices
Unleash the value of all your data through the power of SAP HANA

- Employ in-database predictive algorithms
- Access 3,500+ open-source algorithms via R integration for SAP HANA

Intuitively design and visualize complex predictive models

- SAP Predictive Analysis

Bring predictive insight to everyone in the business

- Embed within business applications
- Extend into BI and reports
- Insight into events instantly delivered to dashboards, alerts, and mobile devices
SAP HANA In-Memory Predictive Analytics
Built In Predictive Library and R Integration

Combine the depth and power predictive capabilities within SAP HANA to support a variety of advanced analytic and predictive scenarios

Predictive Analysis Library (PAL)
- **Native** predictive algorithms
- In-database processing for **powerful** and **fast** results
- **Quicker** implementations
- Support for K-Means, K-Nearest Neighbor, C4.5 Decision Tree, Multiple Linear Regression, Apriori, ABC Classification, Weighted Score Tables

R Integration for SAP HANA
- R provides an incredibly comprehensive library of predictive analysis algorithms
- SAP provides an efficient integration between SAP HANA and R
- Analysts already using R will be able to use functionality without any additional training
- Enables the use of the **R open source environment** (> 3,500 packages) in the context of the HANA in-memory database
Accelerated BI with SAP BusinessObjects BI and SAP HANA: The Perfect Match

### Capabilities
- Columnar storage
- In-memory computing
- In-database computations
- Real-time data replication
- Full plug and play access to information models
- Unique touch points for high-value scenarios
- Universe access to tables

### Customer Value
- Compress and load mountains of data into memory
- Lightning-fast data access
- Lightning-fast aggregation and calculation
- Real-time analytics
- Immediate in-depth access to all optimizations
- Data discovery and predictive analysis for the enterprise
- Leverage previous investments
3 Reasons Why a Single Vendor End-to-End is Best

1. **Minimize integration challenges**
   SAP certifies SAP BusinessObjects BI and SAP HANA to work together as an end-to-end stack
   - Only clients and applications certified on SAP HANA will be supported by SAP
   - 3rd-party certification program planned in the future

2. **Faster and easier deployment**
   Don’t chase down several vendors with missing software, integration challenges, and information gaps
   SAP takes end-to-end responsibility and new features and functions can be rolled out faster and more easily

3. **Better customer support experience**
   One phone number, one contact
   Dealing with one vendor is a better experience. Period
Customer Case Studies
T-Mobile USA, Inc.
Telecom – Measure effectiveness of Marketing Campaigns

Business Challenges
- Absence of rapid insights lead to inefficiencies and potential revenue loss
- Proliferation of offers/micro-offers makes offer performance management increasingly strategic

Technical Challenges
- Big data cannot be analyzed efficiently and accurately

Benefit
- Real-time business decisions to maximize revenue by channel
- Refine sales offers leading to increased adoption rate and profitability from their customers

We recognized that being able to respond to the needs of our customers in real time would give us an incredible competitive advantage and improve the quality of the customer experience. In order to deliver that kind of experience, we needed an underlying platform behind our sales and marketing efforts, allowing us to uncover customer insights and then act on those insights in minutes, not weeks. SAP HANA delivered exactly that.

Jeff Wiggin, VP, Enterprise Information Technology, T-Mobile USA, Inc.
BMW
Automotive – Accelerated Insight for non SAP data

The company’s top objectives
- Sustain broad adoption of SAP BusinessObjects BI solutions
- Accelerate reports on 3rd-party database as data volume increases
- Lower TCO as data access optimization and tuning increases costs

The resolution
- Load detailed data into SAP HANA from 3rd-party database
- Push calculation on detailed data down to SAP HANA, avoiding pre-aggregation
- Move existing SAP BusinessObjects reports to the new environment

The key benefits
- A minimum of 20x performance improvement
- No change to the SAP BusinessObjects reports
- Enabled drill down to details that wasn’t possible in the previous environment
## SAP HANA Transforms both Businesses and IT

<table>
<thead>
<tr>
<th>Business Transformation</th>
<th>Example</th>
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<tbody>
<tr>
<td><strong>Reduce waste &amp; fraud in government fund</strong></td>
<td>&lt;2 min for detecting 100,000 names over 90M records</td>
</tr>
<tr>
<td><strong>Identify cancer DNA variants for treatment</strong></td>
<td>216x faster results: 3 days → 20 minutes</td>
</tr>
<tr>
<td><strong>Improve diagnostic through pattern detection</strong></td>
<td>300M records; analysis in 2-10 seconds</td>
</tr>
<tr>
<td><strong>Predict customer purchase sentiment</strong></td>
<td>Seasonality Analysis in 5 seconds</td>
</tr>
<tr>
<td><strong>Improve labor utilization</strong></td>
<td>1131x faster reporting time</td>
</tr>
<tr>
<td><strong>“Perfect order” experience</strong></td>
<td>60x faster real-time insights</td>
</tr>
<tr>
<td><strong>Sharpen marketing effectiveness</strong></td>
<td>56x faster reporting: micro-targeted customer offers</td>
</tr>
<tr>
<td><strong>Accelerate monthly close &amp; spending insight</strong></td>
<td>75% reduction in CRM query ~23 to 6 seconds</td>
</tr>
<tr>
<td><strong>Launch new products or markets</strong></td>
<td>400x faster report execution: Forecast sales-trends in real-time</td>
</tr>
<tr>
<td><strong>Remote roadside diagnostics in real-time</strong></td>
<td>Analyze 15 years 1 TB data in seconds</td>
</tr>
<tr>
<td><strong>Deeper customer relationships</strong></td>
<td>360 customer view and comprehensive experience</td>
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</table>
SAP HANA Adoption Model
A Platform With a Strong Roadmap

Level 1
SAP HANA as a data mart
- Fast time to value
- Bring data into SAP HANA for a high value scenario
- Flexible and extremely fast real-time analysis
- Non disruptive adoption

Level 2
SAP HANA as a platform for all your analytics
- Multiple scenarios
- Consolidation database that scales with multiple nodes
- Unstructured data analysis (e.g. Text analytics)
- Predictive analytics
- Analytics for mobile users

Level 3
SAP HANA as a platform for analytics and applications
- Consolidation of OLTP and OLAP workloads
- New generation of in-memory applications from SAP and partners
- Custom applications on SAP HANA as a primary database
- Reduced landscape complexity
SAP BusinessObjects BI Solutions with SAP NetWeaver BW Powered by SAP HANA

Shanghai Volkswagen
- Cube loads 1.4x faster, DSO activation 4x faster
- Web Intelligence acceleration by more than 10x
- Now expanding functional BI scope

Lenovo
- 6 tables with 100+ mio. records, 2 with 10+ mio.
- Query performance improved from hrs to mins
- 2x to 20x acceleration of Web Intelligence reports

NongFu Spring
- 5x to 10x acceleration of queries/reports
- Non disruptive for SAP BusinessObjects BI users
- Much faster BI leading to better user experience
Be Sure To Visit: ExperienceSAPHANA.com

1. Hear Directly from SAP HANA Customers
2. Technical Resources – Learn how it works
3. Blogs from Experts on HANA key topics
Thank You!

SAP BusinessObjects BI 4.0 and SAP HANA: online interactive briefing on SAP Community Network