

# Power BI on SAP HANA

by Gerhard Brueckl and Markus Begerow



# Who we are

Gerhard Brueckl

- Analytical Databases (SSAS, HANA)
- Power BI and Office 365
- Windows Azure



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**SSAS**  
MAESTRO  
by Microsoft

Markus Begerow

- DWH: SSIS & SSAS
- Power BI: Power Query & PowerPivot
- SAP HANA



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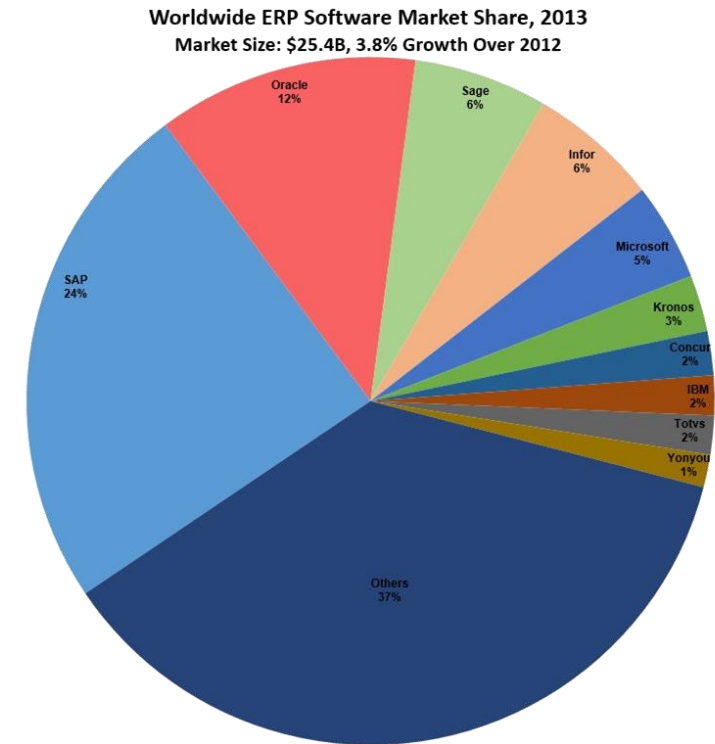
# Agenda

- Background
- What is Power BI
- What is SAP HANA
  - Architecture
  - XS Engine
  - Connectivity
- Integration Scenarios

# Background

- Why is this scenario so important (for us/for you)
- SAP is Market Leader in ERP
  - Especially in Germany
- Lack of Third-Party Integration
- 2011
  - Introduction of SAP HANA
  - Introduction of Power BI v1.0
- Late 2014: Introduction of Power BI v2.0

**24%**



<https://www.gartner.com/doc/2729518/market-share-analysis-erp-software>



# What new Power BI v2.0?

- Power BI Designer
- Platform-Independent / Excel-Independent
- HTML5 / Mobile
- New License Model

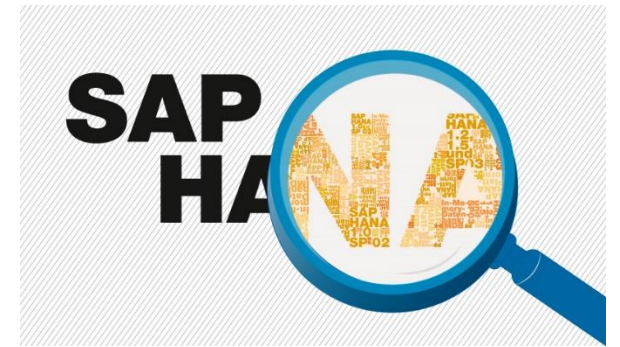
# What new Power BI v2.0?

- Live-Reporting
- APIs / Extendibility
- Integrated Security



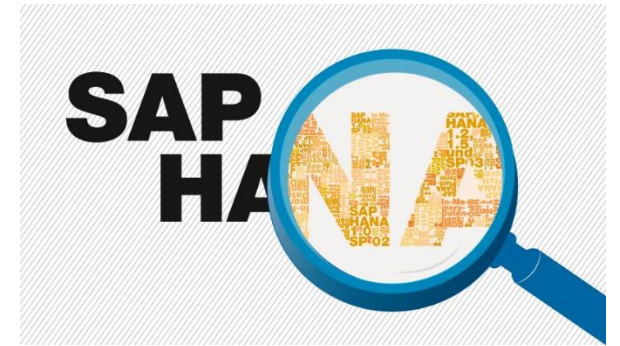
# What is SAP HANA?

- It's a RDBMS Appliance
  - Row- and Column-Store
  - In-memory only
- MPP-Architecture
- Deep Integration with other SAP Products



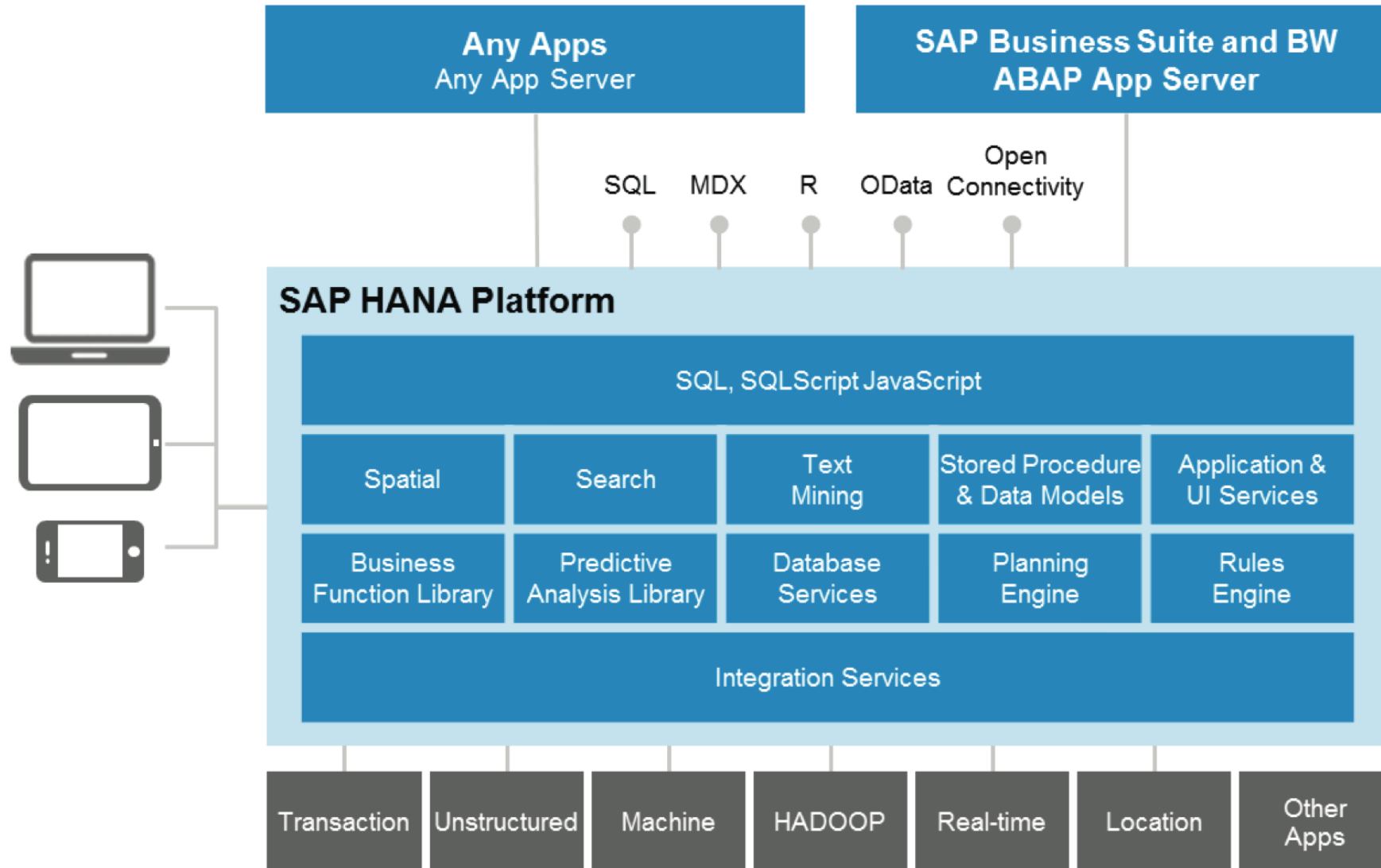
# What is SAP HANA?

- Standard Interfaces for Data Extraction
- Real-Time capabilities
- Built-In Application Layer / XS Engine

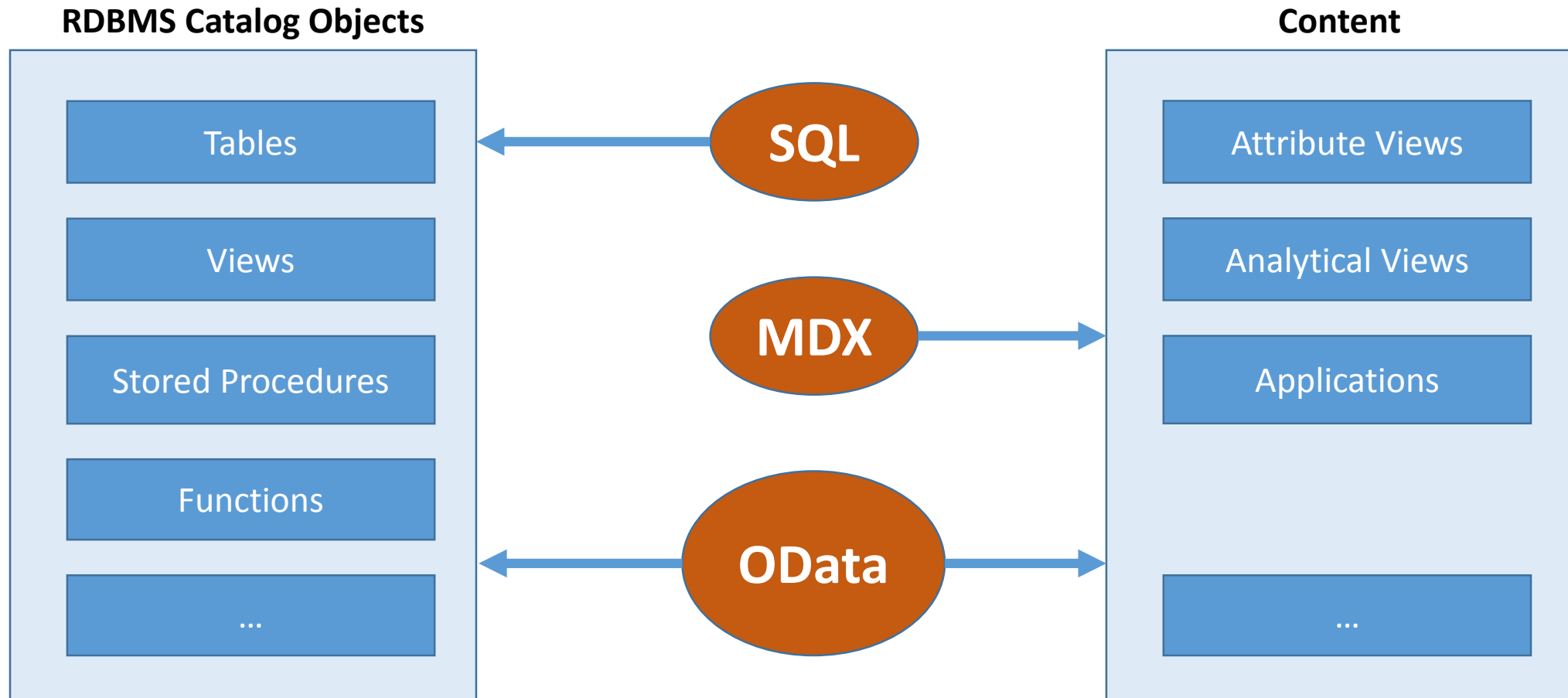




# SAP HANA Architecture



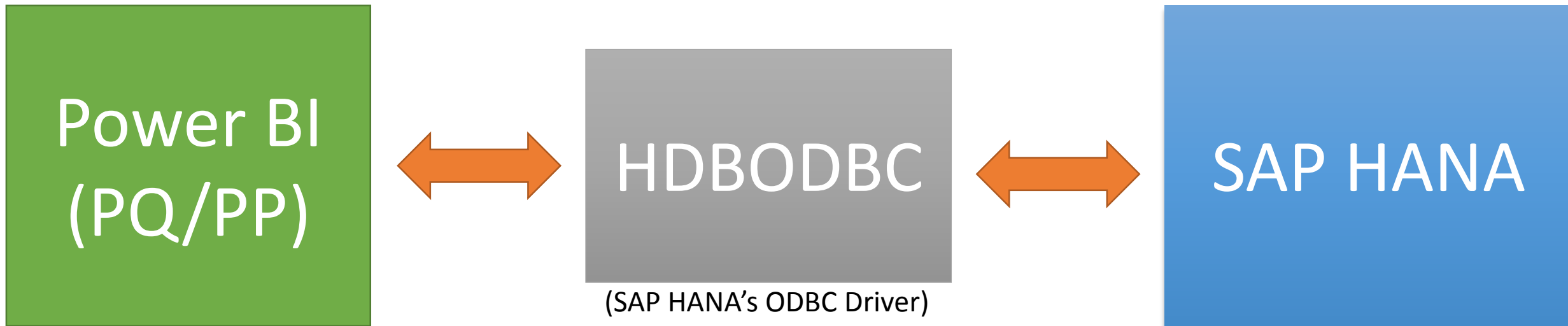
# Objects in SAP HANA



# SQL Connectivity with ODBC

- ODBC is an industrial standard
- Native to Power Query / Power Pivot
- Cumbersome to get ODBC Connection String
- Easy to implement SQL Queries to get data that YOU want
  - ANSI-SQL
  - SAP HANA SQLScript

# SQL Connectivity with ODBC



**Note:** Does not work with Data Management Gateway yet (!)

# DEMO

SQL Connectivity with ODBC

# MDX Connectivity with Excel Pivot Tables

- Using SAP HANA MDX Provider
- Analytical Views / Calculation Views
- Currently some Limitations
  - Stability
  - (Formattings)
  - Session calculations
  - Drill-Through

# DEMO

MDX Connectivity and Excel Pivot Tables

# OData Connectivity – What is OData?

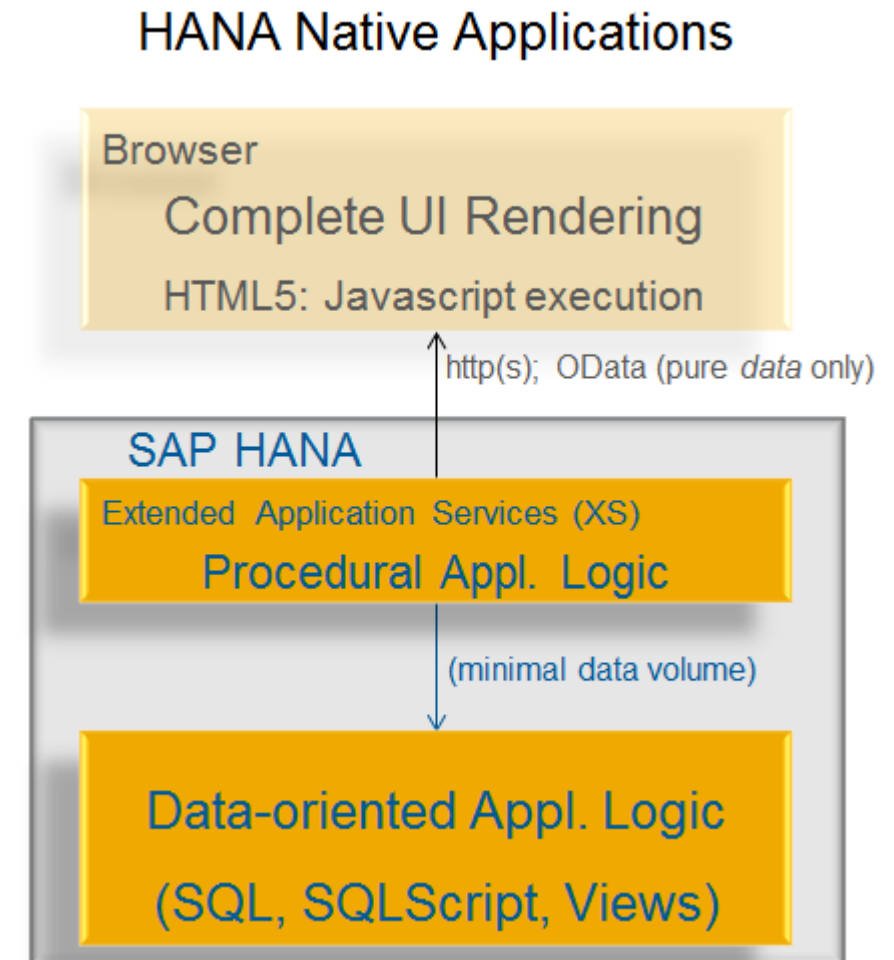
**Open Data Protocol (OData)** is a RESTful data access protocol initially defined by [Microsoft](#). Versions 1.0, 2.0, and 3.0 are released under the [Microsoft Open Specification Promise](#). Version 4.0 is being standardized at [OASIS](#),<sup>[1]</sup> and was released in March 2014.<sup>[2]</sup>

The protocol enables the creation and consumption of REST APIs, which allow resources, identified using URLs and defined in a data model, to be published and edited by Web clients using simple HTTP messages. It shares some similarity with JDBC and ODBC but OData is not limited to relational databases.



# SAP HANA and OData – The XS Engine

- *Extended Application Services*
- Built-In Application and Web Server
  - Lightweight
  - Integrated Security
- Development Server
- Fully integrated

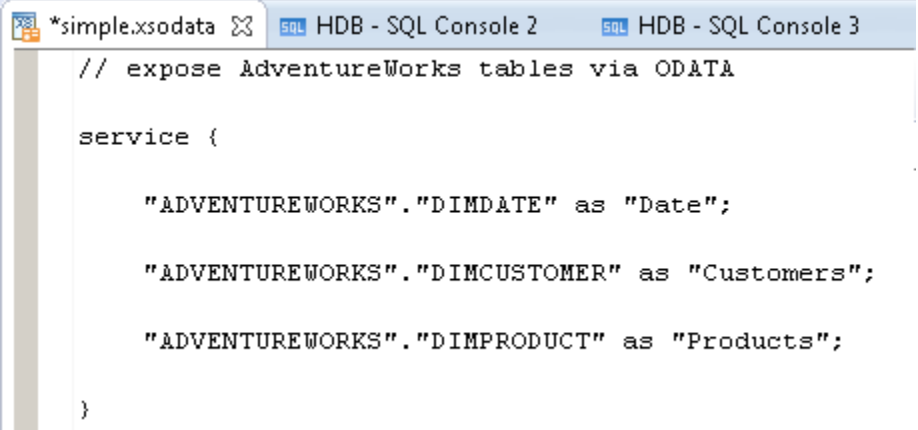


# SAP HANA and OData – The XS Engine

- Build Applications
  - HTML5
  - JavaScript (Server-Side)
  - OData
- SAP Web IDE
  - Hosted within the XS Engine (!)
- SAP HANA Studio

# SAP HANA and OData – The XS Engine

- Using .xsodata
- Catalog Objects
  - Tables
  - Views
- Content
  - Attribute Views
  - Analytical Views
  - Calculation Views



```
*simple.xsodata  SQL HDB - SQL Console 2  SQL HDB - SQL Console 3
// expose AdventureWorks tables via ODATA

service {

    "ADVENTUREWORKS"."DIMDATE" as "Date";

    "ADVENTUREWORKS"."DIMCUSTOMER" as "Customers";

    "ADVENTUREWORKS"."DIMPRODUCT" as "Products";

}
```

# OData Connectivity with Power Query

- Native Integration / Open Standard
- SAP HANA Security
  - Basic Authentication
- Query Folding
  - \$filter
  - \$orderby
  - ...
- Detect Relationship

# DEMO

XS Engine and OData Connectivity

# What's next? (hopefully)

- Live OData support in Power BI (?)
  - Mapping of Security credentials?
  - Not only for HANA, also for other Data Sources
  
- Native Support for SAP HANA (?)
  - Dedicated provider
  - Similar to SAP Business Objects BI Universes

# Summary

- SAP HANA offers various Interfaces
  - ODBC
  - MDX
  - OData
- Power BI works with most of them smoothly
- However, choose the right Interface!
  - Supported Objects
  - Performance
  - Security and Integration