Overview on SAP HANA and HANA Cloud Platform

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Tech Tuesday,13th Dec-2016

Dell EMC |Accenture MDC2B

Agenda

PART 1 : SAP HANA Technology

- What is in-memory computing?
- Harware vendors

PART 2 : SAP HANA Architecture

- Architecture overview
- Data provisioning in SAP HANA

PART 3 : SAP HANA Studio

- SAP HANA Studio
- HANA SQL and Functions
- HANA modeling and reporting

PART 4 : SAP HANA Cloud Platform

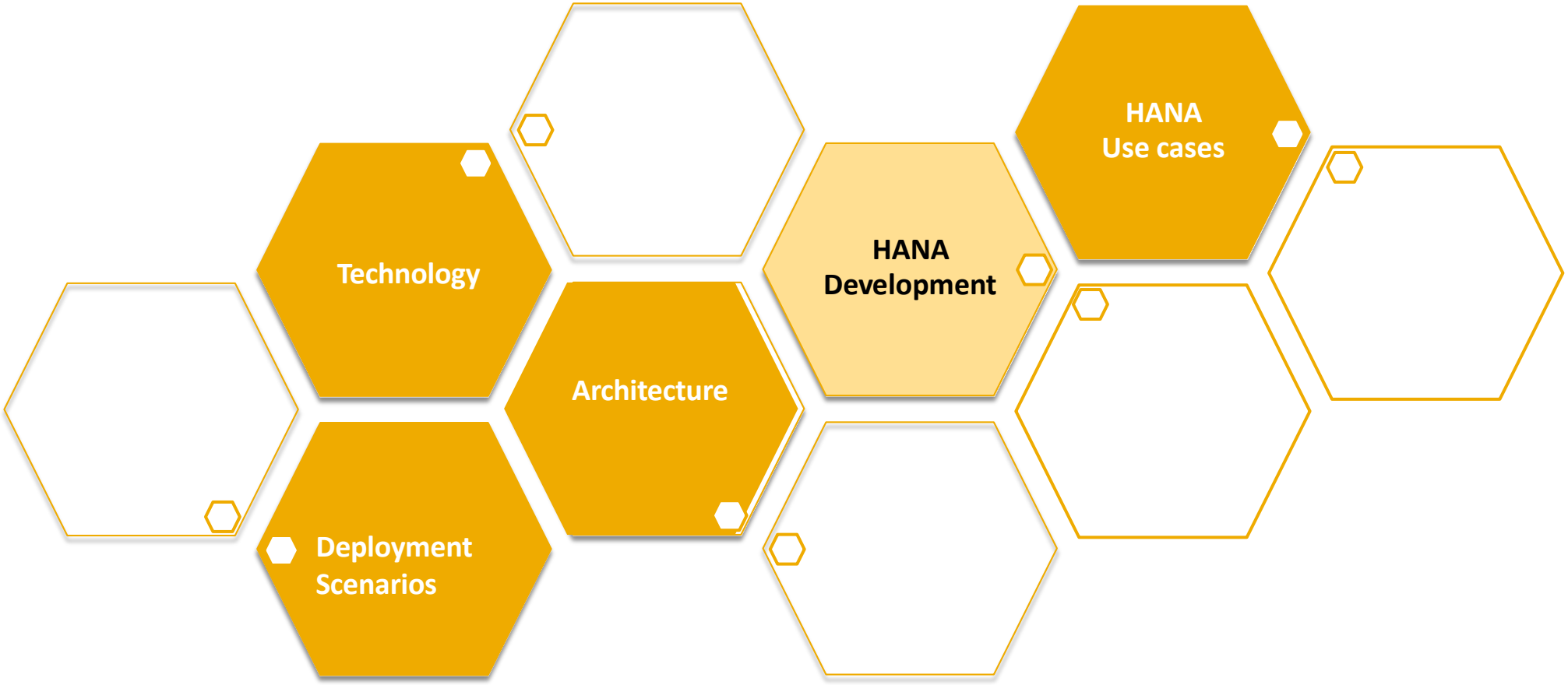
- Architecture overview
- Capabilities and services
- SAP HANA for developers

PART 5 : SAP HANA use cases

- By Business -
- By Product -

PART 1: SAP HANA

Technology



What is SAP HANA

High Performance Analytic Appliance

- ✓ **SAP HANA is an in-memory data platform that is deployable as an On-premise appliance, or in the cloud.**
- ✓ **At the core of this real-time data platform is the SAP HANA database, which is fundamentally different from any other database engine in the market today**
- ✓ **Best suited for real-time analytics and applications.**

SAP HANA Hardware Partners

SAP HANA has two part –

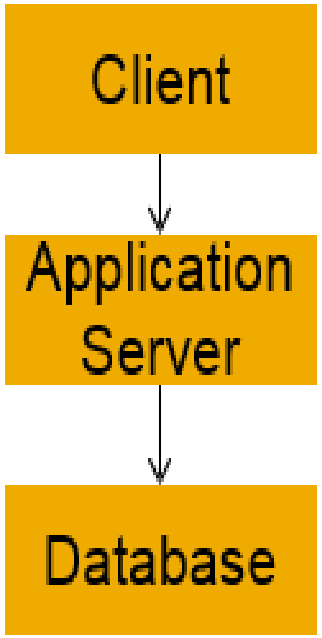
1. **SAP HANA Database**
2. **SAP HANA Platform**

Components	Platform Edition	Enterprise Edition	Extended Edition
SAP HANA Client	✓	✓	✓
SAP HANA Studio	✓	✓	✓
SAP HANA Database	✓	✓	✓
SAP Host Agent	✓	✓	✓
SAP HANA Information Composer	✓	✓	✓
Diagnosis agent	✓	✓	✓
SAP HANA UI for Information access	✓	✓	✓
SAP HANA Client package for MS -Excel	✓	✓	✓
SAP HANA SLT		✓	✓
SAP HANA Business Object Data Service		✓	✓
SAP HANA Direct Extractor Connection		✓	✓
Sybase Replication server			✓
SAP HANA Load Controller			✓

What is In-Memory computing

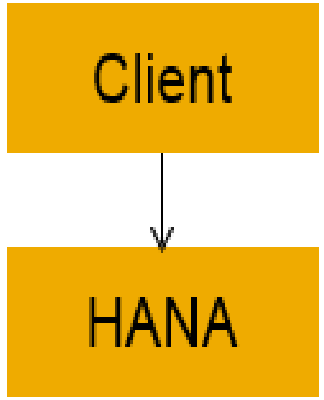
Technology innovation

Traditional



3 tier architecture:

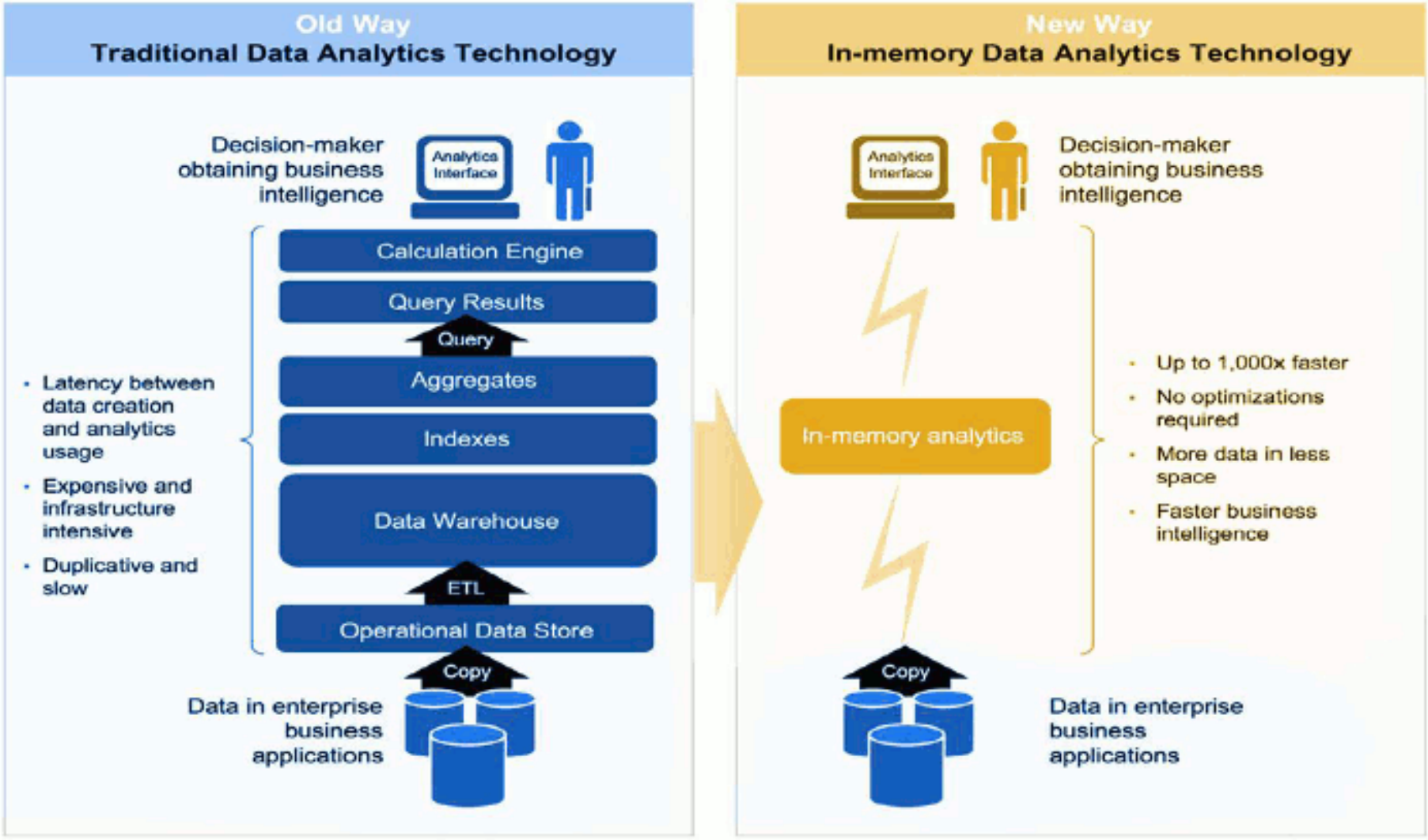
In-Memory Computing



2 tier architecture:

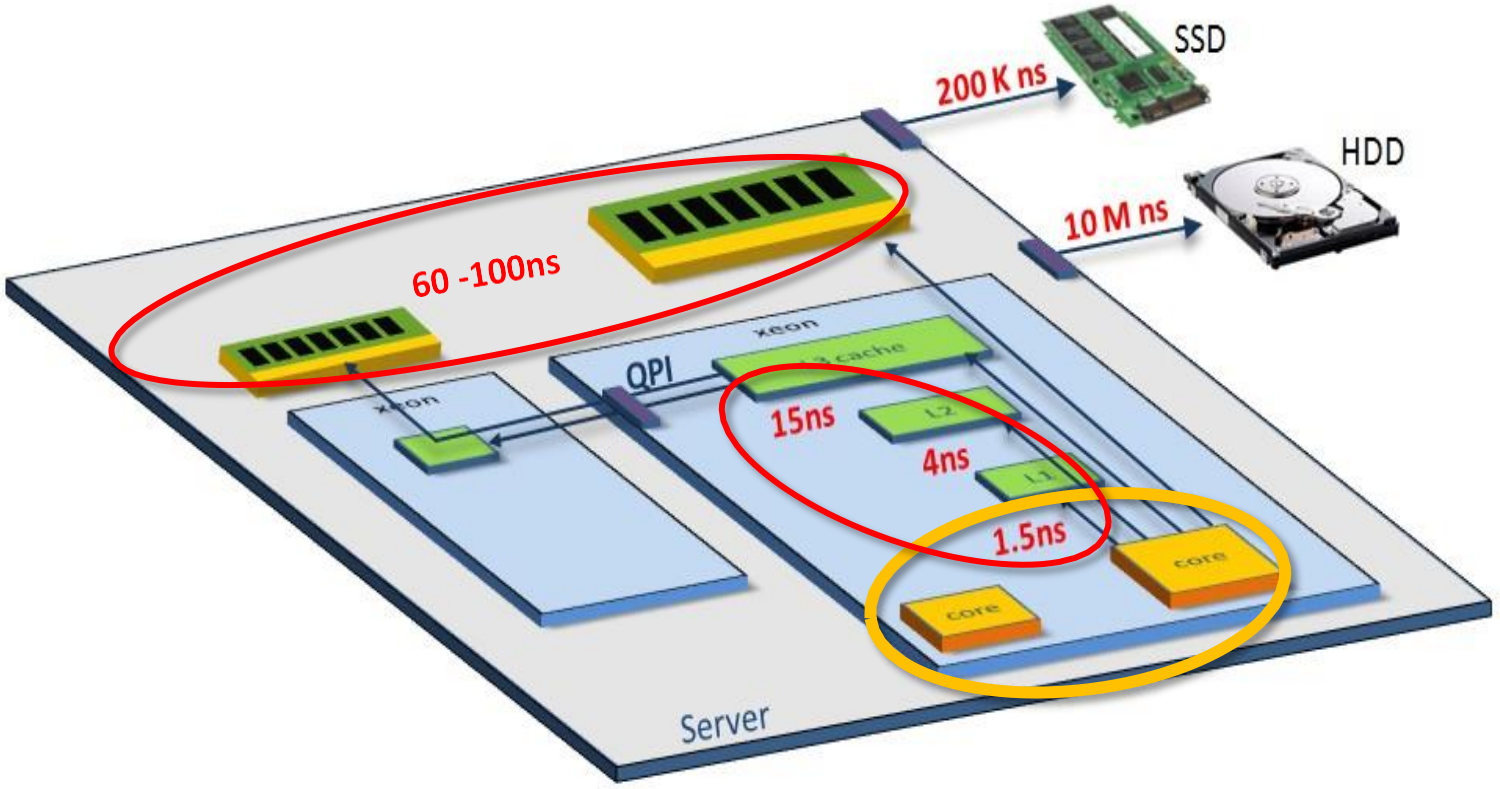
What is In-Memory computing

Technology innovation



In-Memory computing

Challenges of In-memory Computing



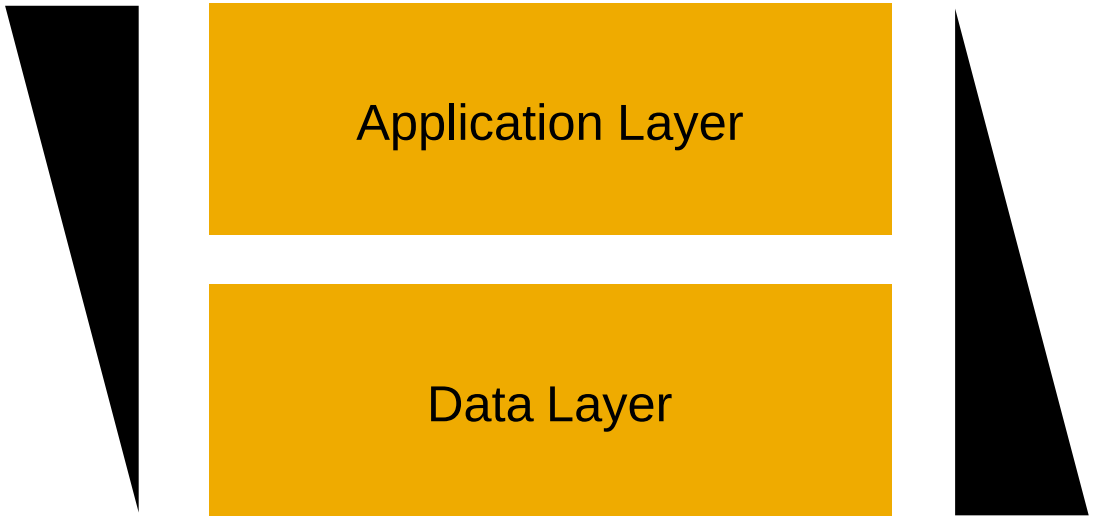
- **Challenge 1: Parallelism!**
  Take advantage of tens, hundreds of cores

- **Challenge 2: Data locality!**
  - Yes, DRAM is 100,000 times faster than disk…
  - But DRAM access is still 4-60 times slower than on-chip caches

In-Memory computing

Delegation of data intense operations to the in-memory computing

Today‘s applications execute many data intense operations in the application layer



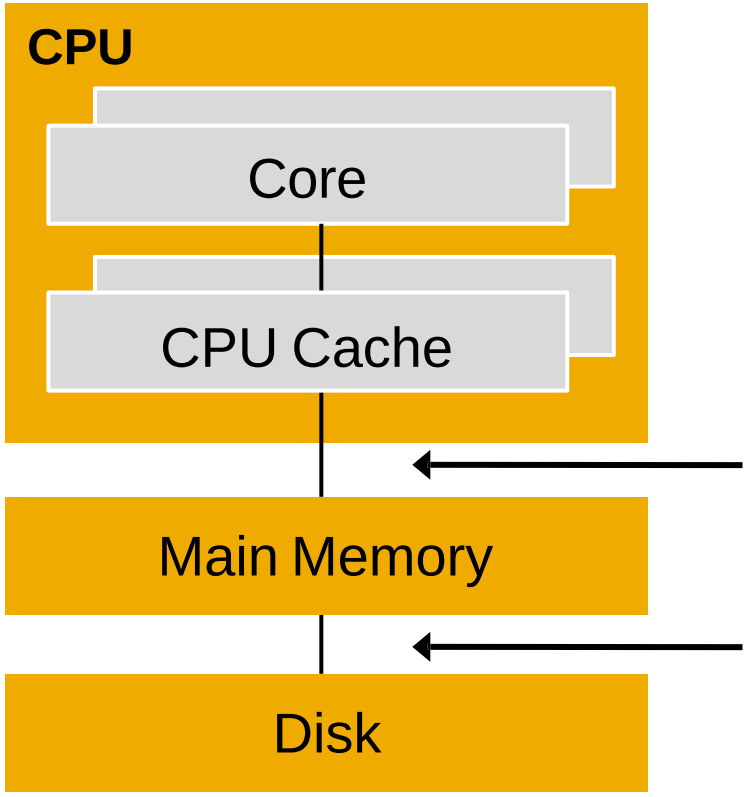
High performance apps delegate data intense operations to the in-memory computing

In-Memory Computing Imperative: Avoid movement of detailed data
Calculate first, then move results

In-Memory computing

Challenges: Use cache-conscious data-structures and algorithms

Programming against a new scarce resource…



Performance bottleneck today:
CPU waiting for data to be loaded from memory into cache

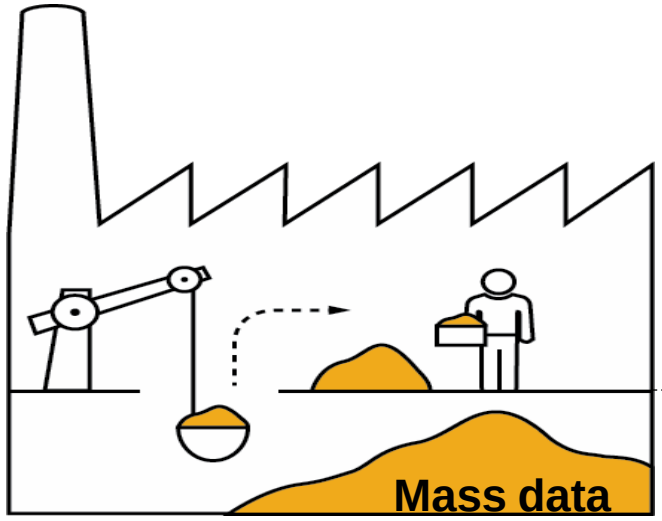
Performance bottleneck in the past: Disk I/O

… requires cache-conscious data-structures and algorithms.

In-Memory computing

Delegation of data intense operations to the in-memory computing

Traditional

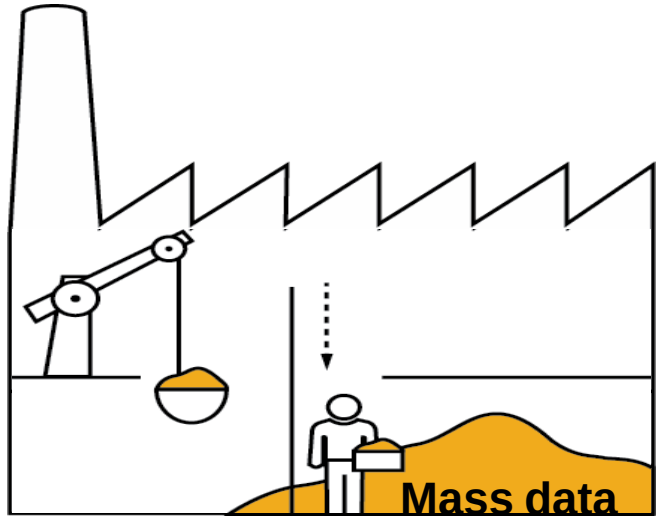


Typical assumption: DB is too slow, app server must optimize (caching)

Application

Database

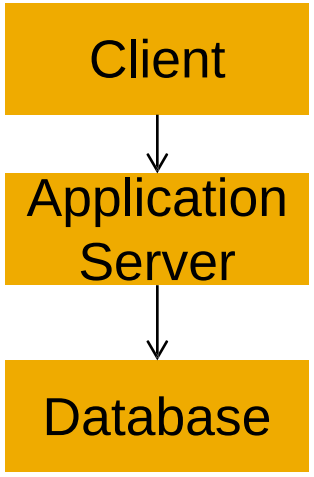
In-Memory Computing



Assumption: do everything with the data where the data is

In-Memory computing
Security implications

Traditional

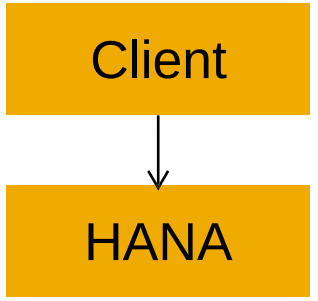


3 tier architecture:

- Users exist in application server only
- Authorization is handled by application server
- DB is accessed with technical user

Security is handled by application server

In-Memory Computing



2 tier architecture:

- Users log on directly to HANA
- Users exist in HANA
- Authorization is handled by HANA

Security is handled by database

In-Memory computing

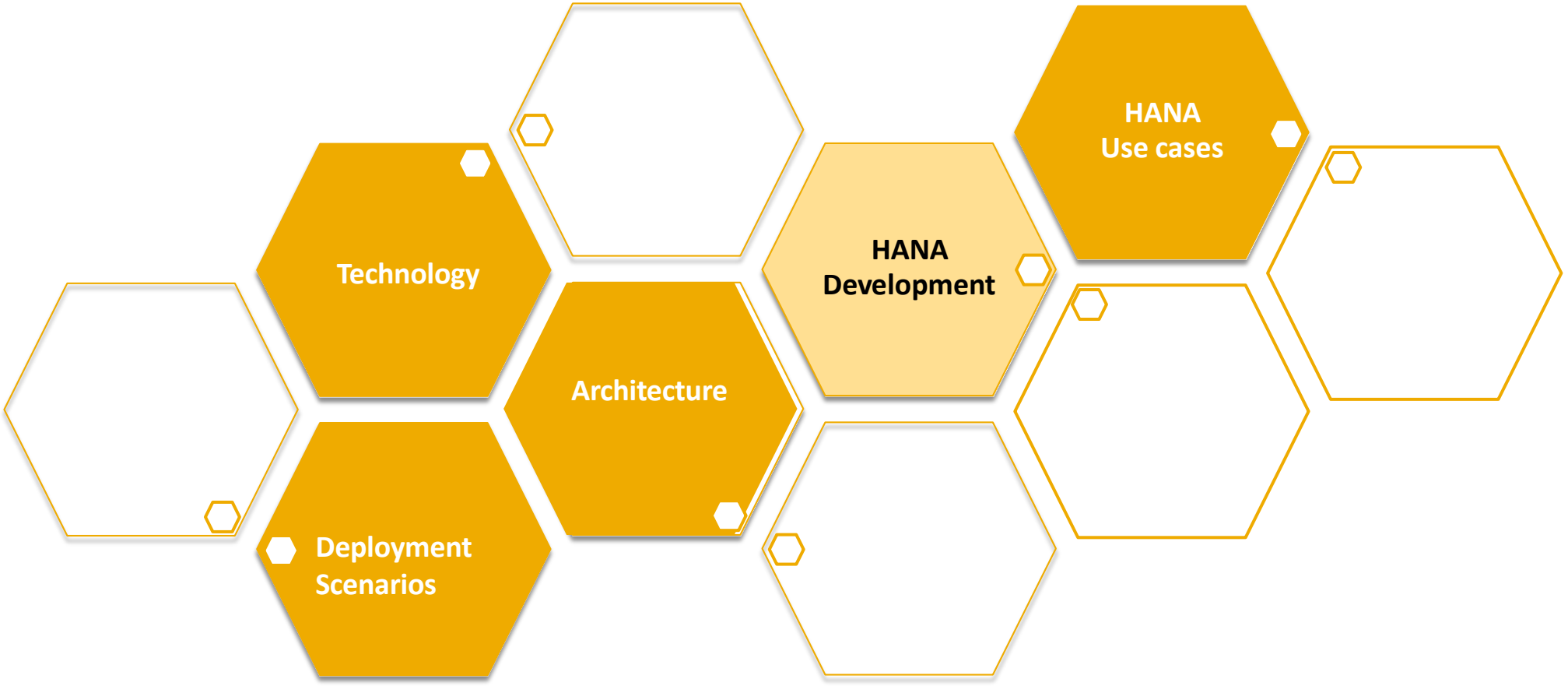
Summary - Why SAP HANA?

Few reasons why to choose SAP HANA –

- **Real Time**
- **Speed**
- **Any Data/Source**
- **Cloud**
- **Simplicity**
- **Cost**
- **Choice Option**

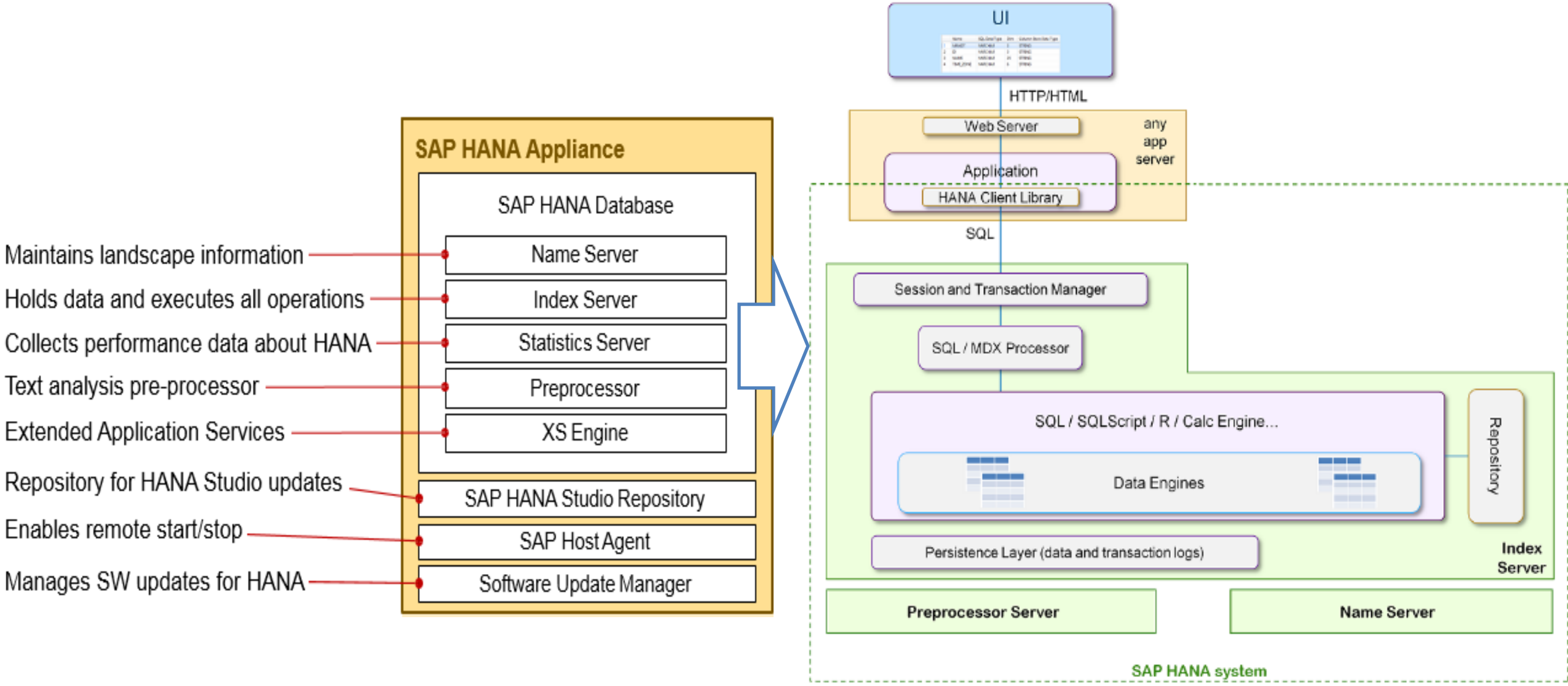
PART 2 & 3: SAP HANA

Architecture and HANA Studio



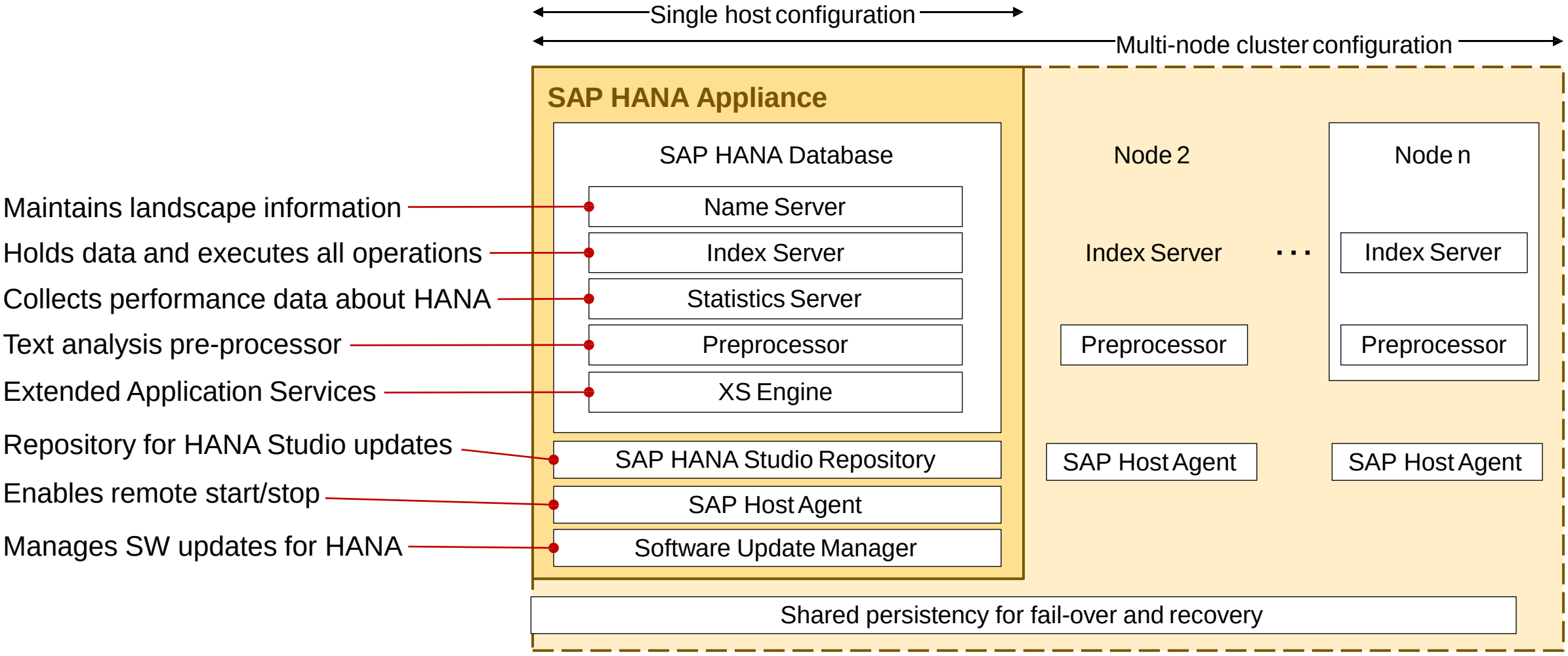
SAP HANA Database Architecture

High level Architecture and components



SAP HANA Architecture

High level Architecture and Deployment view



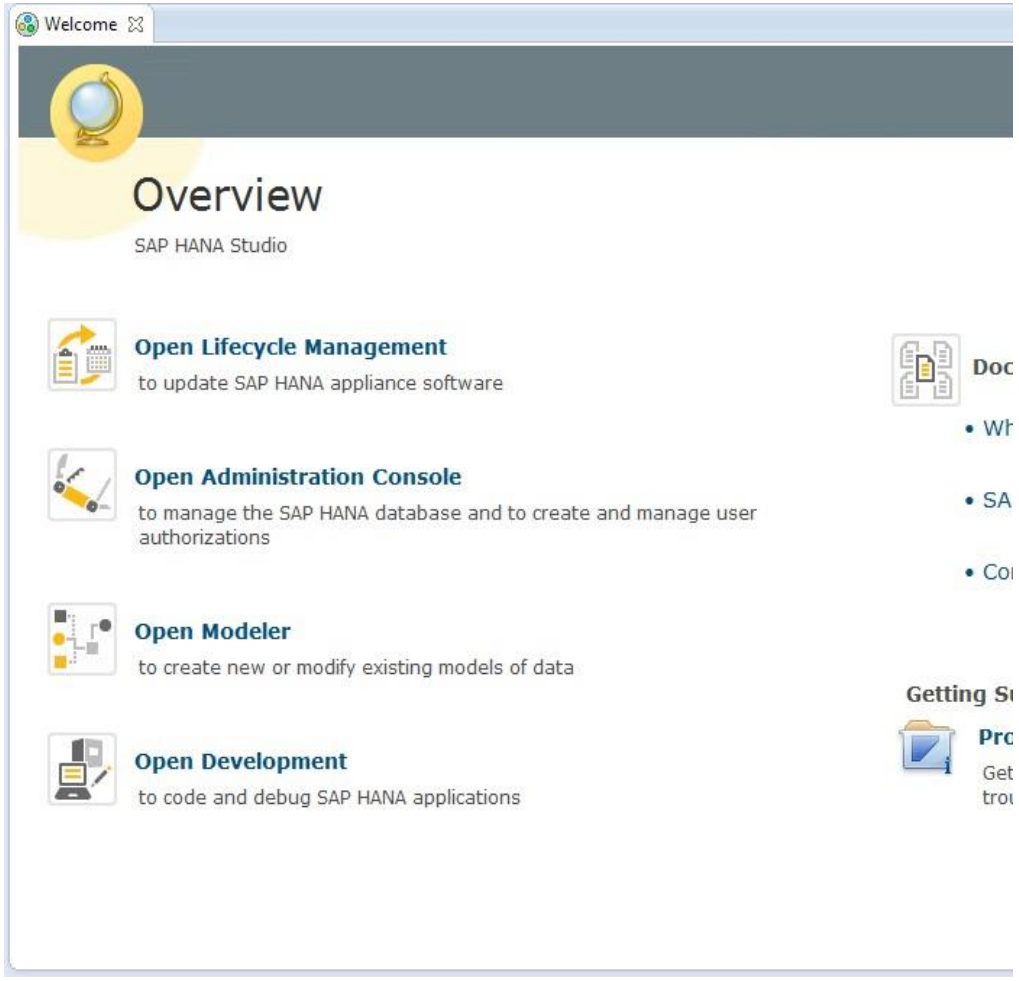
SAP HANA Studio

Administration and Development Tool for SAP HANA

The SAP HANA studio runs on the Eclipse platform and is both the central development environment and the main administration tool for SAP HANA.

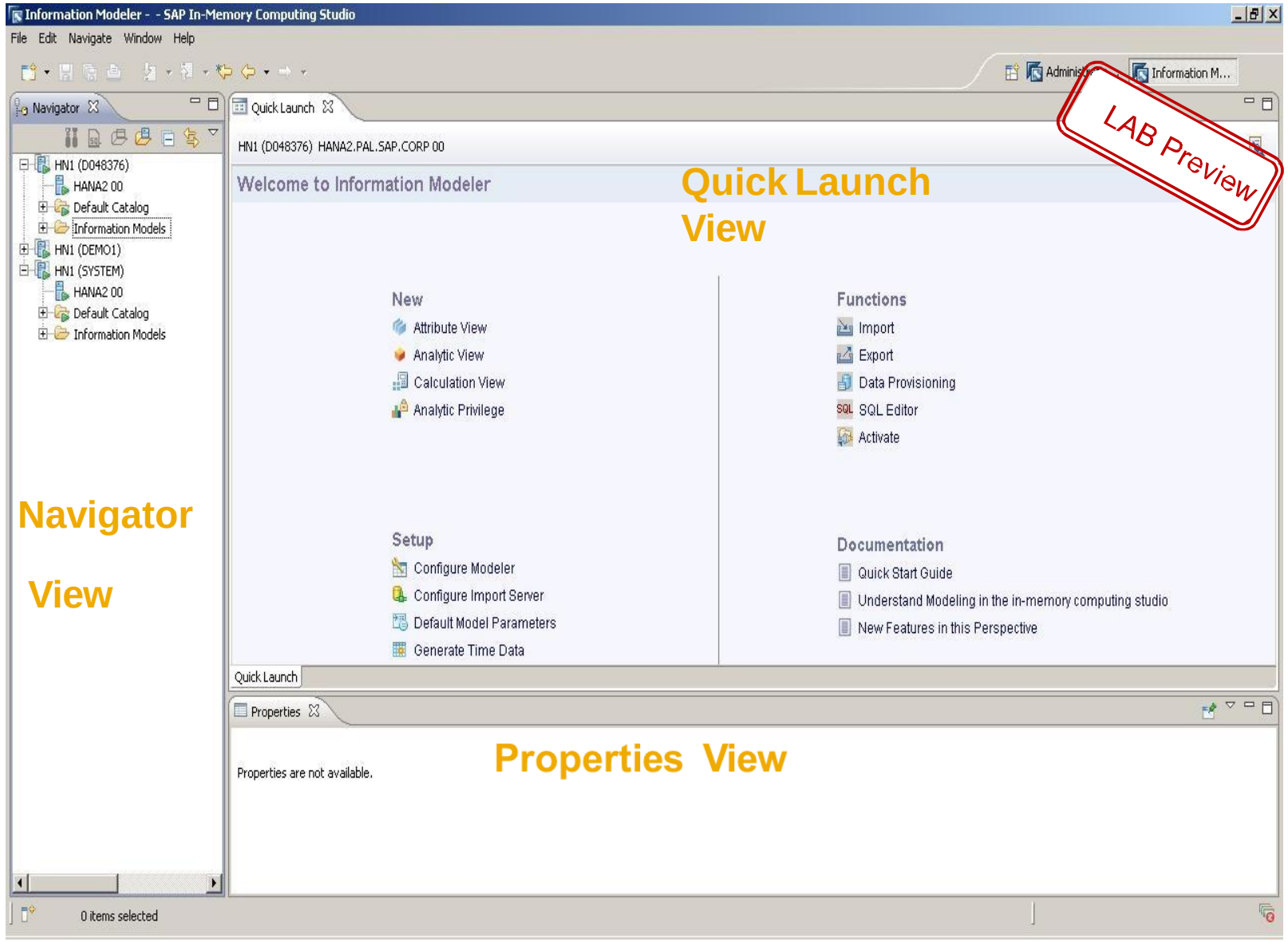
Administrators can use the SAP HANA studio, for example, to start and stop services, to monitor the system, to configure system settings, and to manage users and authorizations. The SAP HANA studio accesses the servers of the SAP HANA database by SQL.

The SAP HANA studio presents its various tools in the form of perspectives. Database administration and monitoring features are contained primarily within the **Administration Console** perspective.



SAP In-Memory(HANA) Computing Studio

Features

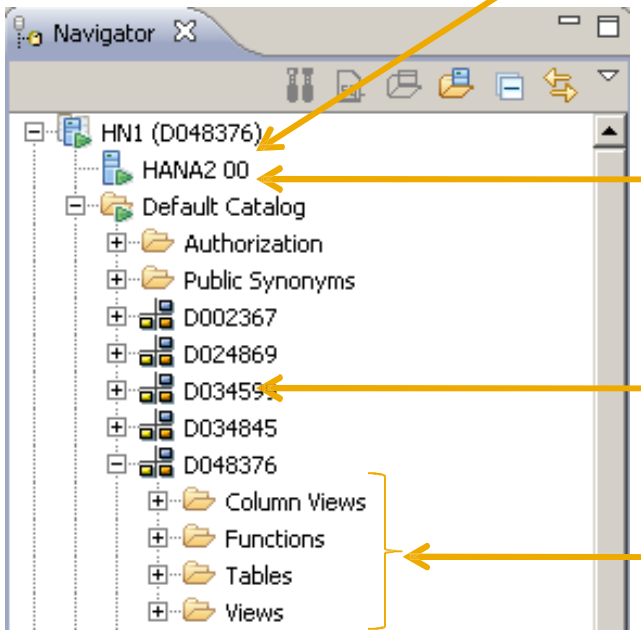


Information Modeler Features

- Modeling
  - No materialized aggregates
  - Database views
  - Choice to publish and consume at 4 levels of modeling
    - Attribute View, Analytic View, Analytic View enhanced with Attribute View, Calculation View
- Data Preview
  - Physical tables
  - Information Models
- Import/Export
  - Models
  - Data Source schemas (metadata) – mass and selective load
  - Landscapes
- Data Provisioning for SAP Business Applications (both initial load and replication)
- Analytic Privileges / Security

SAP HANA Studio

Navigator View - Default Catalog & Information Models

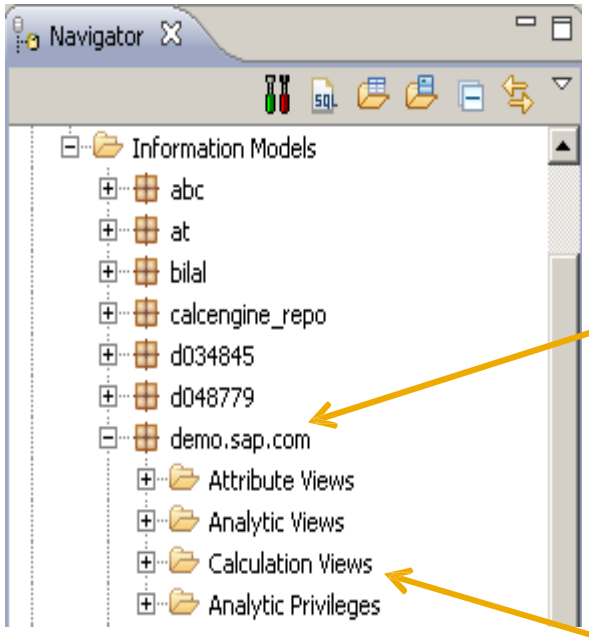


HANA Instance (<USER>)

HANA Server Name and Instance Number

User Database schema

Schema Content: Column Views, Functions, Tables, Views



Information Models organized in Packages

Attribute Views, Analytic Views, Calculation Views, Analytic Privileges organised in folders

SAP HANA Studio

Data Provisioning in SAP HANA

DATA Provisioning is a process of creating, preparing, and enabling a network to provide data to its user. Data needs to be loaded to SAP HANA before data reaches to the user via a front-end tool.

SAP HANA supports two type of Provisioning tool –

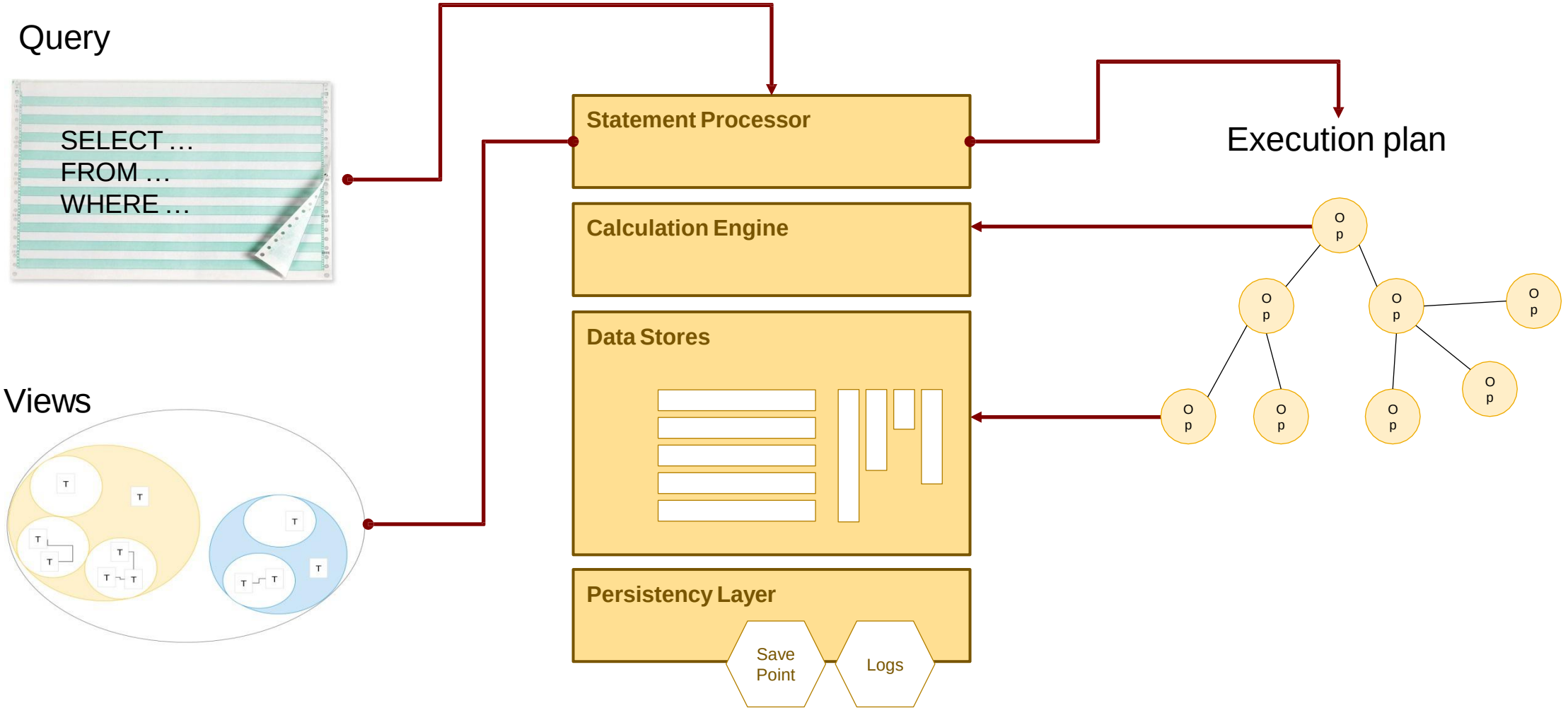
1.SAP HANA built-in Provisioning Tools

1. Flat File
2. Smart Data Streaming
3. Smart Data Access (SDA)

2. **External Tools supported by SAP HANA**

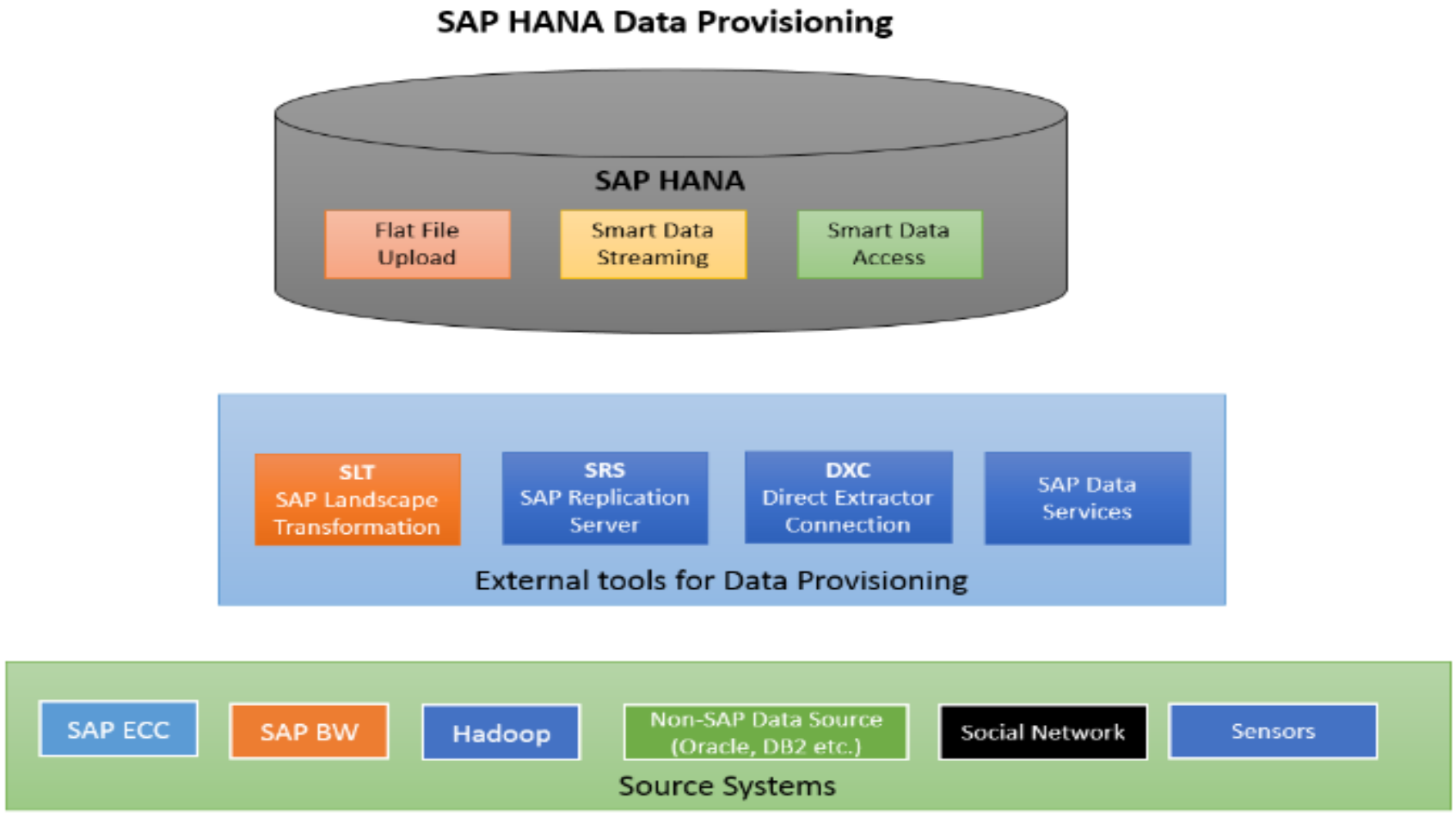
1. SAP Landscape Transformation
2. SAP Business Objects Data Services
3. SAP Direct Extractor Connection
4. Sybase Replication Server

Using data in SAP HANA



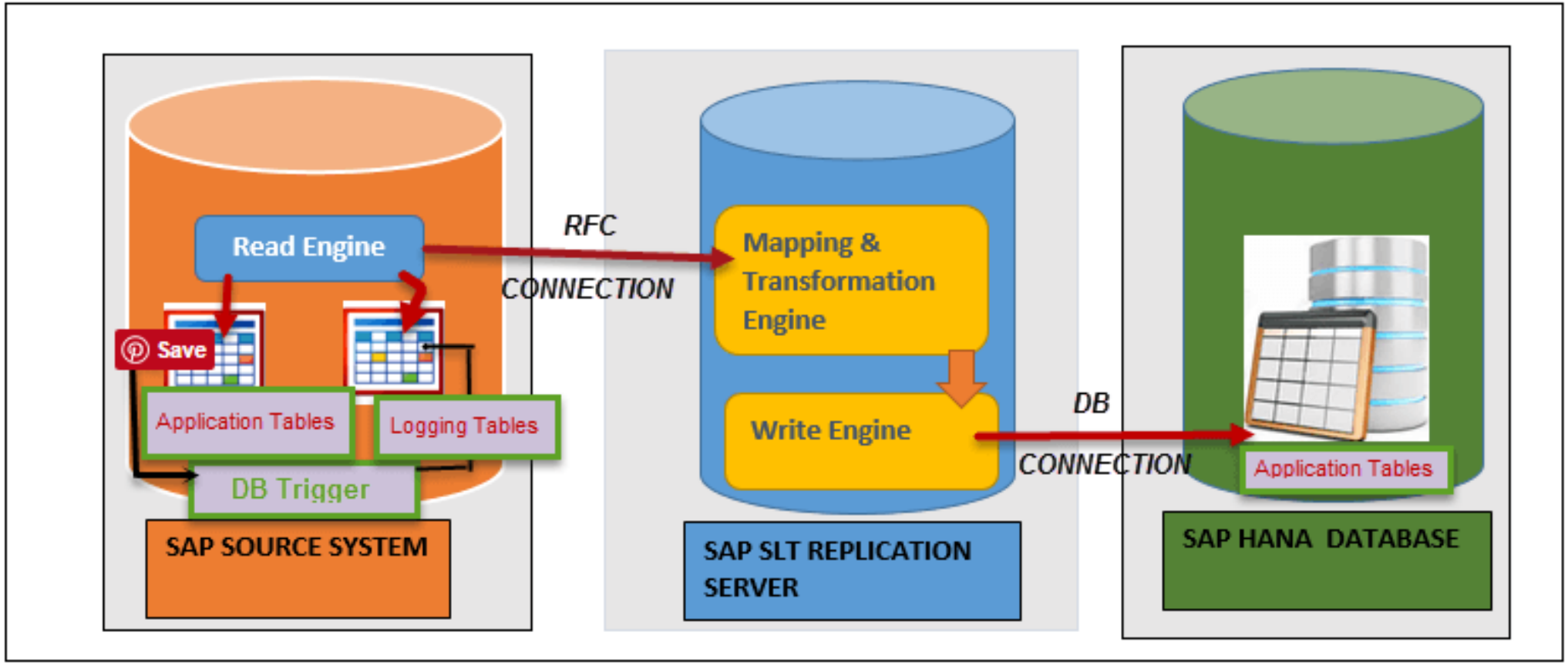
SAP HANA Studio

Data Provisioning in SAP HANA



SAP HANA Studio

Data Provisioning in SAP HANA – SLT explained

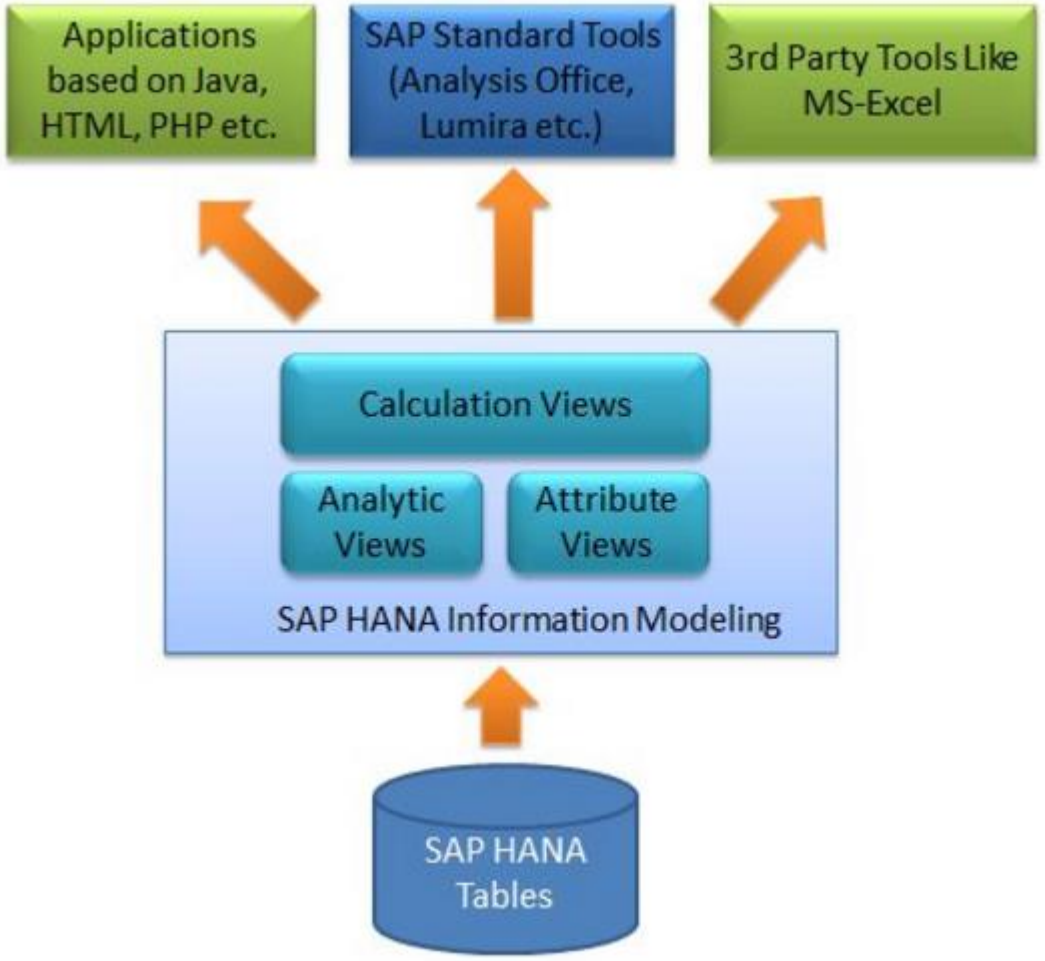


SAP HANA Studio

Using stored data – Data Modeling

Modelling is an activity in which user refine or slice data in the database table by creating information view based on the business scenario.

This information views can be used for reporting and decision-making purpose.

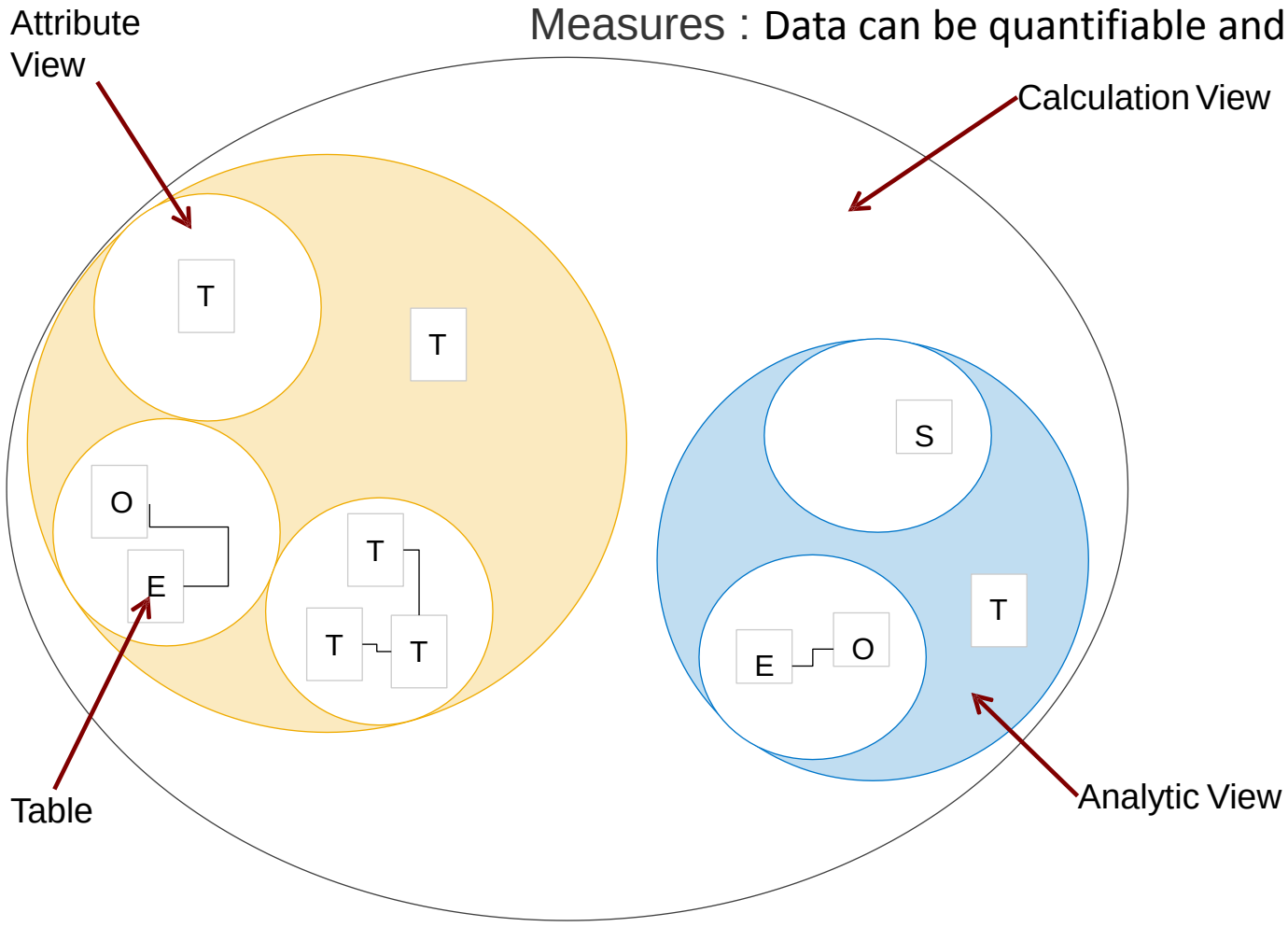


SAP HANA Studio

Using stored data – Data Modeling

Attributes : Descriptive and Non-Measureable Data. E.g. Vendor ID, Vendor Name, City, etc.

Measures : Data can be quantifiable and calculated. E.g. Revenue, Quantity Sold and Counters



Views enable real-time computing by transforming data on the fly.

Example:

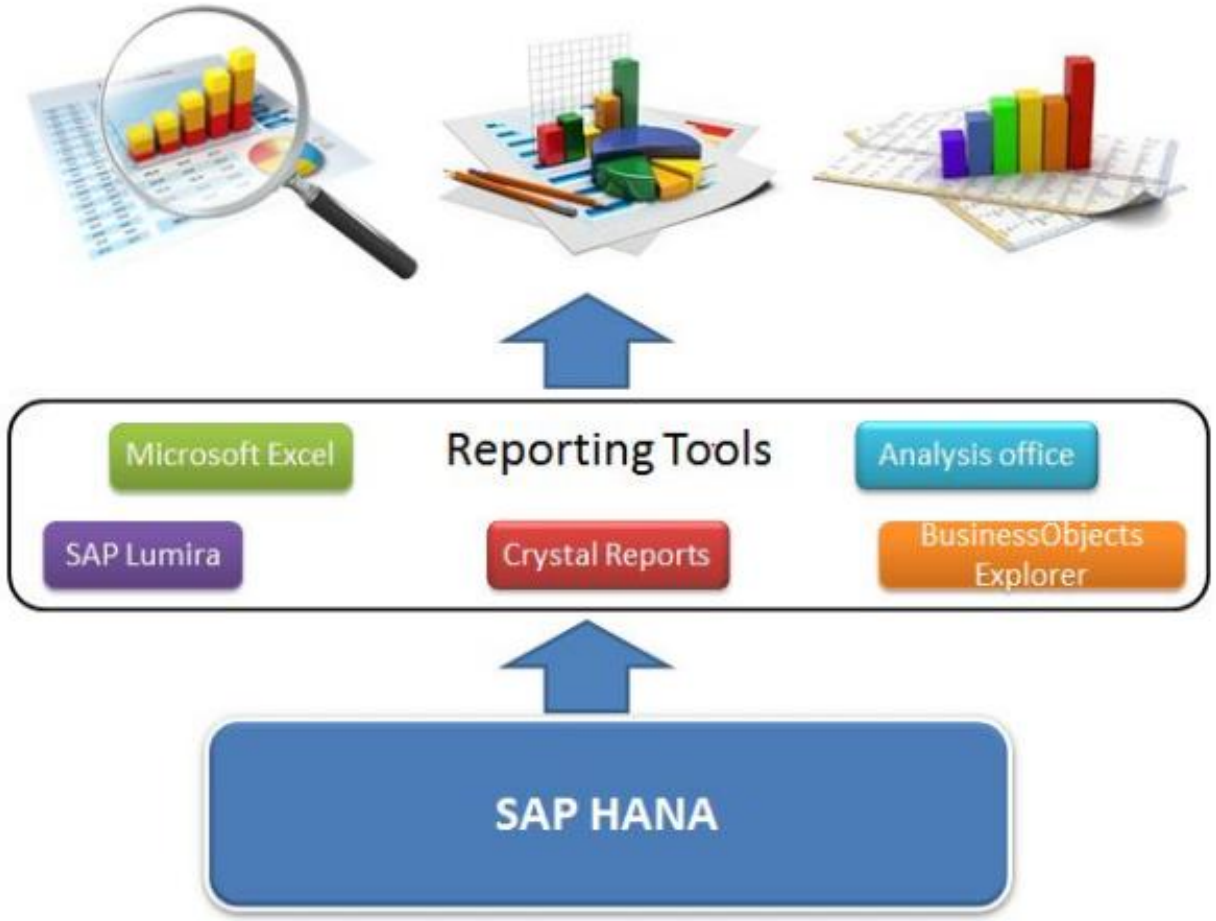
E: Employee Table
O: Organization table
S: Sales Transactions

SAP HANA Studio

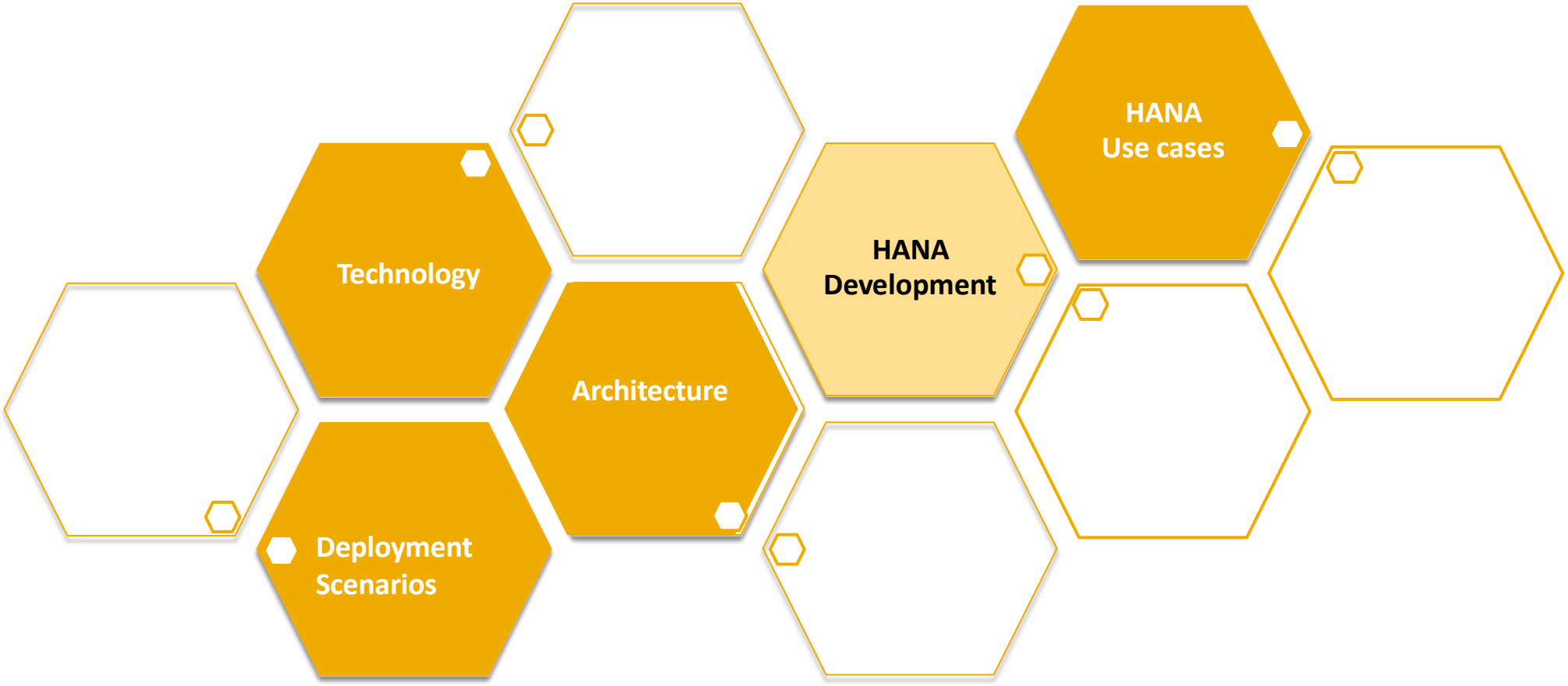
Using stored data – Reporting

Recommended frontend tools

- SAP BusinessObjects Analysis
- SAP BusinessObjects Explorer
- SAP Lumira
- SAP Business Objects Crystal Reports
- SAP BusinessObjects Dashboards



PART 4: SAP HANA
Cloud Platform



SAP HANA Cloud Platform

The Platform-as-a-Service to Extend, Integrate, and Build Business Apps

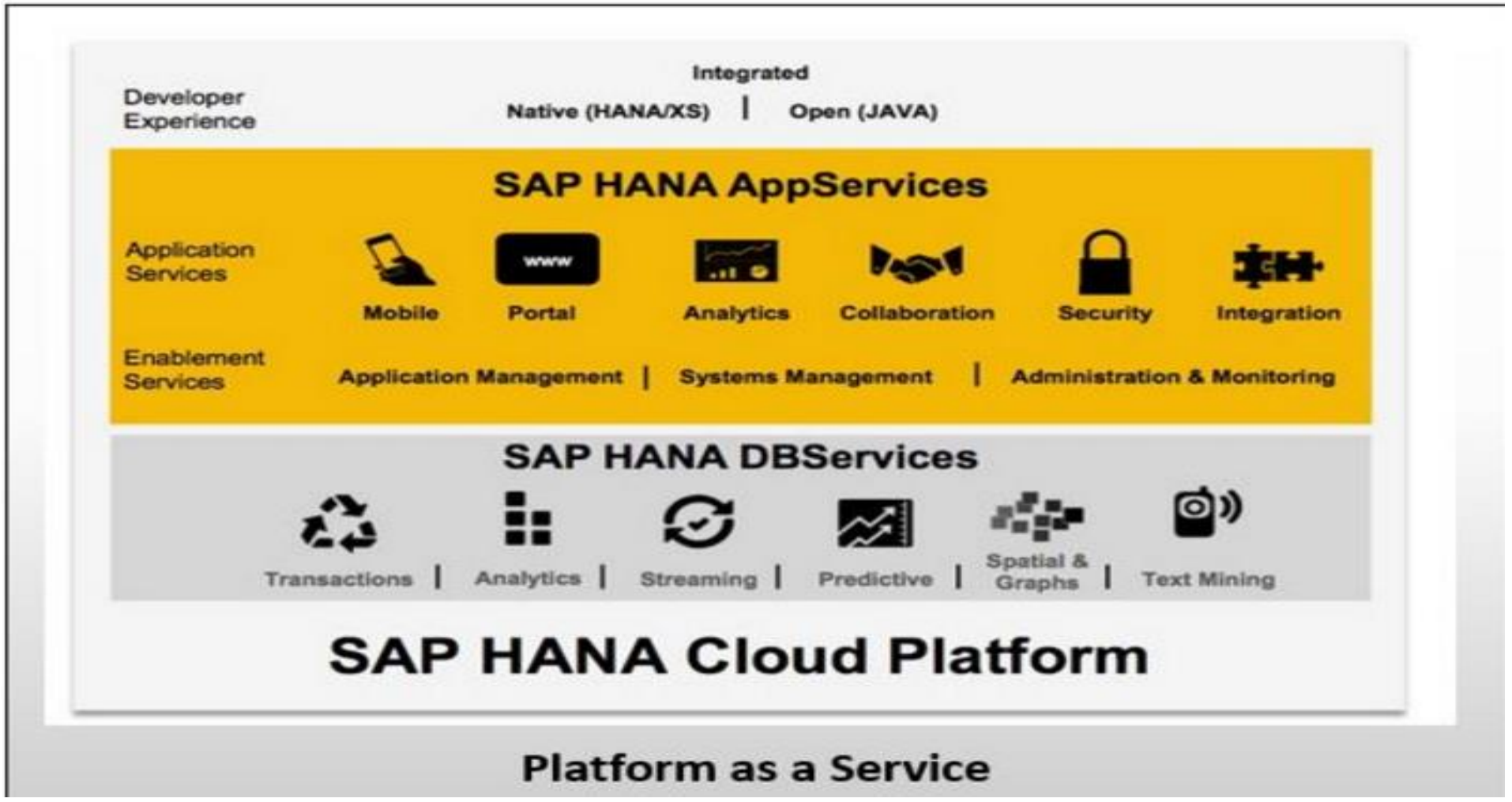
SAP HANA Cloud Platform is an in-memory cloud platform based on open standards. It provides access to a feature-rich, easy-to-use development environment in the cloud.

The platform includes a comprehensive set of services for integration, enterprise mobility, collaboration, and analytics

SAP HANA Cloud Platform enables customers and partners to rapidly build, deploy, and manage cloud-based enterprise applications that complement and extend SAP or non-SAP solutions, either on-premise or on-demand.

SAP HANA Cloud Platform

Interactive Architecture and Capabilities

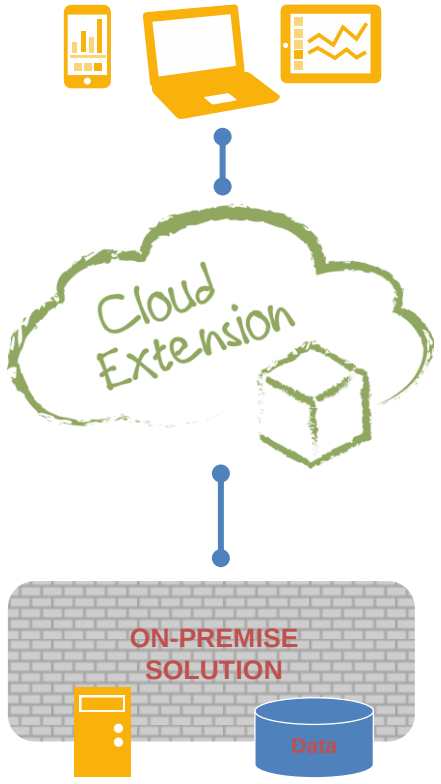


SAP HANA Cloud Platform

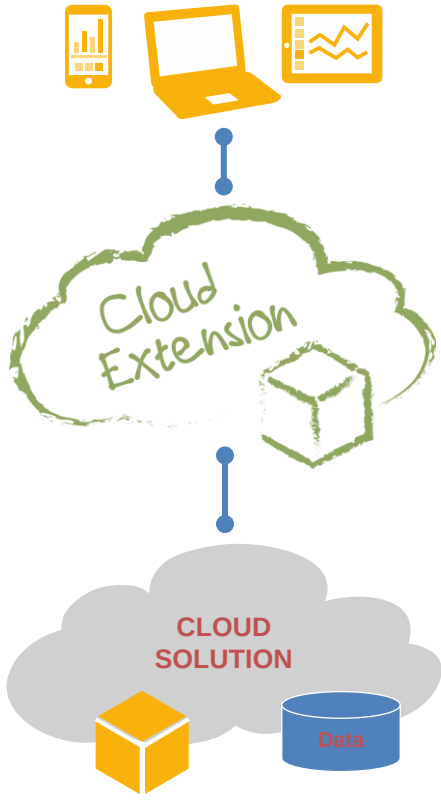
Scenarios

BUILD New Cloud Apps

EXTEND On-Premise Apps



EXTEND Cloud Apps



RUN Application Management and Runtime

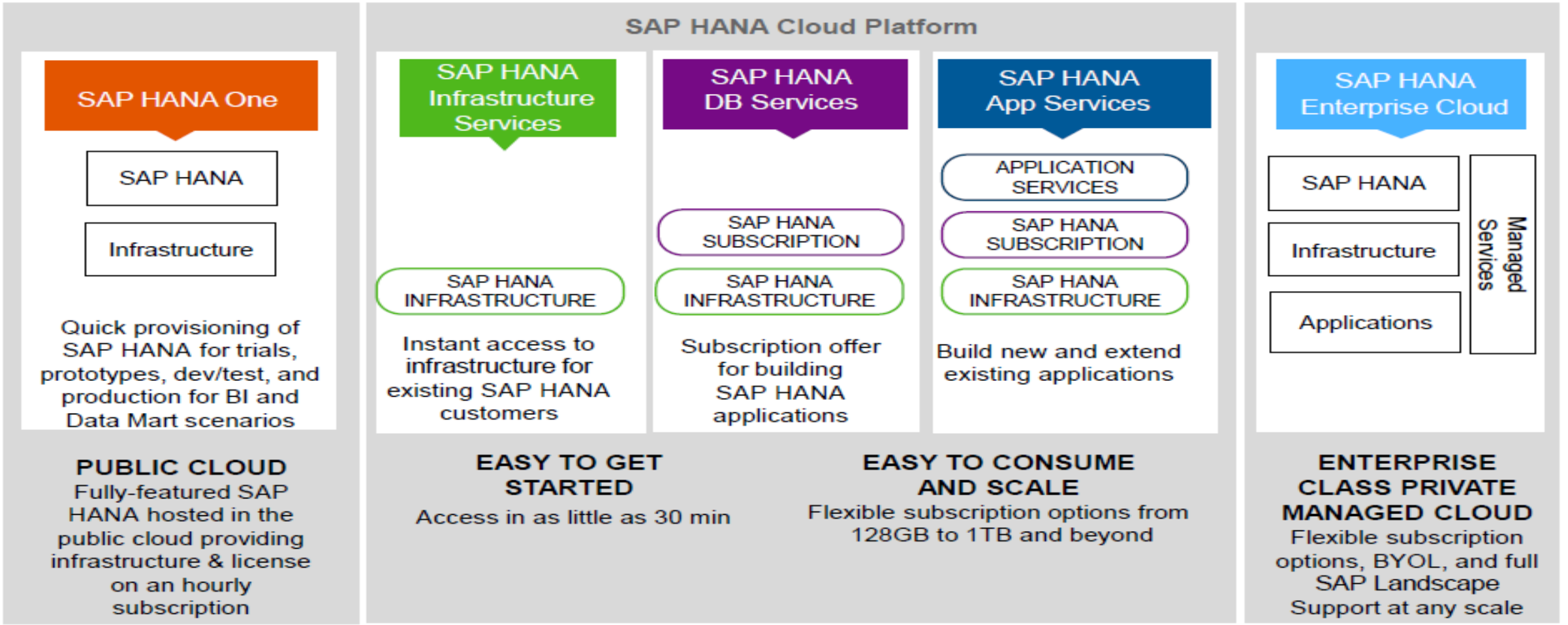
SAP HANA Cloud Platform
Application Development

Programming models to build highly scalable applications:

- Java - SAP HANA Cloud Platform is Java EE 6 Web Profile certified. You can develop Java applications just like for any application server. You can also easily run your existing Java applications on the platform.
- SAP HANA - you can use the SAP HANA development tools to create comprehensive analytical models and build applications with SAP HANA programmatic interfaces and integrated development environment.
- HTML5 - you can easily develop and run lightweight HTML5 applications in a cloud environment.
- SAPUI5 - use the UI Development Toolkit for HTML5 (SAPUI5) for developing rich user interfaces for modern Web business applications.

SAP HANA Cloud Deployment options

Subscribe to the platform and services that fit you best



Available Editions: SAP HANA App Services

SAP HANA Cloud Platform - Application Services pricing at a glance

Developers	Starter	Extensions	Standard
FREE	starting at **$ 539** per month	starting at **$ 1337** per month	starting at **$ 3932** per month
Develop JAVA or native SAP HANA applications or extensions with a shared SAP HANA instance	Dedicated SAP HANA instance for developing larger applications or extensions	Build & Run unlimited extensions to your cloud or on-premise applications	Build and Run unlimited custom JAVA or native SAP HANA applications

Subject to change without notice.

Further Information

SAP Public Web

http://www.sap.com/hana

http://experiencesaphana.com/

http://scn.sap.com/community/hana-in-memory

http://opensap.com

Thank you