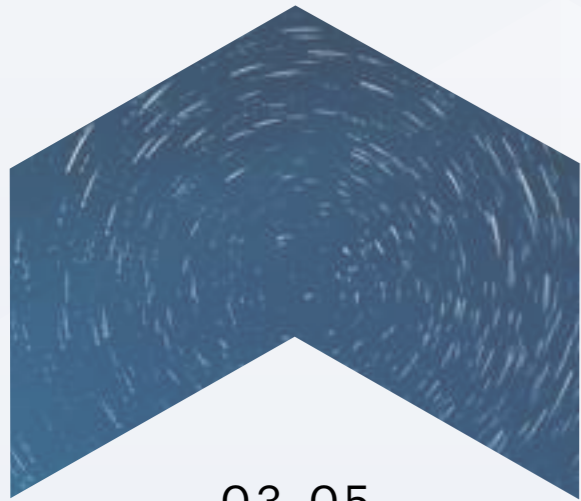


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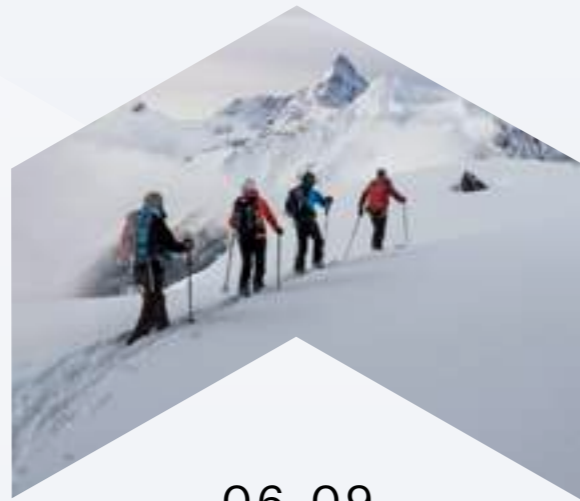
Elevating **SAP** with **Denodo**

Contents



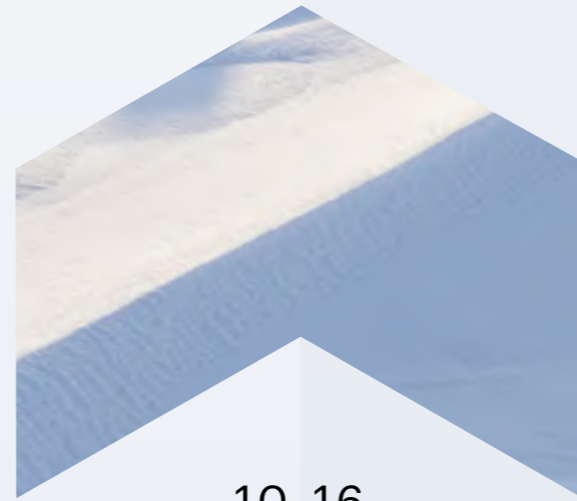
03-05

**Unlocking the Power
of SAP Data**



06-09

**Democratizing SAP
data with Denodo**



10-16

**A more detailed
view of Denodo's
integration with SAP**



17

**Understanding SAP
Note 3255746 - The
impact on SAP Data
Democratization**



18

**Unlocking the full
potential of SAP data**



Unlocking the Power of SAP Data

Unlocking the Power of SAP Data

In today's ever-evolving business landscape, SAP remains a cornerstone in enterprises' quest for operational efficiency and data-driven decision-making. This whitepaper delves into the vital role of SAP data and explores how Denodo, a leading data virtualization platform, seamlessly integrates with both traditional SAP tools such as SAP ERP, SAP Business Warehouse (BW), and SAP Business Objects (BO), as well as with the new generation of SAP solutions, including SAP S/4HANA, SAP Datasphere and SAP Analytics Cloud. This document is the introduction to our whitepaper series which is published in cooperation with Denodo & Accenture.

The importance of high-quality data is undisputed. data-driven decisions have transitioned from being mere buzzwords to becoming a tangible reality. While only 3 of the 10 most valuable enterprises were actively taking a data-driven approach in 2008, that number has risen to 7 out of 10 today. From Apple to Microsoft, from Facebook to Amazon—they all rely on data to drive their key decision-making processes. According to data from Accenture, being data-driven pays off—those organizations have an annual growth rate of 30% or more.

Of course, the emergence of new data sources, particularly from the IoT (Internet of Things) sector, is a crucial factor. However, the "traditional" data, mostly structured data, continues to fuel informed decisions. It encapsulates the day-to-day operations and their operational processes. In this context, a particular vendor is almost indispensable in a modern enterprise architecture – it is SAP.

SAP, a global leader in enterprise software solutions, provides organizations with a comprehensive suite of applications that encompass essential business functions. From financial management and supply chain operations to human resources and customer relationship management. SAP's reach spans across the core of an enterprise's operations. As a result, SAP data emerges as a focal point within the data architecture, holding much information reflecting an organization's very heartbeat.

The significance of SAP within a modern data architecture is undeniable. Therefore, it becomes even more crucial to make data accessible within an organization. Modern data architecture concepts revolve around this core aspect: how can data be shared and made available quickly, easily, and in some cases, automated?

This has given rise to the currently highly popular architectural pattern known as "Data fabric." Gartner describes it as follows: "The core of the matter is being able to consolidate many diverse data sources in an efficient manner by allowing trusted data to be delivered from all relevant data sources to all relevant data consumers through one common layer." (Demystifying the Data Fabric, by Jacob Orup Lund, September 2020).

The Data Fabric architecture pattern encompasses much more than can be summarized in a single sentence.

It is worth noting that Data Virtualization, and consequently, Denodo as a leading vendor in this field, has emerged as a significant enabler of the Data Fabric.

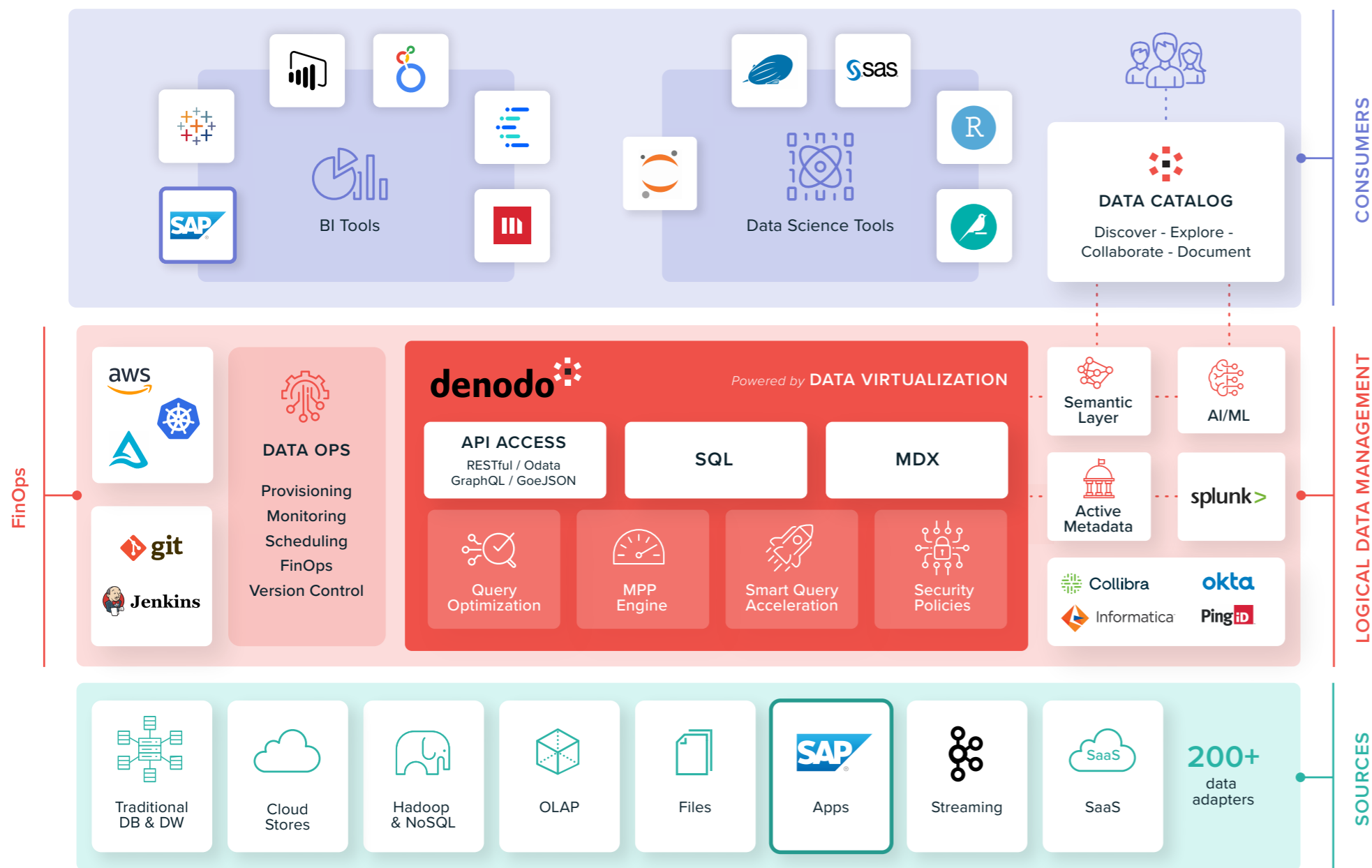


Figure 1: Functional diagram of a Logical Data Fabric (source: Denodo)

The fundamental data virtualization layer serves as a gateway that abstracts the underlying data sources, consolidates access, facilitates data integration, and ensures security. Its functionalities are further enhanced through the incorporation of active metadata, an AI engine, a data catalog, and additional features. This robust foundation sets the stage for implementing a data fabric strategy. Furthermore, as illustrated in the diagram, it offers integration points with various other essential components within the ecosystem, such as version control, governance, log management, and numerous others.

The power of such an architecture becomes evident when dealing with a highly heterogeneous system landscape comprising multiple diverse data producers and various tools that consume the data. When discussing data producers and data consumers, it is essential to understand what sets SAP apart in this context and how its tools distinguish themselves from those of other vendors.

There is a widely held belief – whether this is indeed the case is left for each reader to form their own judgment – that SAP data is often very challenging to access. This can be due to technical limitations of the interfaces as well as licensing reasons. The latter has certainly changed with the new generation of SAP tools.

Some opinions state that while SAP tools are highly integrated within the SAP ecosystem, they tend to reveal their weaknesses when used with third-party solutions.

However, with this whitepaper, and especially with the whitepaper series on this topic, we aim to delve deeper into the interaction between SAP technologies and Denodo. We intend to provide clear guidance and share insights and experiences with these technologies. The upcoming editions of this series will specifically delve into certain technical aspects in greater detail.



Democratizing SAP data with Denodo



Democratizing SAP data with Denodo

As described, SAP data holds significant importance when making data-driven decisions in everyday business operations. Central to this role is the SAP ERP system, which serves as the foundational bedrock in the data architecture. It encompasses all core operational processes, such as finance, supply chain management, human resources, and more. The success of this system can be attributed to its highly integrated business processes, resulting in data that can be entirely represented within a single system. Concurrently, the system rigorously upholds data consistency and integrity, ensuring adherence to regulatory requirements.

However, SAP should not be solely limited to its robust ERP capabilities. In the realm of Data Warehousing, with the so-called SAP BW solution, structured data from ERP systems and other data sources can be consumed and made available for analytical purposes. Integration is also a critical success factor. With predefined Business Content that aligns with the standard content of the SAP ERP system, seamless data integration can occur.

In contrast to traditional SQL Data Warehouses, SAP BW offers a powerful UI-supported data modeling approach coupled with a robust programming language (ABAP). To complete the circle within the Business Intelligence (BI) domain, SAP provides a range of reporting tools, each suited to specific reporting types. These tools span from pixel-perfect reports (e.g., for external reporting purposes) to web-based analytical applications.

Over the years, the SAP tool landscape has undergone significant transformations, evolving from SAP R3 to SAP S/4HANA, from SAP BW 7.x to SAP BW4HANA, and from SAP Business Objects to SAP Analytics Cloud.

The transformation, or paradigm shift, has a significant impact, particularly from the perspective of data integration, data modeling, and the way and where data is analyzed.

Data Democratization

Data Security.

Spectrum of strategical approaches, security mechanisms, and sophisticated technologies to ensure robust protection of data—whether in transit or at rest—from unauthorized access, breaches, and theft.

Data Governance.

Foundational framework that meticulously defines the roles, delineates the responsibilities, and prescribes the comprehensive rules governing data-related activities, thereby ensuring the meticulous management of data as an essential and strategic asset within the organization.

Data Literacy & Data Culture.

The competency of an organization to effectively manage and utilize data. It encompasses not only the knowledge and expertise required to interpret and leverage data but also the behavior, values, and norms that constitute the organization.

Data Infrastructure.

Represents the technological aspect of data democratization. It enables the efficient handling of large volumes of data, supports complex data analytics, and provides the foundation for data-driven innovation.

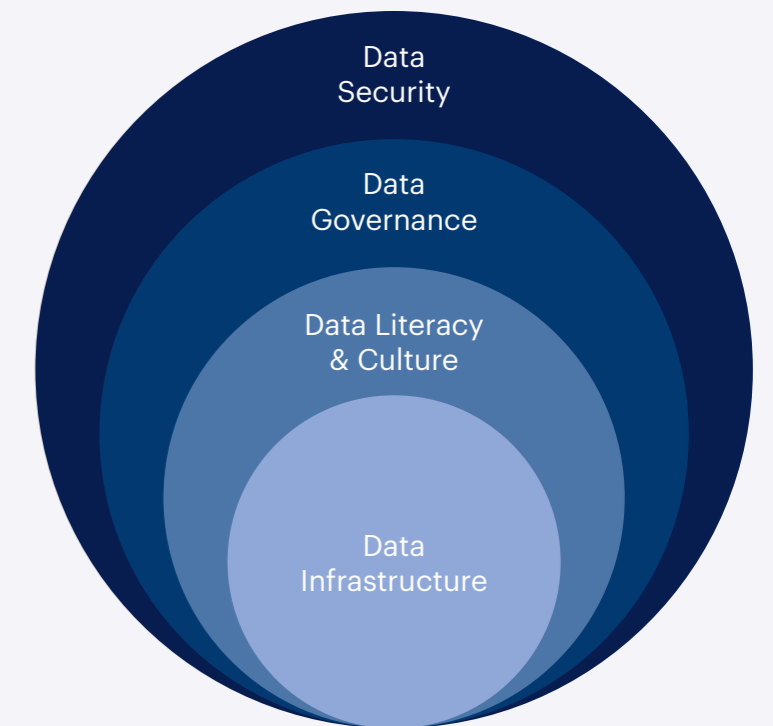


Figure 2: *Data Democratization*
(source: Accenture)

Understanding the evolution of SAP systems in recent years

In the past decade, the SAP landscape has undergone significant transformations. To gain a comprehensive understanding of this recent evolution and its far-reaching implications, it is essential to delve into the historical journey of SAP:

Founding and Genesis (1972): SAP's inception in 1972 was the brainchild of five engineers hailing from IBM's AI department.

- R/1 - The Dawn (1972): SAP's inaugural release, R/1, marked the outset of an era. It operated using punch cards, a testament to the technological context of the time.
- R/2 - The Mainframe Era (1979): SAP transitioned to the R/2 release in 1979, embracing mainframe architecture. This marked a significant investment in standard business software, enabling real-time integration of major business functions. It also supported multi-currency and multi-country implementations.
- R/3 - Client/Server Revolution (1992): In response to the burgeoning personal computer market, SAP introduced R/3 in 1992. This release adopted a client/server architecture, introducing a three-tier approach. It transformed user experience by processing across three layers: client, application, and database.
- S/4 HANA - The In-Memory Leap (2015): In 2015, SAP unveiled S/4 HANA, leveraging the power of massive in-memory and multi-core processors that had become available in the market. This marked a groundbreaking shift towards parallel computing power.

Alongside the departure from the "R" nomenclature in ERP releases, S/4HANA represents a paradigm shift in architecture, akin to each of its predecessors. SAP retained the numbering convention, with S/4HANA being the fourth generation of their ERP system. However, S/4HANA can be seen as a revolution in multiple ways: it is the first product to fully utilize SAP's own HANA database technology (which has been available for ECC since 2010), and it constitutes a fundamental transformation of SAP's data model and architecture.

Two of the most important innovations in the context of data are a simplification of the data model (very few tables) and the operational reporting (with Fiori) within a single system (no data warehouse needed anymore for operational reporting) – a quantum leap compared to ECC. At the same time, SAP's data warehousing solution (BW) remains fully supported and provides additional analytical features.

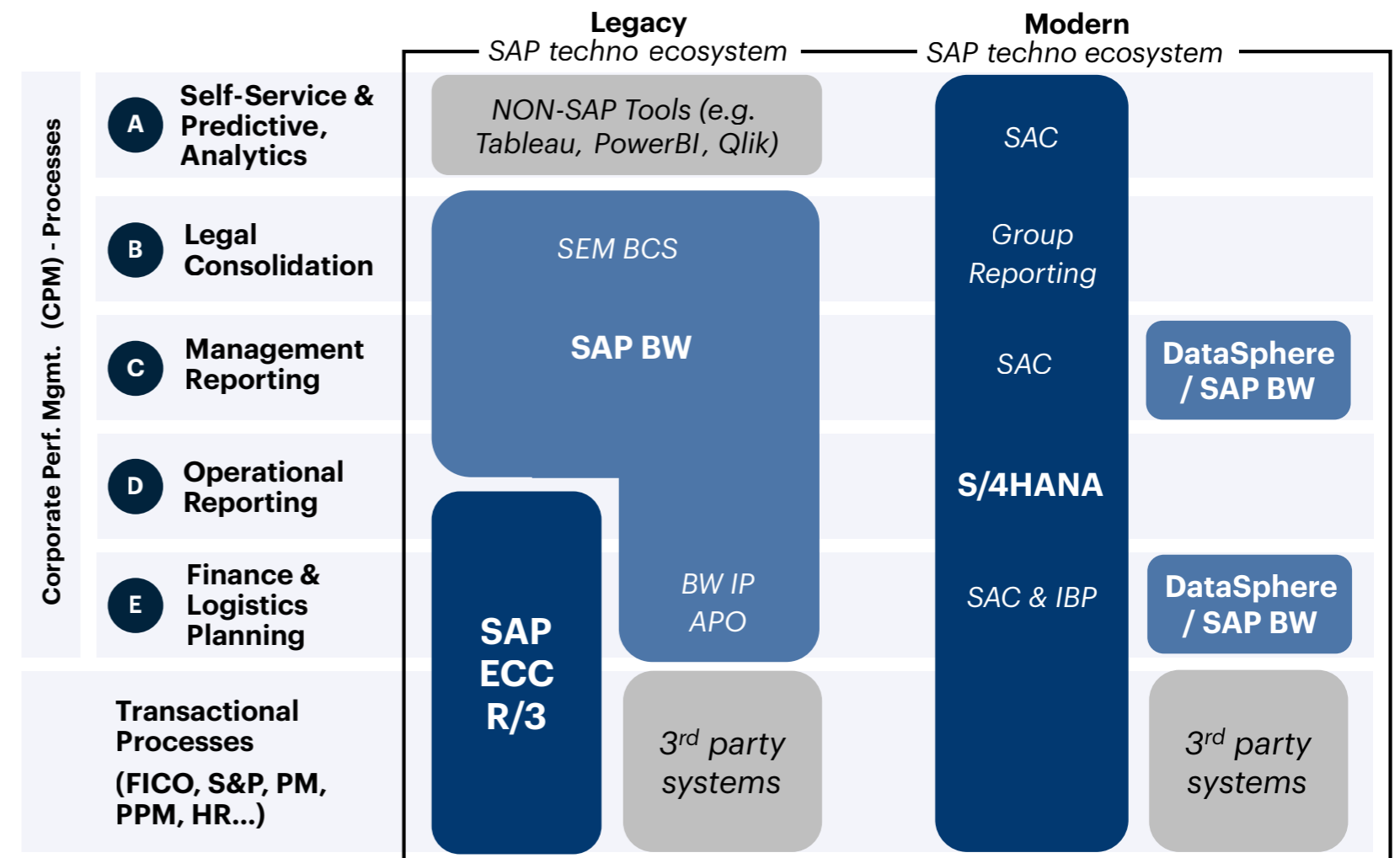


Figure 3: SAP's system evolution with a focus on Corporate Performance Management (CPM) - processes (source: Accenture)

To better illustrate these changes, figure 1 depicts a visual representation of various **Corporate Performance Management processes** (A – E) in both R/3 and S/4HANA and their respective technology ecosystems to highlight how S/4HANA and its renewed architecture have encompassed and modernized these crucial processes.

| The race to cloud – *“Future innovation is only available in the cloud.”*

“The race to cloud” – that is probably the best term that quickly sums up the major focus of many businesses in recent years, and it is still a hot topic today.

Interest in cloud technology has grown rapidly over time, leading to the launch of numerous projects aimed at keeping up with industry leaders. According to an Accenture report, 86% of companies have expanded their cloud projects in terms of size and scope over the past two years. It is interesting to note that companies that fully embraced cloud technology have seen impressive results with 47% reporting that they have achieved all their goals.

Not on only scalability (increasing system resources as needed) but also the potential cost savings associated with continuous innovations and releases (mostly in very short periods of time) within individual cloud services are the driving factors for transitioning to modern cloud solutions.

Like all major software providers, SAP has recognized this trend, as well as the demand. The substantial investment by SAP is clearly evident. Over the past years, numerous SAP cloud services have been launched. A significant portion of SAP’s development effort has been dedicated to these products. On July 20, 2023, SAP CEO Christian Klein declared that future innovation would only be available in the cloud. Definitely not what many customers, primarily relying on on-premises solutions, wanted to hear. Accordingly, there was a loud outcry from numerous SAP customers. However, let us get into the specifics of SAP and the cloud.



In light of this context, this paper is structured around a logical framework. It aims to systematically assess the capabilities of Denodo in two distinct SAP landscapes: the traditional SAP environment (featuring R/3, BW 7.x, and SAP frontend systems) and the evolving SAP ecosystem characterized by S/4HANA, BW4H, the introduction of the new frontend system SAP Analytics Cloud (SAC), and the overarching trend of cloudification across SAP ecosystems.

Through this comparative analysis, our objective is to illuminate how Denodo can seamlessly integrate within both established and emerging SAP environments. This exploration promises valuable insights for organizations seeking to optimize their data integration strategies in the dynamic landscape of SAP technology.



A more detailed view of Denodo's integration with SAP



A more detailed view of Denodo's integration with SAP

This chapter illustrates how Denodo can integrate within both, legacy and modern SAP environments. This whitepaper promises valuable insights for organizations seeking to optimize their data integration strategies in the dynamic and ever-evolving landscape of SAP.

We first examine the technologies available in **legacy SAP ecosystems**, namely SAP R/3 & ECC, BW 7.x, BusinessObjects platform its frontend tools Crystal Reports and Web Intelligence (WebI) as well as the almost legendary BW frontend tools BEx Analyzer and its successor Analysis for Office (Afo) and Lumira.

We then take a closer look at modern **SAP technology ecosystems** with S/4HANA, BW/4HANA, DataSphere and SAP Analytics Cloud (SAC) as the new state-of-the-art Business Intelligence (BI) frontend tool of SAP.

The following overview chart helps to navigate better between the two different SAP technology ecosystems (**legacy [A]** and **modern [B]**) and the **Denodo Layer (1)** in the middle between SAP systems understood as **Source Systems (2)** for **Denodo** and SAP frontend tools understood as **Data Consumers (3)** for **Denodo**.

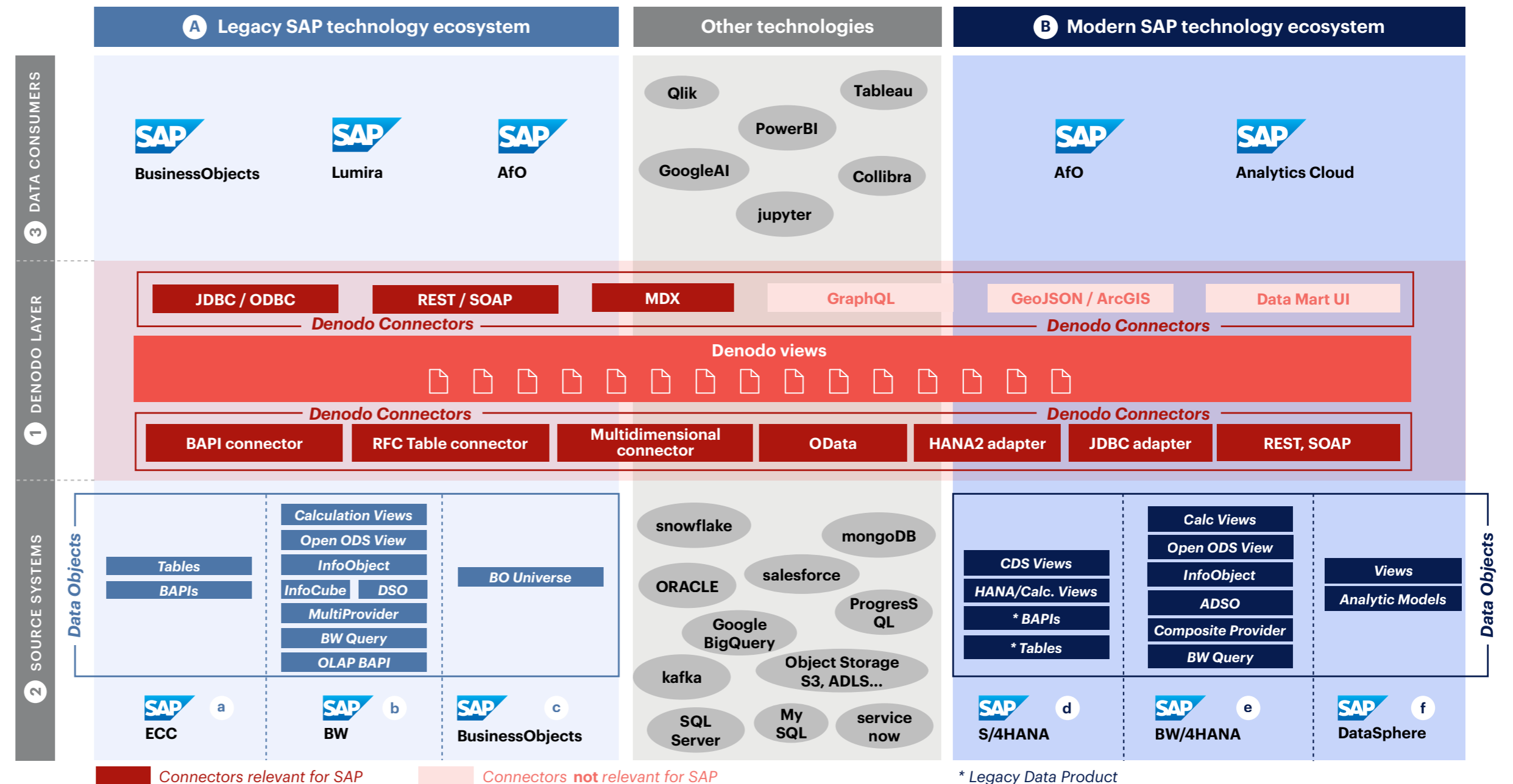


Figure 4: Architecture overview of SAP's two technology ecosystems (legacy [A] and modern [B] with Denodo) (source: Accenture)

(A) Data integration into the legacy SAP technology ecosystem

Source System Perspective (2)

Interfaces to access data in SAP systems with Denodo will be referred to as “**Data Objects**” in this white paper.

To this day, many clients around the world still rely on their **ECC (a)** systems, many of which grew in size and complexity over the course of more than twenty years. As system landscapes tend to grow and become increasingly heterogeneous, the integration of ECC systems with other data sources is still relevant today.

A standardized method for accessing ECC data with external tools in general (not only with Denodo) are the Business Application Programming Interfaces (**BAPIs**).

BAPIs allow to either access specific ECC database tables or pre-defined datasets in the form of pre-defined business content. Denodo can connect to BAPIs through a specific BAPI connector from SAP and retrieve data to be used in the virtual Denodo data model.

Especially for everyday **operational reporting** purposes data from ECC is used to integrate with data from other sources. BAPIs always access data via SAP’s application layer, which might result in computational overhead and associated performance issues.

In addition to the legacy SAP ERP system ECC, many organizations use **Business Warehouse (b)**, SAP’s data warehousing solution. Business Warehouse, or more often just abbreviated with BW, has a special appeal, as it contains pre-defined business content especially tailored to the ECC’s data model out-of-the-box.

The business content manifests itself in a multitude of purpose-built Data Objects for all kinds of different business areas that already come with corresponding business semantics. A defining characteristic is that this content is provided in a multidimensional format so that it can be analyzed and reported on across multiple features.

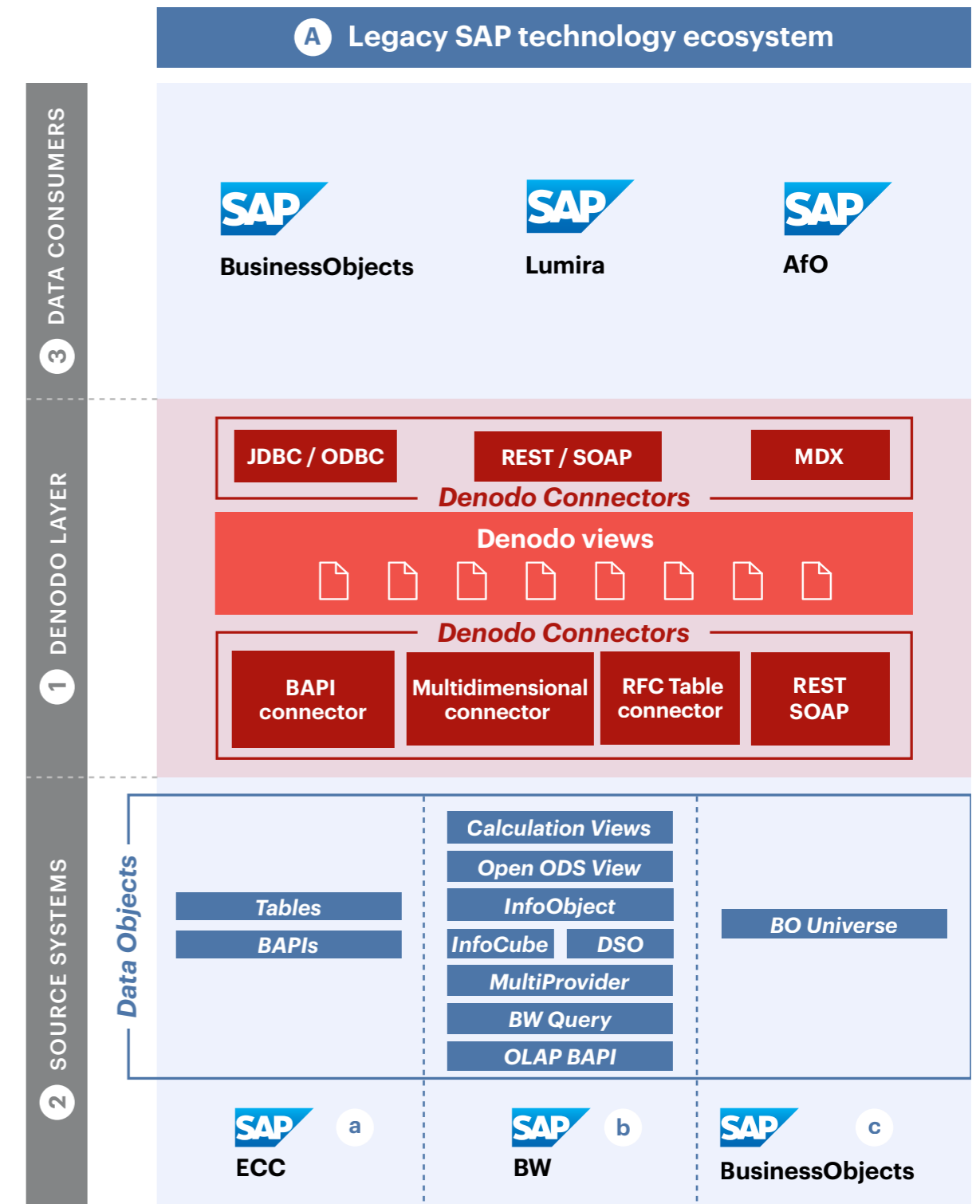


Figure 5: Denodo's integration into SAP's legacy technology ecosystem (source: Accenture)

Denodo can access BW data in two ways, the first being direct access to Data Objects (InfoObjects, DSO, Open ODS View, InfoCube, MultiProvider) via **Denodo's multi-dimensional connector**. Secondly, data can be accessed by exposing **BW Queries as OData services**, which can be accessed via Denodo's OData wrapper. Both options are convenient ways to use aggregated and transformed BW data and its associated business semantics and join it with other data sources.

In addition to BW, SAP provides another end-to-end Business Intelligence (BI) platform: **BusinessObjects (BO) platform (c)**. The BO platform has a multi-layered architecture with the BO Universe component serving as a semantic layer under the two frontend tools Crystal Reports and Web Intelligence (WebI). The advantage of this layered architecture with the BO Universes is a simplification for business users, who interact with the data, as they can rely on familiar business semantics, while technical complexities regarding the underlying data source(s) are concealed – actually to a certain extent comparable to Denodo's data virtualization approach.

In the context of BO Universes, Denodo can serve **both** as a **data source and as data consumer**:

- Denodo can access a BO Universe to use it as a **source system** to integrate its data – this is especially interesting for semantically enriched data from Non-SAP data sources. In this case, Denodo connects to the BO Universe via its **REST API**.
- Conversely, Denodo can be used as a data source for BO Universes, which in this case accesses Denodo via a **JDBC adapter**. This offers the possibility to enrich a BO Universe with data from various heterogeneous source systems via Denodo, e.g., to retrieve external data in one of SAP's legacy reporting solutions.

Data Consumer Perspective (3)

One of the most popular frontend tools on top of SAP's Business Warehouse (BW) was the **Business Explorer Analyzer** (BEx Analyzer), which allowed users to run queries directly from Microsoft Excel via a dedicated plugin for quick, ad-hoc analyses in a style similar to pivot tables.

Meanwhile, SAP offers a more advanced successor for BEx in the form of **Analysis for Office** (AfO) while BEx is discontinued.

Another SAP legacy frontend tool is **Lumira**. It is a rather IT- than end-user- oriented BI tool to create dashboards and analytical applications.

Additionally, SAP offers two **BusinessObjects** frontend tools:

- **Crystal Reports** enables users to create pixel-perfect, highly formatted reporting documents such as financial statements or annual company reports.
- **Web Intelligence** (WebI) is a web-based tool for ad hoc reporting and data analytics. Both reporting tools can retrieve data from multiple sources with BO Universe and SAP Business Warehouse (BW) being the most important.

In terms of reporting & analytics frontend tools, **R/3 & ECC** also provide some reporting tools - primarily **ABAP standard reports** within the SAP GUI **for topic specific operational reporting**. Additionally, there is a simple ad hoc reporting capability for operational reporting (**InfoSet Queries**). These tools cannot be connected to Denodo.

In terms of **interfaces** of the mentioned **legacy SAP frontend tools** to Denodo, the following methods are available:

- BusinessObjects only via BO Universe:
 - As a source system via JDBC adapter
 - As a data consumer via REST API
- **Lumira** via **JDBC adapter**
- **Analysis for Office** (AfO) via **ODBC** (AfO however is not yet considered as legacy tool)

(B) Data integration into the modern SAP technology ecosystem

Source System Perspective (2)

S/4HANA (d) is SAP's 4th generation of SAP ERP software. It is specifically designed to run on SAP's proprietary HANA database – an in-memory database built for rapid data retrieval that combines transactions and analytics within the same system. S/4HANA employs an entirely new virtual data model (S4H- embedded Analytics) and simplifies access for third-party applications (like Denodo) through the utilization of OData interfaces. S/4HANA can either be deployed on-premises, in the cloud, or in a hybrid configuration. Typically, Denodo is used to provide S/4HANA data for (near) **real-time operational reporting** in a third-party reporting tool or for analytical purposes, e.g., data science.

The most common way to connect to S/4HANA is via the Data Object **ABAP Core Data Services (CDS)**. CDS is used to build virtual data models that enrich the raw data in S/4HANA with business semantics by utilizing a sequence of cascading virtual views in an approach comparable to Denodo's virtual data modeling capabilities. SAP offers thousands of pre-defined standard CDS views (known as S4H-embedded analytics) for a multitude of business applications alongside the option to create custom virtual data models, either by defining entirely new views, by combining standard and custom views, or by extending existing views. CDS views – standard as well as custom – can be exposed as OData services and subsequently be consumed by Denodo.

The advantage of this approach is the possibility to re-use existing business logic, semantics, data transformations, and calculations already modeled in CDS, abolishing the need to rebuild the same logic in Denodo or any other tool.

In a similar fashion as to ECC, the option to access data via the Data Object BAPIs is still possible for S/4HANA as well. However, the data access via **BAPIs** shows a different behavior in S/4HANA than in ECC. First and foremost, BAPIs were adopted in S/4HANA for compatibility reasons – but while they allow access to physical database tables in ECC, they access virtual database views in S/4HANA. Performance issues are equally possible due to the BAPI's data access through the application layer, which in S/4HANA can be avoided by directly accessing the HANA database or via a CDS data model.

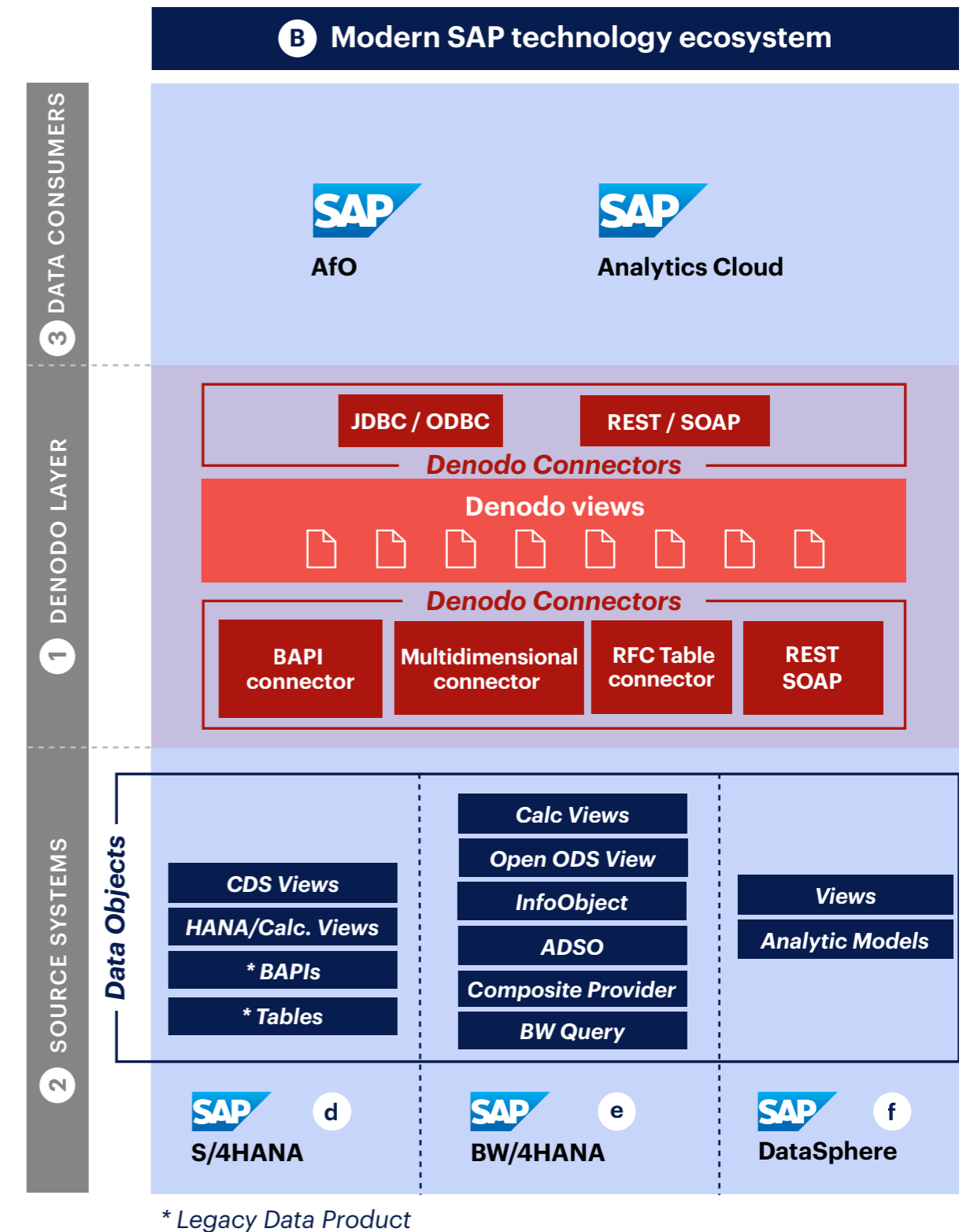


Figure 6: Denodo's integration into SAPs modern technology ecosystem (source: Accenture)

Additionally, **native HANA objects – database tables & calculation views** – can be accessed directly. SAP provides a dedicated **JDBC adapter** (also known as **HANA2 adapter**) which can be used by Denodo. Direct access of native HANA objects through calculation views in S/4HANA only make sense in **very exceptional** cases as you lose the whole complex business logic aside of additional licensing costs (Full Use or Enterprise License) becoming due as you are developing in this case directly on SAPs HANA database. Last but not least you would need to implement a separate, non-standard security concept in S/4HANA for these calculation views and custom database tables.

With **BW/4HANA (e)**, SAP also provides its own data warehousing solution for the “S/4HANA ecosystem”. It was released in 2016 and is designed to fully utilize the HANA database’s capabilities. As support for the legacy BW 7.x will be discontinued in 2027, customers are encouraged to migrate to BW/4HANA.

However, the possibilities for accessing BW/4HANA data from Denodo are at least partly comparable to the legacy BW system. BW/4HANA provides multi-dimensional Data Objects (ADSO, Composite Providers, Open DSO View and InfoObjects) as well, which can be accessed via Denodo’s **Multi-dimensional connector**. In a similar fashion, **BW Queries** can be exposed as OData services and retrieved via Denodo’s **OData** wrapper.

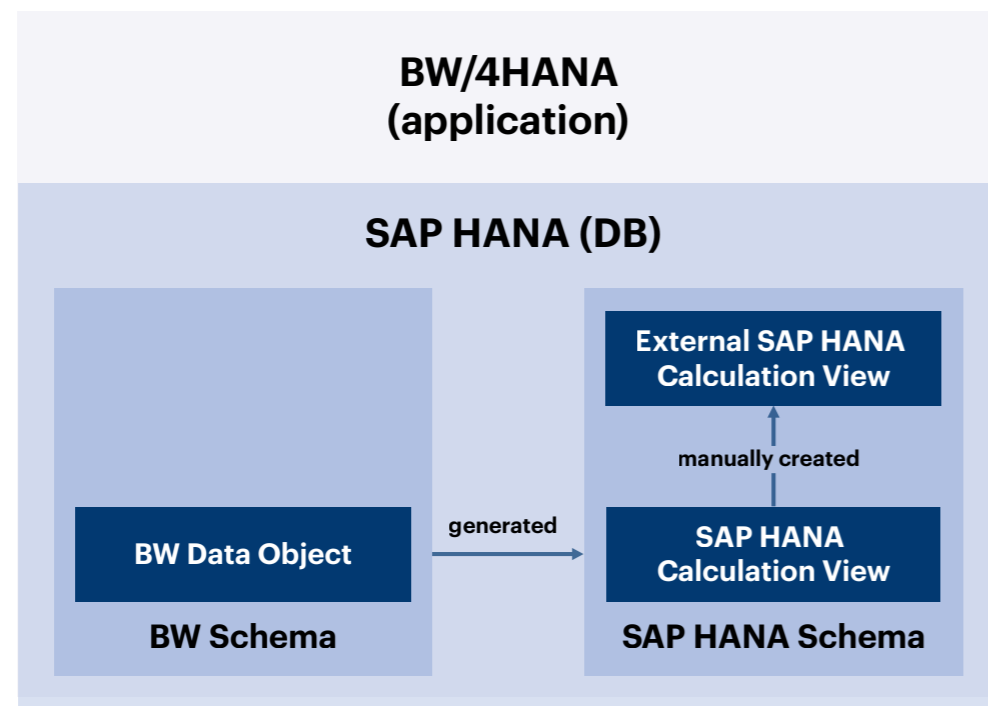


Figure 7: BW/4HANA database schemas and data objects (source: Accenture)

In terms of data modeling with BW/4HANA, SAP offers generally two possibilities – and many organizations rely on a mix between them, resulting in a hybrid data model:

- Via the **BW “application”** with the above-mentioned **Data Objects** (ADSO, Composite Providers, Info-Objects, DSO Views, BW Queries) in the BW-Schema of the HANA database
- Via BW generated SAP HANA calculation views. When activating a BW Data Object, it is possible to generate SAP HANA calculation views with the same structure, which can be accessed via Denodo’s **JDBC adapter**.
- On top of these generated views, it is possible to create (manually) more views. These Calculation Views are called **External SAP HANA Calculation Views**. It must be considered that they are developed directly on the HANA database, which might result in additional licensing fees and might require a dedicated security concept. Nevertheless, they can also be accessed via Denodo’s **JDBC adapter**.

SAP DataSphere (f) is one of the latest additions to SAPs portfolio, emerged from SAP Data Warehouse Cloud (DWC), a cloud-based data warehouse first introduced in 2019. In 2023, DWC was re-branded into Datasphere to symbolize its importance as a strategic cloud-native product. In the fashion of a “business data fabric”, Datasphere’s focus is on self-service, data federation, and data governance within a completely cloud-native solution. The goal is to provide business as well as IT users with a common tool for data integration, transformation, and federation as well as self-service capabilities based on a single semantic layer.

Currently, **views**, (indirectly also tables through views) and **analytic models** are the DataSphere Data Objects, which can be made consumable through **OData** and accessed from an external tool such as Denodo via an API.

Data Consumer Perspective (3)

SAP's push towards the cloud also gave rise to a new front-end application: **SAP Analytics Cloud (SAC)**. SAC is a multi-purpose analytics, reporting and planning tool, especially for the modern SAP technology eco-system.

It is a Software-as-a-Service (SaaS) cloud solution that combines various functionalities such as business intelligence (BI), reporting, data visualization, predictive analytics, and planning, effectively providing a single solution for all kinds of analytics requirements.

SAC is in SAP's modern technology ecosystem also, an important cornerstone to enable fully integrated planning processes, especially with S/4HANA and Integrated Business Planning (IBP), SAP's logistics planning solution in the cloud.

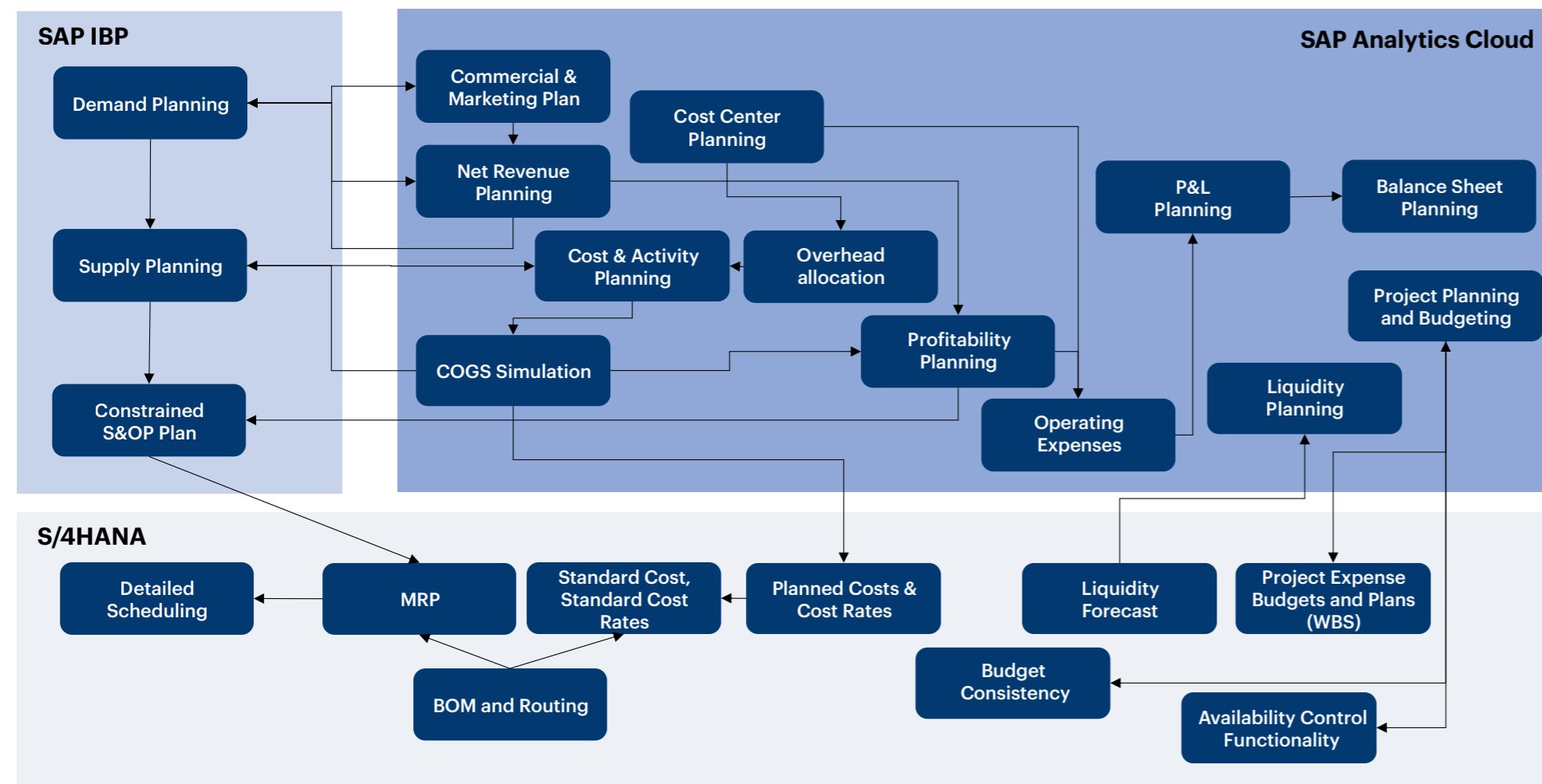


Figure 8: SAP's high-level planning (financial & logistics) architecture (source: Accenture)

This tight integration of SAC into the modern SAP technology ecosystem is a challenge for third party tools like Denodo. We will dive deeper into this topic in a later release of this white paper series.

SAC offers connectivity to a wide range of source systems, with two distinctive connection types:

- Live connections allow real-time access to specific SAP systems, namely SAP BW, BW/4HANA, SAP Business Planning and Consolidation (BPC), S/4HANA.
- Import connections allow us to extract data from its respective source systems and load a data copy into SAC for visualization, reporting, analysis and especially planning purposes.

SAC's import connection options are also available to third-party systems, including relational databases, cloud systems, and Denodo. SAC can establish a connection to Denodo via the Open Data Protocol (OData), which allows to run queries on Denodo views.

However, it is possible to establish a live connection from SAC to Denodo with APOS, a third-party solution that utilizes SAC's standard HANA live connection. This approach can be a feasible alternative to an import connection, e.g., if data cannot be copied into SAC due to regulatory or data governance requirements.

Understanding SAP Note 3255746

The impact on SAP Data Democratization

In February 2024, SAP updated SAP Note 3255746 to version 4. While this note itself is not entirely new, its recent revision has reignited significant discussions and created uncertainty within the user community.

Briefly, the note addresses the use of SAP data via APIs for Operational Data Provisioning (ODP). It specifies that using SAP data through this API is no longer permitted. The use of this interface is subject to auditing, and violations may lead to SAP denying support for the SAP systems involved in case of issues.

However, what does this mean from a technical perspective? Essentially, this is primarily relevant when using data from SAP systems (such as e.g., S/4HANA, BW) that have already been enriched with business logic. As previously mentioned, in cases like S/4HANA, data can be consumed via ABAP CDS Views and through the OData interface. ABAP CDS Views not only incorporate comprehensive business logic but also serves as delta-enabled datasets, which means that consuming systems like Denodo require minimal to no further data modeling to provide certain operational data products. It is at this point that SAP intends to intervene in the future.

To be more specific, it is important to distinguish between the Runtime and Enterprise Editions of the HANA Licensing Model. This differentiation is crucial because it dictates whether users can operate directly on the database level — in this case, the SAP HANA database that serves as the foundation for systems like S/4HANA and BW/4HANA — or are limited to working within the application layer. Specifically, in the context of S/4HANA for example, using ABAP CDS Views is an activity confined to the application layer. Consequently, users holding only a Runtime license are prohibited from accessing ABAP CDS Views via the OData service. On the other hand, those with an Enterprise Edition license are permitted to use this API.

With this announcement from SAP, the democratization of SAP data through third-party tools have become increasingly challenging. However, it is important to note that, at least for now, this note is not legally binding. We recommend involving the legal team before launching data initiatives or projects that involve using SAP data through non-SAP tools, to ensure full compliance. Additionally, direct communication with the relevant SAP representative is advisable. Furthermore, it is important to continually monitor this SAP Note for any updates or changes.

We will certainly do this and provide a more detailed exploration in the next edition of our whitepaper.

Unlocking the full potential of SAP data

Concluding our exploration in the whitepaper "Elevating SAP with Denodo" it is evident that Denodo's distinct integration capabilities opens up a variety of usage patterns and opportunities for democratizing SAP data. This emphasizes the essential task of pinpointing suitable usage patterns in advance, dependent on the distinct data architectures and business use cases.

Harnessing the synergies between SAP technologies and Denodo is essential for organizations that aim to tap into the full capabilities of their SAP data. Most importantly, the ability to provide SAP data in an efficient, agile, and secure way to form valuable assets for strategic decisions is an undeniable necessity.



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About Accenture

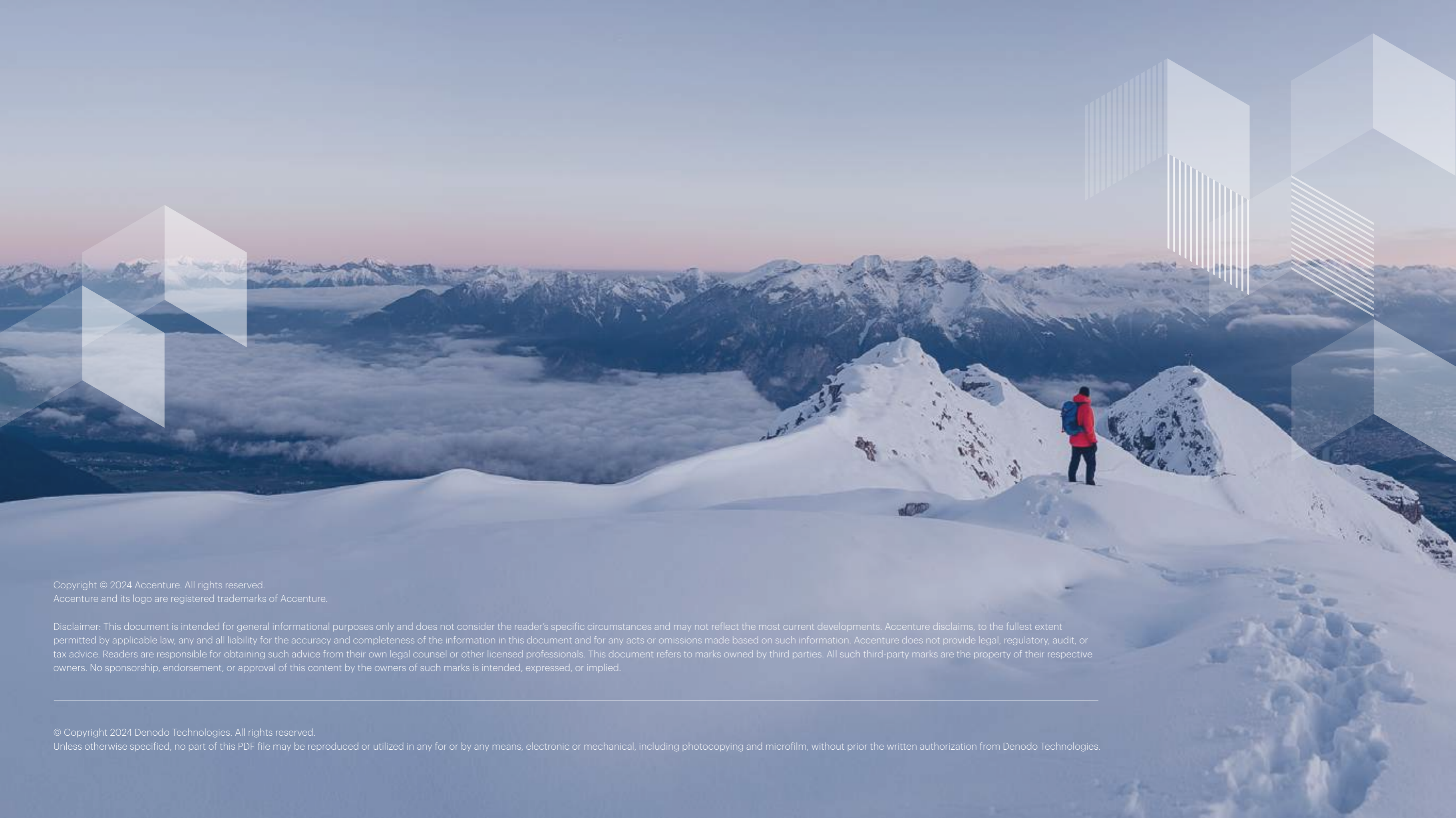
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About Denodo

Denodo is a leader in data management. The award-winning Denodo Platform is the leading logical data management platform for delivering data in the language of business, at the speed of business, for all data-related initiatives across the organization. Realizing more than 400% ROI and millions of dollars in benefits, Denodo's customers across enterprises in 30+ industries all over the world have received payback in less than six months.

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