Speed Up Your Profitability Analysis Performance with SAP HANA's CO-PA Accelerator

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Get a first-hand look at how the CO-PA Accelerator for cost-based CO-PA with SAP HANA replicates data from SAP ERP in real time into SAP HANA for fast access to revenue, cost, and profitability data. Look at some of the most asked-about best practices available now for implementing the CO-PA Accelerator with SAP HANA, including technology prerequisites and skills needed. Learn how to execute profitability-related reports and allocations on in-memory without disruption for your business users.

Profitability analysis (CO-PA) is one of the most commonly used capabilities within SAP ERP. In September 2011, SAP announced the availability of the new CO-PA Accelerator for cost-based CO-PA with SAP HANA, which integrates the SAP HANA in-memory appliance into CO-PA as an existing, well-established SAP ERP application.

The CO-PA Accelerator allows significantly faster processing of complex allocations and basically instantaneous ad hoc profitability queries. It belongs to accelerator-type usage scenarios in which SAP HANA becomes a secondary database for SAP products such as SAP ERP. This means SAP ERP data is replicated from SAP ERP into SAP HANA in real time for secondary storage. The CO-PA Accelerator allows you to adopt a highly innovative in-memory solution in a non-disruptive fashion, protecting your IT investment and delivering long-term value and continuous improvement to your business processes at the same time.

We'll tackle the following key topics to help you tap into some of the best practices available for the CO-PA Accelerator with SAP HANA:

- Get familiar with the technology prerequisites and skills needed to implement the CO-PA Accelerator
- Understand the difference between the two main use cases of the CO-PA Accelerator:
  - Use case 1: Accelerated allocations and SAP ERP drill-down reporting in CO-PA
  - Use case 2: Profitability reporting with SAP BusinessObjects Business Intelligence front ends via SAP HANA

>> Key Concept

SAP HANA is SAP's in-memory appliance that orchestrates the latest hardware and software technology innovations to help you analyze real-time information at unprecedented speeds on large volumes of non-aggregated data. SAP HANA enables both new innovations and customer enhancements as in-memory solutions, including SAP's future products, existing products that can be in-memory enabled, customer-specific development, prepackaged reporting solutions, and accelerators that speed up SAP applications without changing the application fundamentals.

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>>Note

For more information about SAP HANA, go to www.experience-saphana.com. For the technical installation of SAP HANA, refer to http://help.sap.com/hana/, where you can find the latest installation, configuration, and upgrade guides. We also recommend checking the SAP HANA Installation and Implementation Documentation Center.

>>Note

If you would like to run the CO-PA Accelerator implementation project to achieve a fast time-to-value, SAP offers a dedicated Rapid Deployment Solution (RDS) package. An SAP RDS includes software and predefined implementation services delivered by SAP Field Services or certified partners, combined with additional assets such as implementation accelerators and pre-configuration. The RDS packages allow for a fixed project scope at fixed costs up front to fit your existing landscape. The corresponding SAP ERP RDS for profitability analysis with SAP HANA allows you to complete your CO-PA Accelerator implementation project in a low-risk, fixed-price fashion in about 20 days.

>>Note

For more information about the synergies between SAP Business Objects BI and SAP HANA go to http://help.sap.com/content/hana/overview/index.htm and select End User Information.

Get Familiar with the Technology Prerequisites and Skills Needed to Implement the CO-PA Accelerator

A team of SAP professionals with the following skills can lead the implementation of the CO-PA Accelerator:

- Understanding of SAP HANA general architecture, schemas, and authorizations
- Understanding of SAP Landscape Transformation (SLT) or SAP BusinessObjects Data Services (depending on the data replication scenario selected)
- Prior knowledge of SAP ERP Central Component (SAP ECC) CO-PA configuration, reporting, and allocations
- Knowledge of SAP BusinessObjects Business Intelligence (SAP BusinessObjects BI) 4.0 (for the profitability reporting with SAP BusinessObjects BI front ends via SAP HANA scenario only)

You need the following SAP releases for the CO-PA Accelerator. SAP has made the CO-PA Accelerator capability available to accelerate SAP ERP reporting and allocations in all SAP ERP 6.x versions:

- SAP ERP 6.0, 6.01, 6.02, 6.03, 6.04, or 6.05 with the respective SAP NetWeaver version (7.0, 7.01, 7.02, or 7.31)
- Kernel 720 with a patch level greater than 92 including the necessary Database Shared Library (DBSL) for the SAP HANA database. For using the ERP reporting scenario of the CO-PA Accelerator with SAP ERP 6.0, 6.01, 6.02, 6.03, or 6.04, an upgrade to the downward-compatible kernel 7.20 is required. This replaces the current kernel 7.00 or 7.01 respectively.
- SAP HANA database client installed on all application servers
- SAP HANA 1.0 Support Package Stack 2 and higher

SAP Note 1559994 provides a good overview of all the Support Packages to be installed in your SAP ERP system to enable the CO-PA Accelerator scenario.

To run the CO-PA Accelerator, you need to create at least one dedicated user on the SAP HANA database for each SAP ERP system and client you use. You also need to configure the SAP HANA database as a secondary database connection in SAP ECC by using transaction DBCO or SM30. You can find more details on the technical configuration in the CO-PA Accelerator documentation on SAP Service Marketplace (logon required).

Understand the Difference Between the Two Main Use Cases of the CO-PA Accelerator

Companies know that cost allocation runtime can be long, often affecting the overall costing schedule and preventing additional iterations required in the period-end close. Analysis on detailed line-item data is often restricted in SAP ERP due to large data volumes as an affected query on big data might take too long (several hours or days — and who needs information that is obsolete?) or even end up timing out. On the other hand, data warehouses do not reflect transactions quickly enough during the closing process. These limitations often cause frustration among both business users and supporting IT professionals. The need for significantly faster allocations during month-end reporting and real-time, high-performance reporting on a line-item level is evident. This is where the CO-PA Accelerator comes into play.

To leverage the full potential of the CO-PA Accelerator, you need to decide

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Solution needs to:	Use Case 1: Drill-down reporting	Use Case 2: Profitability reporting
Speed up allocations in month-end process	Yes	No
Keep existing SAP ERP reports to protect your investment	Yes	No
Keep existing SAP ERP authorizations and user concept	Yes	No
Get rid of summarization levels in CO-PA	Yes	No
Provide business user front end instead of SAP ERP reporting	No	Yes
Enable real-time access to data instead of waiting for data warehouse processes to finish	Yes	Yes
Drill down on lower level without a performance penalty	Yes	Yes
Unlimited drill-downs on line-item characteristics	Yes	Yes
Combine CO-PA data with other data sources	No	Yes
Avoid any change to SAP ERP system (or minimum SAP ERP and SAP NetWeaver levels are not in reach)	No	Yes
Deploy SAP BusinessObjects BI front ends on top of analytic and attribute views in SAP HANA	No	Yes

Table 1 Overview of the main scenarios supported by the CO-PA Accelerator

what usage scenario is the best fit for your company to accelerate your period-end processes. The CO-PA Accelerator comprises two main use cases that you can use separately or together to provide higher transparency of profitability:

- Use case 1: Accelerated allocations and SAP ERP drill-down reporting in CO-PA
- Use case 2: Profitability reporting with SAP BusinessObjects BI front ends via SAP HANA

Refer to **Table 1** for a quick overview of the two scenarios.

Use Case 1: Accelerated Allocations and SAP ERP Drill-Down Reporting in CO-PA

In this scenario, you use the SAP HANA database as a secondary database (**Figure 1**).

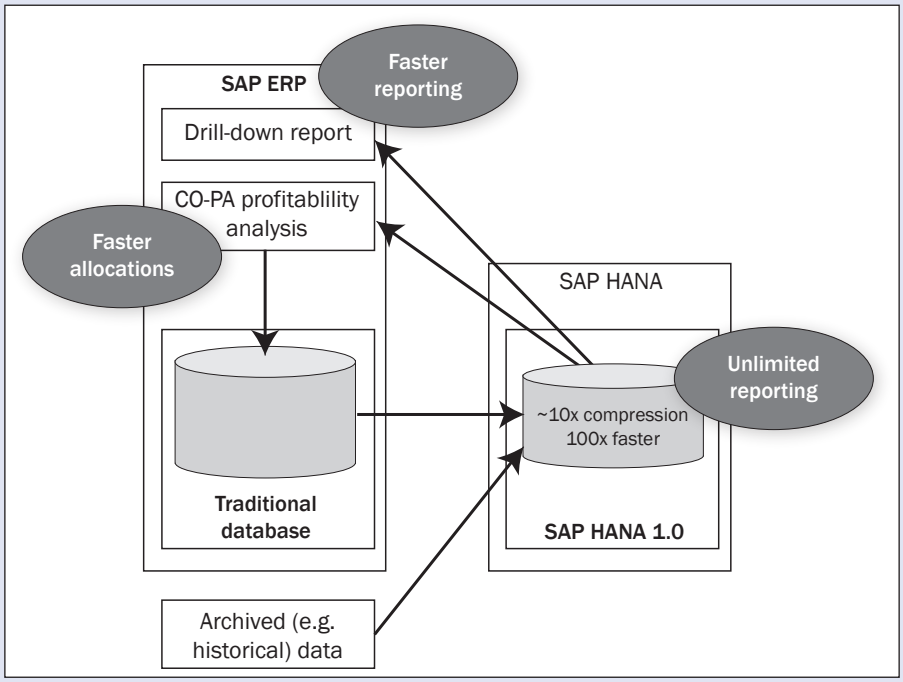

Figure 1 Architecture of use case 1

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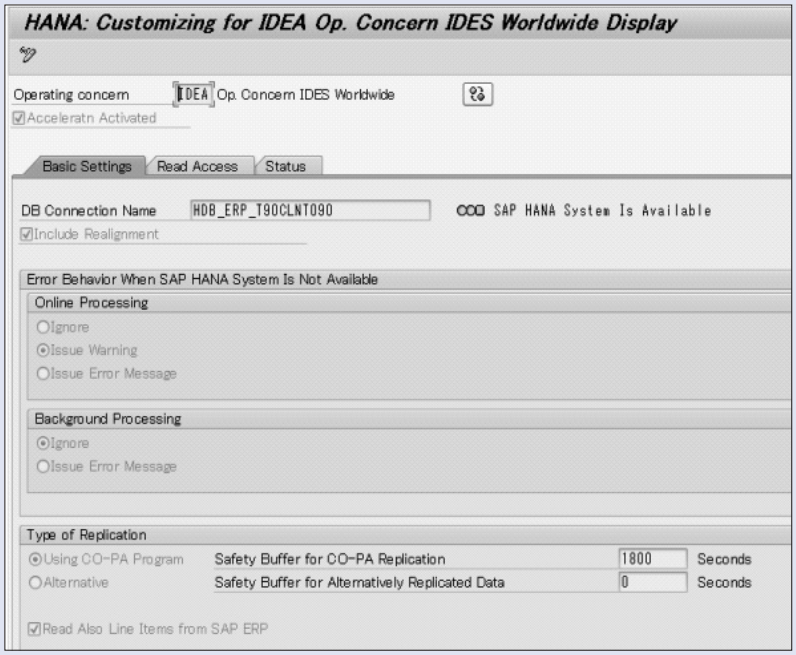

Figure 2 Replication settings of the CO-PA Accelerator

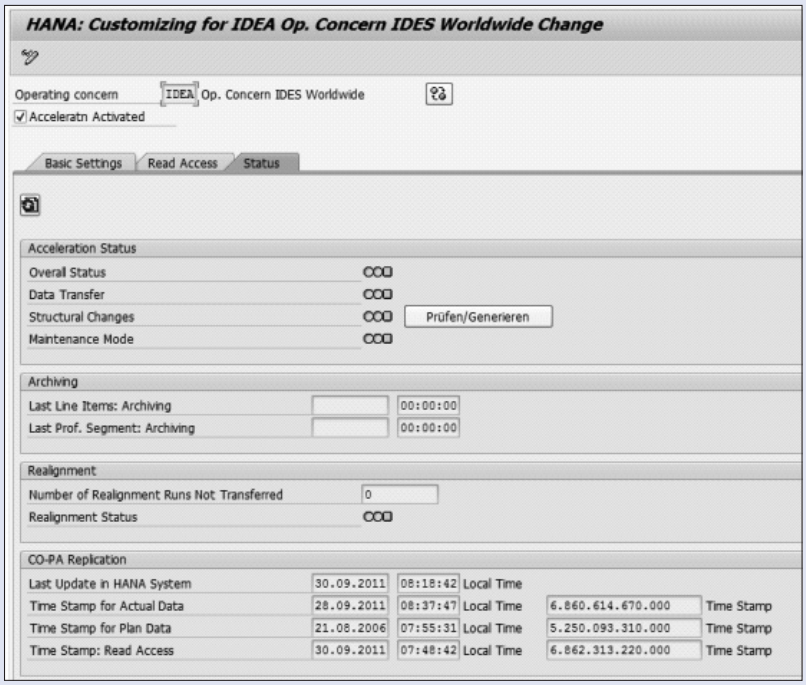

Figure 3 Monitoring acceleration status using transaction KEHC

From here, the CO-PA capability in SAP ECC can retrieve data in a very fast way:

- You continue to use classic SAP ERP reports and allocations. Both automatically benefit from SAP HANA when reading from it instead of from SAP ERP.
- The line-item data is replicated to SAP HANA via a delivered CO-PA periodic replication program or via an SAP HANA replication tool such as SLT or SAP BusinessObjects Data Services (which both require additional licenses)
- The data does not need to be replicated in real time. The CO-PA capability in SAP ECC can read data that is not yet replicated from the traditional database (SAP ECC).
- Only transaction data needs to be replicated, as master data are known to the CO-PA application

The configuration centerpiece of the SAP ERP reporting scenario is transaction KEHC (**Figure 2** and **3**). This configuration transaction helps you switch on and configure the scenario for the relevant operating concern you want to accelerate in SAP ERP with SAP HANA. You select the applicable Operating concern and maintain the following settings:

- Switch on or off acceleration for the respective operating concern in the Acceleratn Activated check box
- Include a realignment function by selecting the Include Realignment check box if desired. This ensures the realignments you have configured in SAP ERP are available in SAP HANA as well.
- Determine system behavior when SAP HANA is not available (e.g., fallback to the transactional database) via the

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Error Behavior When SAP HANA System Is Not Available settings

- Set the replication type via an ABAP program for periodical replication delivered with the CO-PA Accelerator (RKE_HDB_WRITE_DATA) or using an alternative replication solution such as SLT
- Switch on or off reading line items from SAP ERP in the appropriate check box
- Select safety buffer settings in the fields on the bottom-right of the screen

Using transaction KEHC, you can also determine the read mode for how the SAP HANA database is accessed (as column views, Native SQL, or Open SQL) and monitor the replication status in the form of traffic light-type alerts and replication-related timestamps (**Figure 3**). When configured properly, the CO-PA Accelerator starts replicating SAP ERP data in SAP HANA using the replication method of choice and reconciling automatically the entries in the line-item table between SAP HANA and the SAP ERP database at the end of each replication run.

Once replicated to SAP HANA, the CO-PA line-item data stored in memory starts serving as a reference for allocations in SAP ERP, speeding up the allocation process significantly. It's important for you to understand that the in-memory data does not explicitly accelerate the writing part of the allocation run as posting allocations actually happens inside SAP ERP. However, the fast read access to reference (driver) data in SAP HANA alone can speed up the reading part of the allocation process on double-digit million line items from hours to minutes, reducing the total allocation runtime by as much as 30 to 50 percent. Examples of accelerated allocations based on reference data stored in memory might include:

- Allocating overhead cost from cost centers to customers proportionally to sales quantity. For example, you could allocate marketing overhead costs to a customer group (e.g., Large Enterprises) based on sales revenue in the respective customer segment.
- Disaggregating marketing costs from customer groups to single customers proportionally to sales quantity. For example, a selection of sales quantity per customer or a selection of data without customer assignments (to be disaggregated) can be accelerated.

As far as SAP ERP reporting is concerned, the advantage of the accelerator approach is that user interfaces remain unchanged, thus ensuring non-disruptive acceleration. Probably the best testimonial is the statement by one of the early adopters implementing the CO-PA Accelerator to speed up SAP ERP reporting and allocations. The company said that there was no training on the CO-PA Accelerator planned for their business users at all. The CO-PA Accelerator simply plugged into the existing system landscape. The only thing that the business users noticed was that their usual SAP ERP drill-down and line-item reports (**Figure 4**) on triple-digit million line items ran suddenly with sub-second response times with SAP HANA instead of several minutes when reading from SAP ERP. **Figure 4** shows an example of such a report: the standard CO-PA report in transaction KE24.

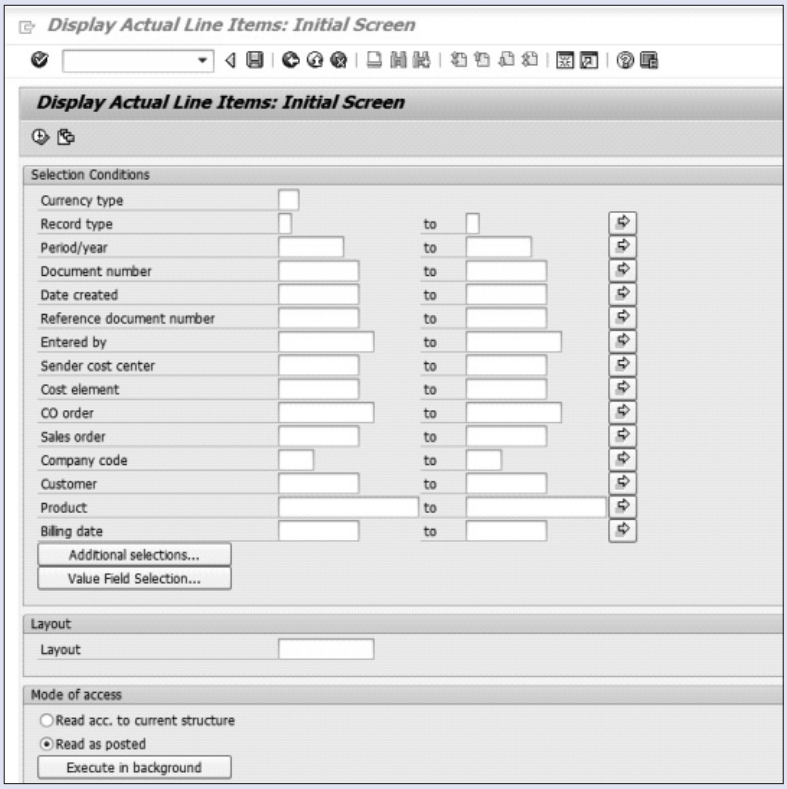

Figure 4 Standard CO-PA reports such as transaction KE24 look the same but run significantly faster when redirected to SAP HANA

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Use Case 2: Profitability Reporting with SAP BusinessObjects BI Front Ends via SAP HANA

In this use case, you replicate data to SAP HANA for the purpose of using SAP BusinessObjects BI 4.0 front-end tools directly on top of SAP HANA (**Figure 5**):

- An XML generator is available to transfer analytic and attribute views from SAP ERP to SAP HANA
- A delivered program lists the required tables to be replicated in SAP HANA
- You build new, flexible reports on SAP HANA using the SAP BusinessObjects BI tools
- You need to replicate both transaction and master data in SAP HANA

Reporting on SAP HANA is optimized and certified only for SAP BusinessObjects BI as these solutions use SAP HANA in an optimal way. The CO-PA Accelerator leverages the characteristics of SAP BusinessObjects BI 4.0 to enable flexible profitability reporting on SAP HANA. The SAP BusinessObjects BI 4.0 tools:

- Serve as a common interface for client tools and a common user experience when accessing SAP HANA
- Support an SAP HANA-specific SQL on top of tables and views for detailed and high-performance access
- Provide a native multi-source interface to federate data from SAP HANA with data from other sources
- Make sure complex calculations are passed into the SQL and sent directly to SAP HANA

You might use the SAP BusinessObjects BI tools such as Explorer (**Figure 6**), Dashboards, Crystal Reports, or Analysis to build flexible profitability reports.

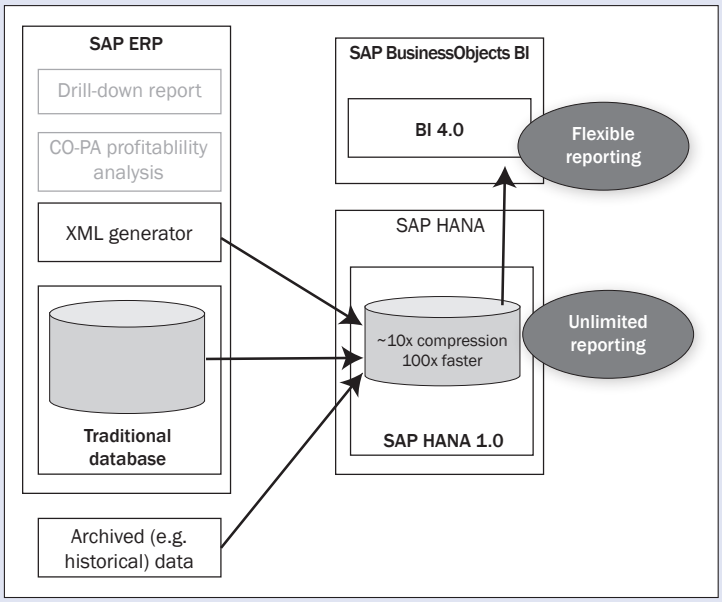

Figure 5 Architecture of the profitability reporting with SAP BusinessObjects BI front ends via SAP HANA use case

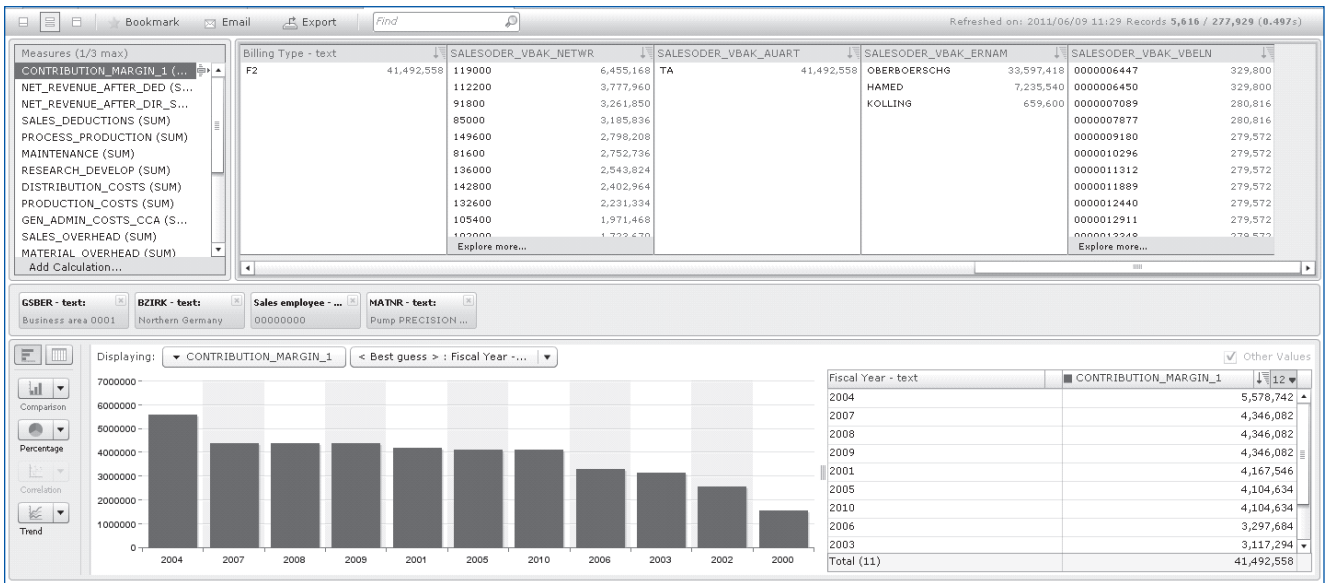

Figure 6 Flexible profitability reporting on SAP HANA with SAP BusinessObjects Explorer

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This delivers instant results across all entities and all periods, supporting analysis over a specified time period (e.g., three-year comparison) vs. lifetime analysis (e.g., from inception to decommissioning) with an optional reload of archived records. You can read millions of records in under a second and perform virtually instant drill-down into all dimensions.

Reporting with SAP BusinessObjects Explorer allows business user-driven, ad hoc analysis without any dimensional limitations (other than defined in the security concept). It features immediate graphical rendering of the results and access to millions of records in under a second. ■

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