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Lowering the Cost and Risk of SAS® Solution Integration with SAP: SAS® Solution Adapters

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ABSTRACT

The ability to transform your SAP® Enterprise Resource Planning (ERP) business data into SAS Business Intelligence and Analytics can be your company's best hope for lowering the cost of an implementation. Your IT organization needs to build a data warehouse; populate it with complete, consistent, accurate, and current data from multiple SAP tables and modules; and make that data available to SAS analytical and BI applications. Perhaps you're still hand-coding individual data integration and warehousing processes. This is a costly, error-prone practice that devours IT time and resources as developers reinvent the wheel every time they want to extract, transform, or load data into SAS.

The SAS® Solution Adapters enable the extraction of data from SAP systems by providing flexible quick-start ETL templates that contain predefined extraction, change data management, and standardization of SAP data so that it can be seamlessly provided to SAS Solutions.

INTRODUCTION

This paper will demonstrate how SAS Solutions can be seamlessly integrated with SAP using SAS Solution Adapters and show how to leverage the customer investment in SAP.

Over the last decade, the number of companies that have invested in packaged applications to help run their business operations and to analyze their business activities has climbed steadily. Many of these companies have selected SAP as a strategic provider for packaged applications and have invested heavily in supporting their organization's IT strategies. They pour significant amounts of money into SAP R/3 and other IT systems to help them better run their day-to-day operations. These investments have yielded benefits, such as improved operational transparency, efficiency, and a platform for making sound operational business decisions.

Today, executives are being asked to apply their expertise to more strategic organizational issues, but they are often frustrated by the paradox of realizing the value of the information contained in their systems and the corresponding difficulty of getting that information back out again.

SAP can transform data into information, but SAS Solutions are required to complete the transformation from information to intelligence. SAS's experience with SAP enables customers to take full advantage of all the valuable data in the SAP system by building upon and extending the enterprise's information infrastructure, leading to more reliable information for sound decision making.

OVERVIEW OF SAS SOLUTION ADAPTERS

The SAS Solution Adapters for SAP enable the extraction of data specific to SAS Solutions from SAP systems by providing flexible quick-start ETL templates that contain predefined extraction, change data management, collation, and standardization of SAP data. The data can then be seamlessly provided to your chosen SAS Solution, enabling decision makers to easily interpret significant events, patterns, and trends and to make fact-based decisions.

The SAS Solution Adapters for SAP extract the data locked in SAP and load it into the SAS Detail Data Store or Solution Data Layer that is used by various SAS Solutions. SAS Solution Adapters come with SAS Data Surveyor for SAP to help account for modifications and customizations needed to run the SAS Solutions.

SAP Adapters are available for the following SAS Solutions:

- SAS® Financial Management
- SAS® Human Capital Management
- SAS® IT Resource Management
- SAS® Service Parts Optimization

SAS has been an SAP Technology Partner since 1991. SAS data integration tools for SAP are certified for SAP NetWeaver™, ensuring maximum reliability, scalability, and manageability in a secure, easy-to-use framework that allows for seamless interoperability with SAP.

BENEFITS OF SAS SOLUTION ADAPTERS

With the SAS Solution Adapters, IT organizations can minimize the costs, time, and risks associated with data warehousing projects. IT teams can readily and cost-effectively scale up data marts and departmental data warehouses to be enterprise data warehouses that provide minute-by-minute decision-making abilities, visibility across business units, and transparency for regulatory compliance.

The SAS data integration solution makes it economical to harness the company's data regardless of location, format, volume, or latency. Expert SAS consultants share best practices and help customer IT organizations configure the solution for maximum flexibility—enabling you to add new capabilities incrementally as needed.

The following customer pains in SAS Solution implementations would be resolved by the SAS Solution Adapters for SAP:

TIME AND COST OF IMPLEMENTATION

According to Wayne Eckerson, Director of Research for TDWI, "Most practitioners told us that ETL design and development work consumes **60 to 80** % of an entire BI project. With such an inordinate amount of resources tied up in ETL work, it behooves BI teams to optimize this layer of their BI environment" (See Eckerson and White, 2003.)

The high cost of hiring consultants to implement the SAP Integration and the lack of skilled resources, along with the length of time to implement, makes it unlikely to yield a ROI. Because high cost and overhead is a high risk to the implementation project, many companies decide either not to implement SAS Solutions or to delay the implementation.

SAS Solution Adapters for SAP provide out-of-the-box rapid identification and extraction of data from SAP to SAS Solutions. The SAS Solution Adapters come equipped with pre-defined ETL templates that allow you to quickly identify and extract data locked in SAP, significantly reducing the time needed before the data is available for analysis.

Fast implementation results in a faster ROI. Lines of business quickly see results, thus establishing a new confidence in IT's ability to deliver.

COMPLEXITY OF DATA

SAP is extremely complex. It takes very specialized programmers (ABAP programmers) to get the data out of SAP. And that assumes they know what data to get out of SAP. The complexity of data results in long delays and turnaround times in reporting. This causes lines of business to loose confidence in IT and to start creating spreadsheets so that they can get the analysis they want.

The SAS Solution Adapters for SAP can help you by providing the following features:

- Full integration with SAP and SAS Solutions.
- Pre-defined process flows to get data without the need to know ABAP programming.
- Use of SAS Data Surveyor, which allows searches of metadata to add to ETL flows without extensive SAP knowledge
- Full integration with the SAS® Data Integration Server to extract data from other data sources and combine them with data harvested from SAP. This ensures that all data held throughout the organization is combined and transformed to provide a single view of your business when viewed through SAS Solutions. This flexibility enables rapid results from SAP but also provides the ability to fit with an organization's particular infrastructure.

The above features help SAS Solutions to be quickly implemented and allow a business to get the information it needs in a timely fashion.

KEY BENEFITS

SAS Solution Adapters for SAP provide the following key benefits to customers:

- **Cost efficiency:**
  - o Greatly reduced management consulting cost over an implementation from scratch
  - o Greatly reduced implementation services (professional services) cost
  - o Greater and earlier ROI from existing IT investments in SAP
  - o A significant reduction in implementation costs because the solution extension reduces the need for customization and long consultation phases
  - o Readily and cost-effectively scaling up SAS data marts and departmental data warehouses to enterprise data warehouses
  - o Much earlier production availability of the total solution—reduced opportunity cost and faster return on investment. The customer starts saving (or making) money several months sooner.

- **Reduced implementation risk:**
  - o Certified for SAP NetWeaver Integration
  - o Best practice and proven approach: Providing greater acceptance from the customer's (and management consultants' as well as implementation partner's) IT staff through a higher level of confidence in a proven solution versus a pure consulting implementation from scratch.
  - o Fully documented ETL process flow in SAS Data Integration Studio from extraction to transformation, data cleansing, and loading

- **Quicker time to value**
  - o Getting SAP data without specific SAP programming expertise
  - o Faster implementation by delivering predefined mappings between SAP and SAS Solutions; quick implementation (for example, weeks not months)
  - o Fast answers to questions about customers, suppliers, and internal organization structure.

- **Greater flexibility**
  - o Easily integrate SAP Data with other data sources
  - o Extendable to other sources and systems
  - o Minimal process changes needed during SAP system maintenance or release upgrades
  - o Integration with SAS Data Integration Studio for automatic code generation and seamless data quality integration
    - ▪ Automatic Code Generation: SAS Data Surveyor for SAP will automatically generate the code necessary to retrieve the required data from SAP applications. Based on SAS/ACCESS to SAP R/3, the extraction routines will use server-side joins, batch extracts, and so on, whenever appropriate.
    - ▪ Data Quality Integration: With SAS Data Surveyor for SAP integration in Data Integration Studio, it is a point-and-click process to run SAP applications data through SAS data quality routines to ensure quality and consistency.
  - o Improved ETL Performance
    - ▪ Doing the Query on the SAP server saves ETL time because only the needed data is moved to the SAS Server
    - ▪ Change Data Capture allows only the data that has been added or changed to be put into the ETL process saving time
  - o Tight integration with SAS Data Integration Studio, the SAS Management Console, and the SAS Metadata Server
    - ▪ The close integration with SAS Data Integration Studio and the SAS Management Console extends SAP applications to be part of a common, open metadata framework, allowing for a consistent storage and view of all source and target systems that can be shared and used across the enterprise.
    - ▪ The SAS Metadata Server stores all relevant information about SAP applications' data structures as metadata so that it can easily be used and reused from one location. This promotes easy maintenance because all information resides in metadata and no source code needs to be touched.

SAS SOLUTION ADAPTERS IN DETAIL

SAS Solution Adapters for SAP fit into the SAS landscape under the Application Integration Layer as shown below.
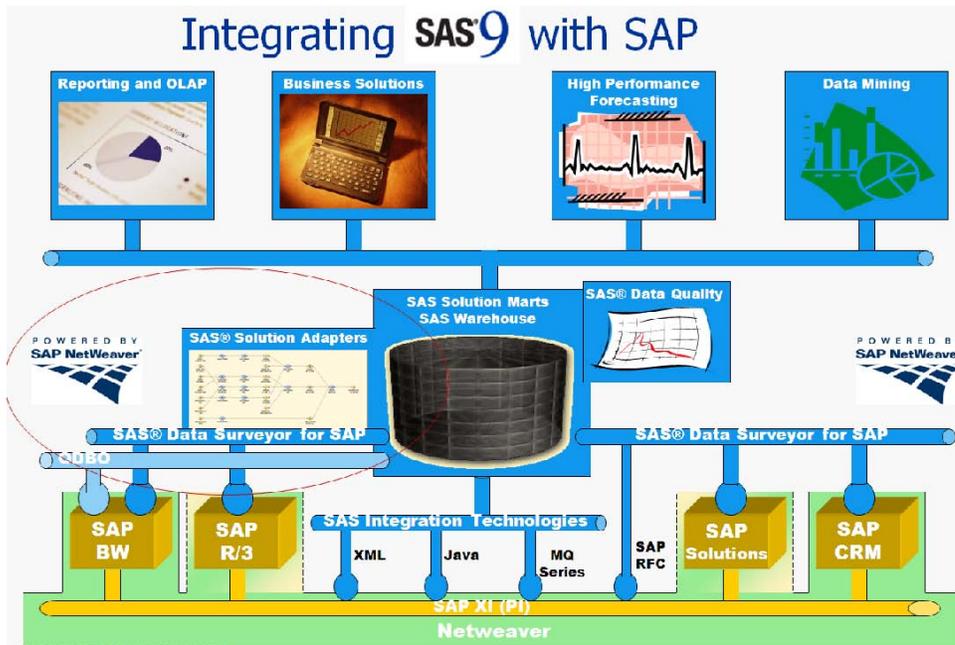
Figure 1. SAS Solution Adapters placement in the SAS Environment

SAS Solution Adapters for SAP extracts, transforms, and loads the data from individual SAP tables into the SAS Solution Data Marts. The data flow architecture from SAP to SAS Solutions using SAS Solution Adapters for SAP is as shown below:
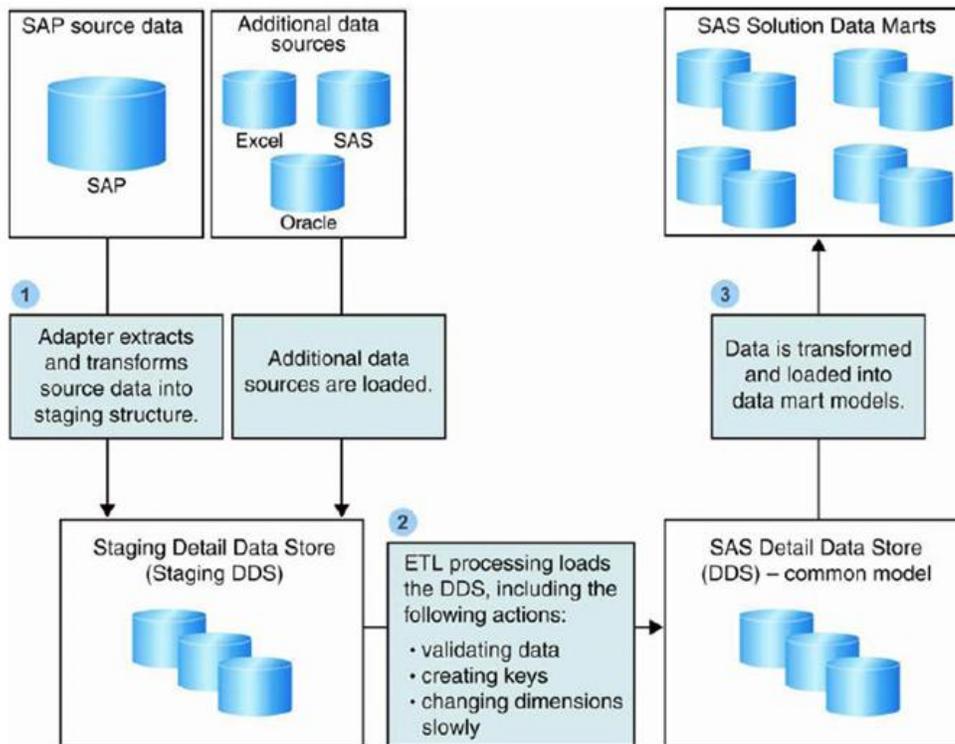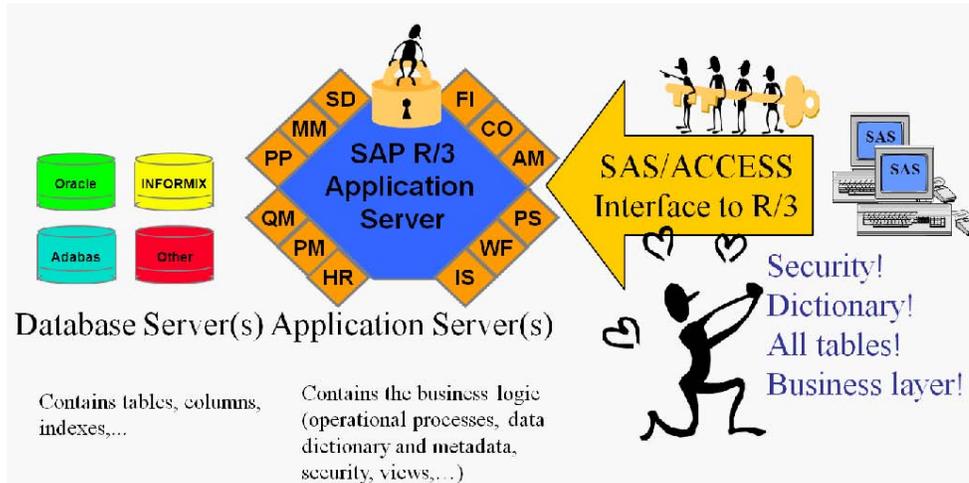

Figure 2. SAS Solution Adapters – Data Flow Architecture

SAS Solution Adapters for SAP use the SAS ACCESS Interface to SAP R/3 as the technology layer for Integrating SAS and SAP. SAS Solution Adapters use all the security protocols defined by SAP for the respective functional modules.

Figure 3. SAS Solution Adapters – Data Access to SAP

In general, SAS Solution Adapters for SAP are collections of the following features:

Pre-built SAP Table metadata (SAP Data Model)

Source tables, pointing at your SAP system, stage tables that hold unmanipulated data from SAP in a SAS format, Administrative Tables, Intermediate tables that enable flexibility in customizing the jobs to fit local requirements, and DDS tables that are the target of the Solution Adapter that you're using.

Pre-built Data Integration Studio Jobs

Jobs hold all the data flows, transformations, and data cleansing routines to get the information from SAP to the SAS Detail Data Store table.

Pre-built Data Integration Studio Transformations and Structuring Information

That defines the tree-view with all necessary sub-nodes, clustering the various elements together, giving them meaningful names that allow the user to easily follow through the processes.

The SAS Solution Adapters for SAP are integrated in and visualized through the SAS Data Integration components, giving you all the benefits that come with the SAS Data Integration environment.

SAS FINANCIAL MANAGEMENT ADAPTER FOR SAP

The SAS Financial Management Adapter for SAP accelerates the SAS Financial Management Solution implementation process and, ultimately, provides the intelligence you need in a fraction of the time you're accustomed to receiving it.

With SAS Financial Management Adapter for SAP, you can pull data from several different controlling areas within the customer's SAP environment, enabling the customer to generate essential financial reports. Only the power of SAS can turn SAP data into enterprise intelligence without disrupting the daily operations or the integrity of your existing investments.

SAS Financial Management Adapter extracts, transforms, and loads the financial information into SAS Financial Management Solution in a consistent way. Delivering the financial information to manage the customer's day-to-day business, and fulfilling their role of being a business driver, will give the confidence to:

- Deliver timely, high-quality performance information to decision makers throughout the enterprise and to external constituencies.
- Reduce planning and budgeting cycles while increasing the accuracy of creating, tracking, consolidating, and validating.
- Improve management controls to increase overall profit margins by analyzing customer and product profitability.
- Accurately predict costs, profits, and resource requirements for the future.

SAS Financial Management Adapter for SAP:
- Extracts and transforms data for:
  - Account dimension
  - Currency dimension
  - Time dimension
  - Internal and external organizational structures
  - Cost and profit center dimensions
  - Exchange rates
  - General ledger entries (transactional data)
- Extracts transactional data using change-data-capture methods
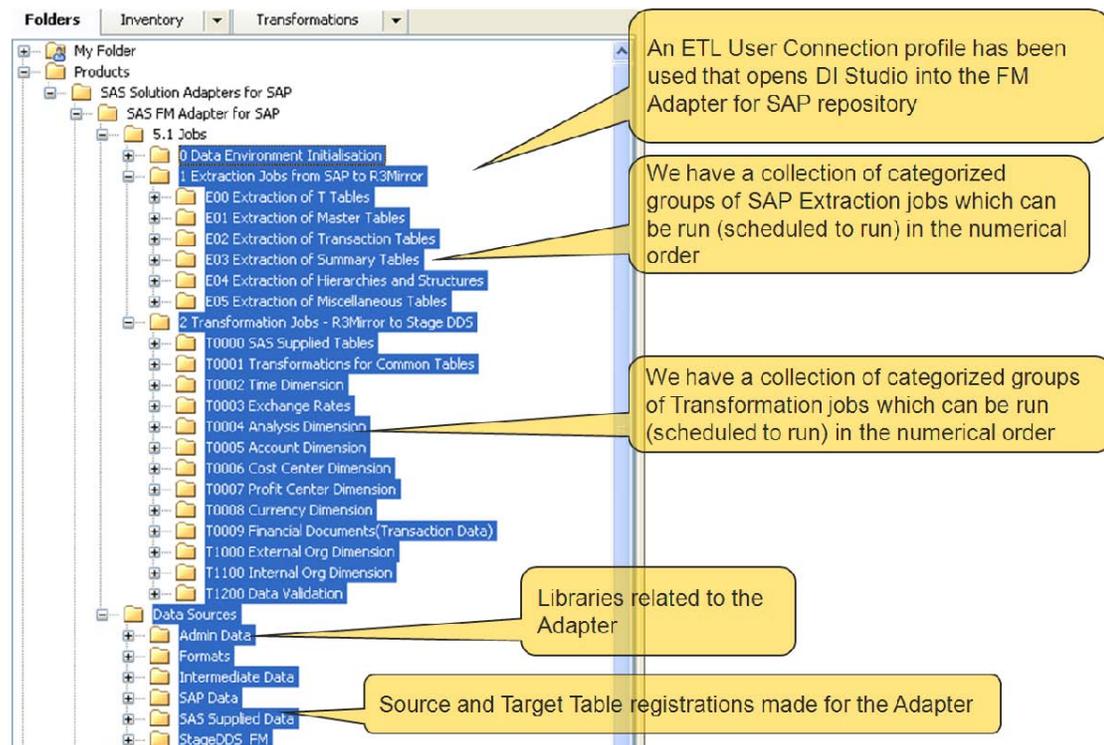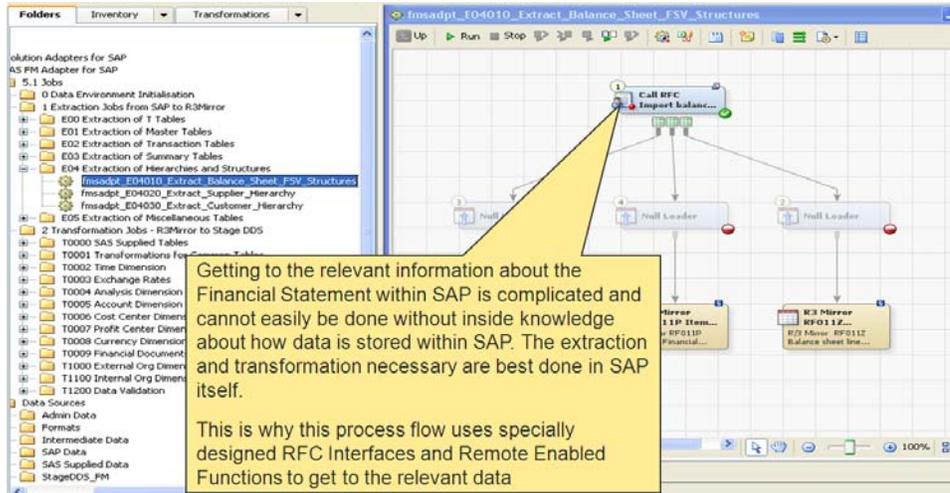- Extracts and transforms lookup/reference tables

Figure 4. SAS Financial Management Adapter for SAP – Components
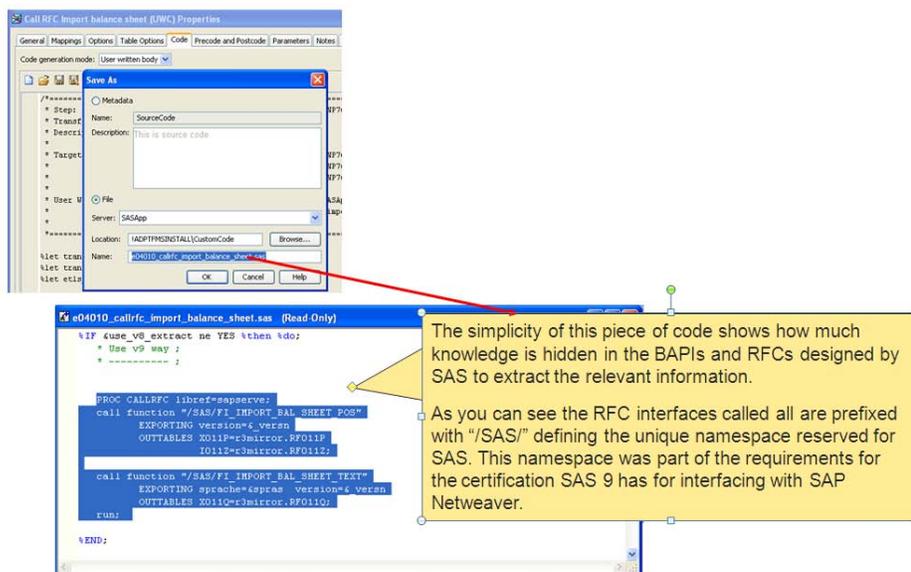
Complex Data extractions made easy

Account dimension in SAS Financial Management Solution can be loaded from many different and complex tables of SAP. SAS Solution Adapters for SAP facilitate the complex data extraction by using simple RFC calls embedded in the jobs as shown below.

- SAP has accounts that appear in different places in the balance sheet (depending on the balance).
- The FM Adapter extracts detail GL information and uses opening balance and monthly running totals to calculate the balance.
- The Adapter assigns both a debit and credit account–and modifies the account number in the transaction to the correct one.
- This ensures that the totals in SAP and FM match exactly.

Figure 5. SAS Financial Management Adapter for SAP – Account dimension extraction

User-written codes are provided in many Data Integration Studio jobs so as to make the complex extractions easy. The user-written code is available to the customer so as to customize the SAS Financial Management Adapter for the SAP Customized Environment.

Figure 6. SAS Financial Management Adapter for SAP – Custom SAS Code

The extracted data from SAP using SAS Financial Management Adapter is ready to be loaded into the SAS Financial Management Solution. Once the data is loaded into the SAS Financial Management Solution Data Mart, the SAP hierarchy is readily available in SAS Financial Management solution as shown below.
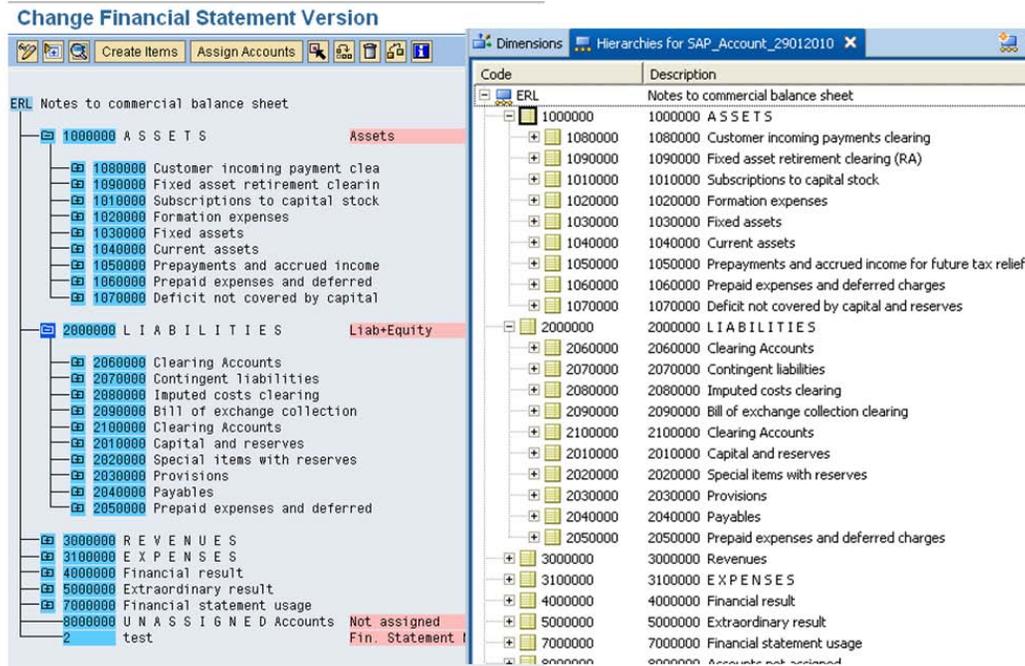

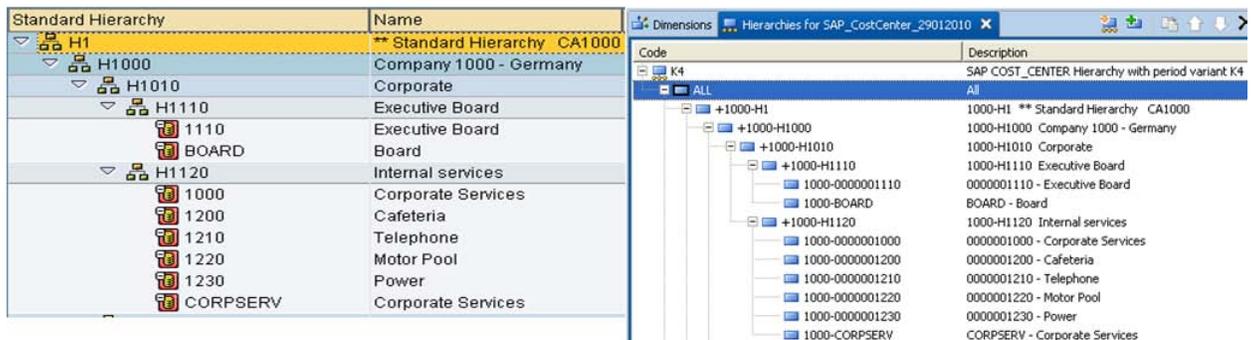**Figure 7. Account Dimension both in SAP and SAS**

Figure 8. Cost Center Dimension both in SAP and SAS

CONCLUSION

A unique advantage in choosing SAS Solution Adapters for SAP is that it reduces the cost and risk of SAS Solutions implementation for SAP customers.

Being able to react to business needs quickly, to leverage all existing data, and to avoid creating a patchwork of various solutions is the objective that should drive IT decisions today. SAS Solution Adapters for SAP extract intelligence from SAP systems and leverage ongoing technology investments, working through SAP NetWeaver to integrate the people, information, and processes that make up your organization. SAS enables you and your company to create a unique competitive advantage, one that stimulates continuous growth and innovation in the most "intelligent" way.

SAS and SAP software make a perfect combination, one that gives your enterprise all you need to go "beyond BI."

REFERENCES

Eckerson, Wayne, and Colin White. 2003. Evaluating ETL and Data Integration Platforms. TDWI Report Series. Chatsworth, CA: 101communications LLC. Downloadable from http://tdwi.org/research/2003/03/evaluating-etl-and-data-integration-platforms.aspx.

CONTACT INFORMATION

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