Implementing a balanced scorecard solution on top of SAP, using CFO vision as interface.

Ida Carpelle & Sophie De Baets, SOLID Partners, Brussels, Belgium (EUROPE)

ABSTRACT

Financial information is vital for all departments of a company. Now that your company has successfully implemented SAP R/3, a vital question comes into all minds:
" How to ensure that the business operations are working towards the strategic direction set by the board of management?"

The answer to this question is the "Balanced Scorecard". The Balance scorecard is a "management system that translates the mission and strategy of an organization into a coherent set of objectives and measures" *(See Ref.1).*

This paper will demonstrate the different steps to achieve the building of this powerful decision support system tool on top of SAP R/3 ERP system.

First, we have to access the SAP R/3 financial data. The SAS/ACCESS® to SAP AG's R/3 tool combined with strong business knowledge of SAP AG's R/3 will be the key success factor to this step.

Secondly, we have to build a powerful reporting tool to serve as a basis for the strategic analysis. For this, we integrate the SAP operational information with the SAS CFO Vision™.
SAS CFO Vision™ will provide the decision-makers with an effective measurement system that will be the starting point for a successful implementation of the financial balance scorecard.

The paper includes a demonstration of SAS CFO Vision™ and a balance scorecard built specifically for the financial decision-makers. It concludes with the feasibility and benefits of building such a powerful decision support system on top of SAP AG's R/3 financial module.

INTRODUCTION

In today's business environment, few factors remain constant very long. Managers need to quickly assess the profit and other financial impacts of these changes. Deciding the best response to changes is never easy, but one thing is clear. Managers need certain types of information for their profit-making decision analysis.

The reference system for managing *operational information* is the SAP AG's R/3 system.
The SAP AG's R/3 system surely contains all the managers need to make their decisions successful.

The only process that is required to provide decision makers with appropriate information is to focus on key data from the operational system and transform them into valuable information.

HOW?

How can we transform thousands of data keyed in every day into only few key indicators that will be the base for the strategic decision of the company?

Only the combination of:
- one *tool*
- one *method*
- the *knowledge* of the SAP R/3 system
could lead us to a successful solution.

The tool is *CFO Vision*™, the method is the *balanced scorecard* and the *knowledge* is based on several projects of building a decision support environment for companies.

PAPER'S APPROACH

It was already demonstrated in a previous paper **(see Ref.2)** the feasibility and profitability of using SAS software as a Decision Support System on Top of SAP. This paper goes a step further and demonstrates how to give the hand to the users allowing them to build "Balanced Scorecard" with the necessary information provided by the solution and the appropriated tools, SAS CFO Vision™.

This paper gives an **approach** for creating a decision support environment and how give to the users the necessary information and tools. This environment will be more directed for financial managers and will be designed at two different levels:
- the totally aggregated level : the ratios of the balanced scorecard
- The one-level down: the reporting that allows deeper figures analysis.

The approach offers a full and transparent integration of the SAP R/3 system with the analysis environment.
This solution is based on real projects lead at companies from different sectors: utility, production, pharmaceutical companies.

STRUCTURE

- The business case story: context of the company under analysis.
- Overview of the SAP AG's R/3 operational environment.
- Balanced scorecard approach.
- The SAS CFO Vision™ tool.
- The solution design and implementation.
  - Data Source Analysis, SAP AG's R/3 data models.
  - SAP AG's R/3 data extraction process.
  - Financial database models and construction.
- Conclusion.

BUSINESS CASE CONTEXT

BUSINESS STORY

The company of our case study is a production company, selling dog food. The company is structured into 3 business units. There is one business unit by region in the country under analysis.

BUSINESS QUESTION

The management wants to examine the performance of the Business Units. One first point of attention is the comparison of performance ratios between the three business units, which shouldn't be too far from each other because the only difference is the region.

This first high-level ratio analysis leads to the conclusion that the Business Unit 1 is not performing as good as the others.

A drill-down analysis through these high level ratios will show us the reason and help us implement a strategy to improve the performance of the Business Unit 1.

OVERVIEW OF THE SOLUTION

The most appropriate ratios to answer the business question will be shown onto the Balanced Scorecard screen.
On the basis of that screen, a one-level down analysis will be made possible thanks to appropriate reports developed under CFO vision. It will then be possible to analyze in details what were the factors leading to such bad or good ratios.

INFORMATION SOURCE

The operational data were taken from the SAP standard test client (IDES).
We mainly took data from the financial module of SAP (FI module) and some were taken from the Material Management module (MM). These data have been manipulated and transformed into ratios and reports ready for analysis.

SAP AG'S R/3 KNOWLEDGE

SAP R/3 ORGANISATIONAL STRUCTURE

Understanding the SAP AG's R/3 operational system:

The SAP data schema is extremely complex and contains a large number of tables with cryptic names and unknown relationships.

That's why it is important to have the knowledge of SAP R/3 when building a data warehouse environment and a decision support system. It is important to know where to go and find the useful information and to understand their business meaning.

SAP R/3 defines a multilevel structure in terms of nested classifications, which are known collectively as the EDM **Enterprise Data Model.**
The intention of the Enterprise Data Model is to enable user of a database network to assemble the data relevant to that enterprise and to attach the correct interpretation to it.

The purpose of an enterprise data model is to make sense of and take account of how the business uses the data structures defined in the active **ABAP/4 data dictionary**.

ABAP/4 DATA DICTIONARY

The ABAP/4 Dictionary describes the logical structure of the objects used in application development and shows how they are mapped to structures in the underlying relational database. It makes central description of all data used in the system without redundancy possible. The ABAP/4 Dictionary provides a logical view on the application data and the organization of this data in the underlying database system.

By an extensive use of the data dictionary it is also possible to easily extract the necessary descriptive information for all building elements from data model to variable. The latter means that the documentation part *metadata*, which is very important in data warehousing, can be taken from the operational environment. These *metadata* are as said to be very well documented and because of this, very useful for D.S.S. purposes.

BALANCED SCORECARD

It is not the purpose of this paper to outline a deep theory on Balanced Scorecard. We just want to illustrate how we can transform operational data into key performance ratios.

In our case study, the company has identified the key performance areas to be reported. The management was allowed to look into further details on the basis of high-level ratios. These details were shown under CFO vision reports.

SAS CFO VISION™

SAS CFO Vision™ is a comprehensive financial management solution empowering executives with business information needed for timely, informed decisions imperative to an organizations growth and competitive advantage.

The SAS CFO Vision™ provides:

- Integrated financial data warehousing and on-line analytical processing (OLAP), offering unlimited views of business information and the ability to interactively drill-down through large amounts of detailed information, including seamlessly accessing transactional data.
- Comprehensive multi-currency reporting, including the Euro, which facilitates viewing financial reports in an unlimited number of currencies, all at the click of a mouse.
- Ability for finance professionals to quickly incorporate change into their business structures, produce dynamic reports, and effectively analyze their business questions.
- Ability to access financial and non-financial information from any data source, so finance professionals can spend more time analyzing business information quickly and interactively, and less time accessing and managing data.
- The benefits of a complete, integrated solution, including reduced system maintenance, decreased reliance on IT, and the most advanced decision support capabilities.

These capabilities of SAS CFO Vision™ allowed us to build a complete financial analysis of our company under the form of a Balanced Scorecard with direct drill-down capabilities to relevant detailed reports.

SOLUTION DESIGN AND IMPLEMENTATION.

INTRODUCTION.

Until now it was explained the problem to solve, the goal of the system to develop and the needs, in this chapter it will be explained how to build the solution.

As in every project it's necessary:

- To analyze the data sources
- To define the data model
- To define the data flow (loading, mappings, transformation rules, aggregation...).

This chapter will describe globally the three main parts of an application design.

SAP-FI DATA MODEL DESCRIPTION (FIGURE-1):

DATA SOURCE ANALYSIS, SAP AG'S R/3 DATA MODELS.

To build this solution the data source is mainly SAP R3/FI-GL. It will be explain the data model and the main entities.

Data Source Analysis
Understanding the SAP R/3 FI

Figure 1

Chart of Account

GL trans.
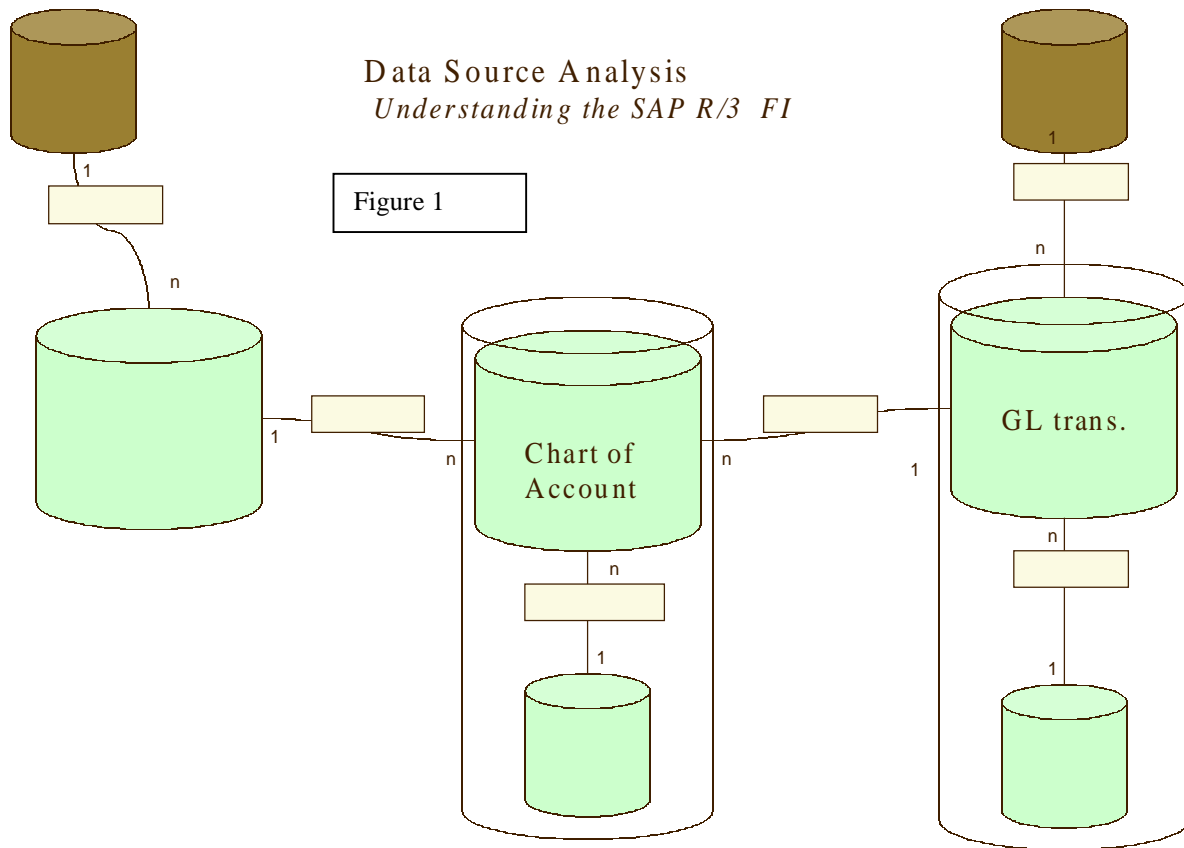
- **Chart of account (figure2-figure3)**

How is the Data Organized?

G/L master data is divided into a chart of accounts area and a company code-specific area.

Chart of accounts area

Chart of accounts
Tax account

Company code area

Co. code 0001
Federal Republic of Germany
Tax account in DEM

Co. code 0002
Italy
Tax account in ITL
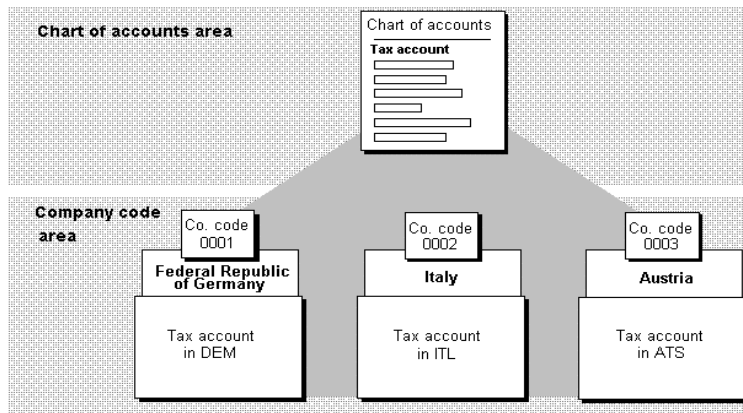
Co. code 0003
Austria
Tax account in ATS

Figure 2

The **chart of accounts area** contains master data that applies to the entire master record. It contains the G/L account number and account name, for example. You also specify here whether it is an income statement or balance sheet account.

The **company code-specific area** contains information that differs between company codes. You specify here, for example, the currency in which you manage the account. You create this area separately for each company code.
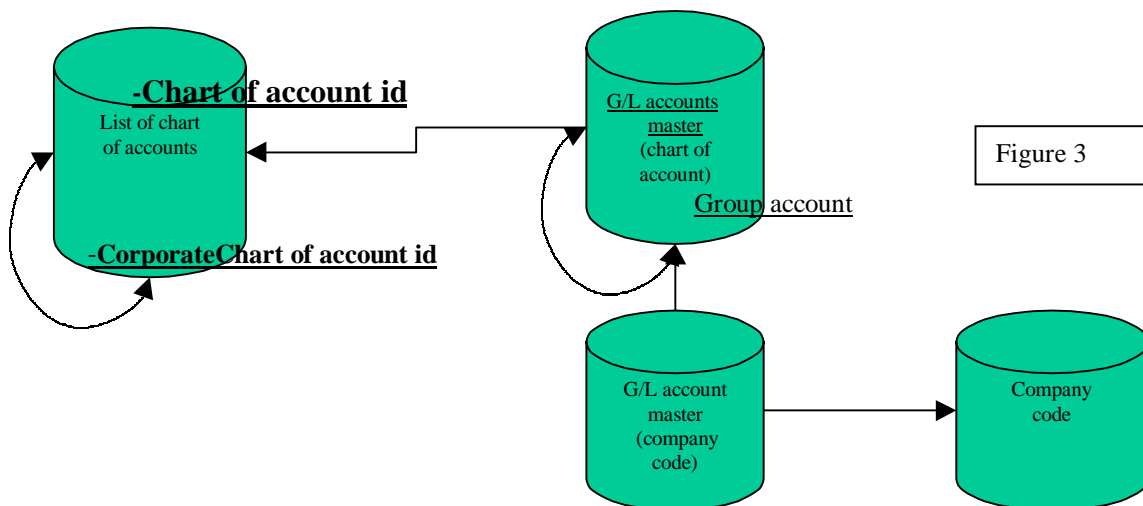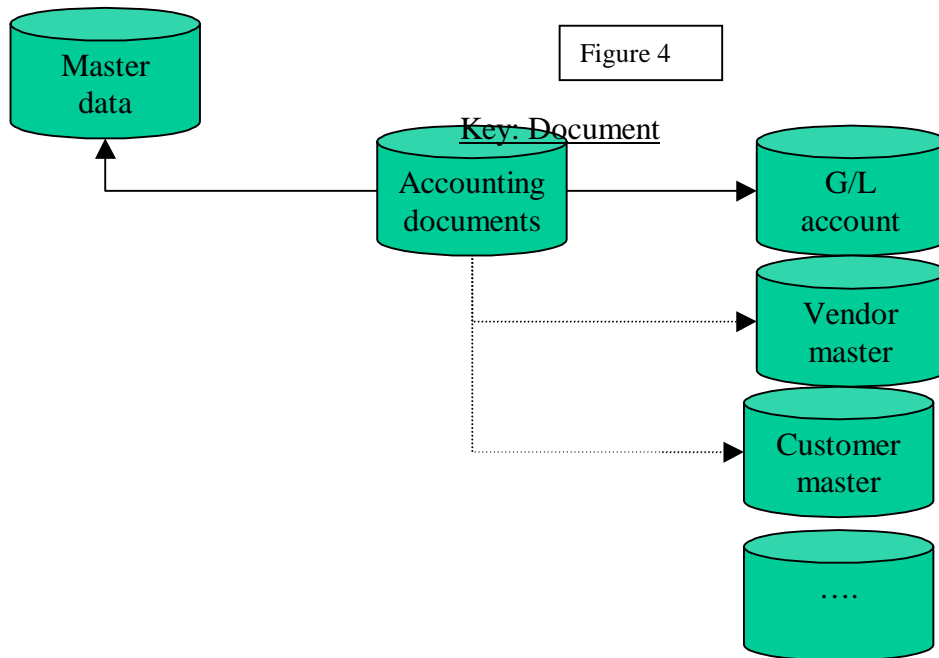
-Chart of account id

List of chart of accounts

-CorporateChart of account id

G/L accounts master (chart of account)

Group account

G/L account master (company code)

Company code

Figure 3

G/L TRANSACTIONS MODEL (FIGURE-4).

Figure 4

Master data

Key: Document

Accounting documents

G/L account

Vendor master

Customer master

....

You post business transactions to accounts and display line items in accounts. **For each general ledger (G/L) account that you require, you must create a master record in the company code.** The G/L account master record contains data that controls how you enter and process data in this account.

SAP AG'S R/3 DATA EXTRACTION PROCESS.
To build the data extraction process it's necessary to do these tasks:
1) Create with SAS/ACCESS® to SAP AG's R/3 the access to the useful table described in the point before.
2) For recurrent process it's easier to include the "Access process" generated automatically by the SAS/ACCESS® to SAP AG's R/3 in your periodic batch, for example after the accounting monthly closure.

FINANCIAL DATABASE MODELS AND CONSTRUCTION.
SAS CFO Vision™ works with FDB "Financial database".
The model of the SAS CFO Vision™ is compound of fact tables and dimensions tables.
The dimension tables are "parent/child" tables, which means that all the levels of the hierarchies are contained in the same table. The lowest element contains the "link" to its direct upper element and so on.
The fact table contains the "figures" and the lowest element of each dimension.

What must be done to build the FDB based on SAP R/3 FI-GL model:

Building Of the Fdb

1) **Load** in SAS CFO Vision™ the fact table, which is in this case the "General Ledger" transaction of SAP R/3 Fi-GL system.
2) **Load** in SAS CFO Vision™ the Accounting Dimension, which is the "Chart of account" of SAP R/3 FI-GL.
3) **Define** or **load** in SAS CFO Vision™ the "Company organization" Dimension, depending on the complexity of the "Company organization".
4) **Define** or **load** in SAS CFO Vision™ the time dimension.
Remarks: in CFO a model could be copied easily, that allows the user to play with the new models for simulation and so on, keeping intact the real one.
The user could also create his own dimension.
For example to group the accounting account in other way of the chart of account. In this case the chart of account remains the legal one and the user is able to produce other reporting for internal usage.

 CONCLUSION
This case study has confirmed that it was possible to build Decision System Support environment on the basis of SAP R/3 operational data.

Not only the building of the Decision Support environment was described but also the exploitation of the environment has been demonstrated through the construction of a measurement system that will be the starting point for a successful implementation of a financial balance scorecard.

THE CRITICAL SUCCESS FACTORS HAVE BEEN:
➢ Knowledge of SAP R/3 relational model: Identify the right data to build relevant and correct Financial Information.
➢ Identify the user's questions about the subject area to ensure the DSS to give the needed answers.
➢ Use the correct tools to answer the users needs: SAS CFO Vision™.
➢ Give the hand to the users offering flexible tools to add their "Business Intelligence".

REFERENCES
[1] Robert S. Kaplan, professor of the Harvard Business school.
[2] SUGI24 – Data Warehousing section: "Using SAS software as a Decision Support System on Top of SAP FI Financial Accounting Module" (Ida Carapelle, SOLID Partners).

CONTACT INFORMATION (HEADER 1)
Your comments and questions are valued and encouraged. Contact the author at:

Author Name:	Ida Carapelle, Sophie De Baets
Company	SOLID Partners S.A.
Address	Boulevard Wahis 21
City state ZIP	B-1030 Brussels
Country	Belgium (Europe)
Work Phone:	+32 2 706 03 00
Fax:	+32 2 706 03 09
Email:	Ida.Carapelle@solidpartners.be
	Sophie.DeBaets@solidpartners.be
Web:	www.solidpartners.be