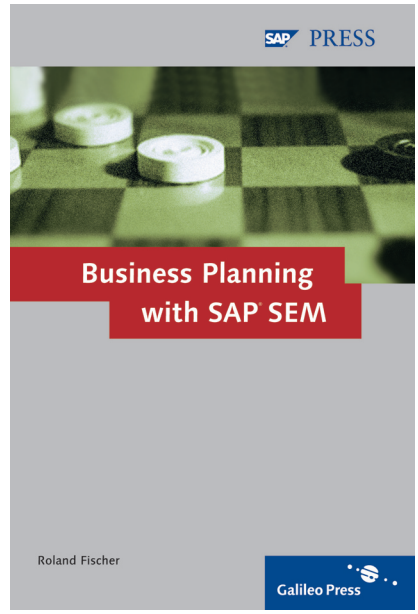
Roland Fischer

Business Planning with SAP SEM



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Mulhouse, France, June 2003
Roland Fischer

Foreword

Strategic enterprise planning is increasingly becoming a continuous process that involves all areas of an enterprise. The last few years have focused progressively more on integrated business planning as a dynamic management instrument. Both strategically and operatively, enterprises are forced to perform integrated planning across functional areas. Given the trends toward increasing internationalization, greater competitive pressure, and growing complexity, only enterprises that use integrated and planning methods with foresight will enjoy lasting success. Using modern information and communications technology as a link between strategic planning and its implementation in business processes is an indispensable part of this success. *SAP Strategic Enterprise Management (SAP SEM)* is a tool that covers operative and strategic decision-making in the context of planning.

In this book, Roland Fischer provides a detailed overview of the current status of business planning. You'll find an extensive discussion of *Business Planning and Simulation (BPS)* as a subset of SEM. BPS is addressed in the context of the SAP environment and how it relates to the new tools based on the SAP NetWeaver platform. The author introduces *SAP Business Information Warehouse (SAP BW)*, which collects, formats, and makes available enterprise data for analysis by SAP SEM and its BPS component.

SAP SEM-BPS supports dynamic and real-time business planning. The planning applications offer a solution for an enterprise's standard tasks, such as balance-sheet or profitability planning, with an option for configuration. Specialized types of planning functions or preconfigured planning objects, such as planning areas, levels, and functions, are available. The book serves as an implementation project that gives readers a detailed view into the procedures for implementing integrated, IT-supported enterprise planning, based on sample profitability and financial planning.

Roland Fischer explains how to design integrated business planning and how an integrated information system can help support planning. He vividly describes the experience he has gained in multifaceted projects. The reader is guided through the somewhat complex structures of dynamic planning. This book is suitable not only for managers and enterprise consultants, but also for students and scholars of related application areas.

Saarbrücken, Germany, July 2003
August-Wilhelm Scheer

1 Introduction and Overview

Planning activity provides the means of testing the quality and coherence of management's mid- and long-term objectives and developing a common understanding of those objectives.

Kenneth Corefield[1]

1.1 Introduction

Marketing another business planning book is no simple task, given that many books on the subject already exist. This particularly holds true for theoretical considerations of business planning. With the mounting complexity and dynamism of the enterprise environment and the growing interdependence of enterprise structures, increasingly serious problems surface—problems that can be overcome only with the assistance of new forms of management and new management instruments.

In this environment, integrated business planning as a dynamic management instrument becomes ever more significant. Based on this development, an observer must quickly realize that the increasing complexity of planning processes and their integration, along with the growing amount of data to be processed, can no longer be supported by partially integrated planning systems. Only completely integrated planning systems—those that implement a complete exchange of information between individual planning areas and individual planning horizons—can withstand the developments of business planning.

Goal of this book

The goal of this book is to introduce the reader to a completely integrated planning system, beginning with a theoretical presentation of integrated business planning, namely, *SAP Strategic Enterprise Management (SEM)* and the design of its *Business Planning and Simulation (SAP SEM-BPS)* component.

This book is the first book to address SAP SEM-BPS and, unlike most books on business planning, details the multifaceted aspects of integration from a theoretical and practical level as realized in SAP SEM.

1 Corefield, 1984, p. 23.

1.2 Structure of the Book

This book can be divided into three main topical areas:

1. Theoretical basics of integrated business planning
2. Detailed description of the functionalities of SAP SEM-BPS and the basics of SAP Business Information Warehouse (SAP BW) required for SAP SEM-BPS
3. Realization of the techniques learned in Chapter 2 in the context of a project on integrated profit and financial planning

Chapter 2: basics of business planning

The first area (*Chapter 2)* provides the reader with a comprehensive foundation for business planning. In the first section of Chapter 2, relevant literature on this topic is introduced and the recurring and interrelated integrative aspects of planning occupy the foreground of this presentation. However, this section does not describe the various approaches to planning often used in practice, such as *zero-base budgeting*, because such methodologies are often used independently of planning software and are therefore not relevant to this book. Regarding the periodicity of planning, this area explores the repetitive types of planning used in an enterprise rather than occasional or unique planning, such as foundational, recapitalization, or liquidation planning.

A later section of Chapter 2 covers one methodology for planning—dynamic simulation—in particular, because it is essential to understand the simulation components of SAP SEM-BPS. In conclusion, the chapter develops the requirements of IT support for integrated planning. When looked at collectively, the requirements constitute a criteria catalog that every completely integrated planning system, and, of course, SAP SEM-BPS, must meet.

Chapters 3 and 4: SAP Business Information Warehouse (SAP BW) and SAP SEM-BPS

The second area of this book is divided into two major chapters. *Chapter 3* provides the reader with a quick presentation of the basics of SAP BW, which is required to understand SAP SEM-BPS. Then, *Chapter 4* introduces the modeling concept and the individual functions of SAP SEM-BPS in detail. The author's experience with SAP SEM-BPS on various projects also helps readers to understand each function and anticipate difficulties that might arise. Readers will also learn where SAP SEM-BPS fits in the wider SAP environment. This section limits itself to a description only of the elements of planning areas necessary for integrated profit and financial planning. A special subsection describes the *Powersim* modeling tool used for dynamic simulation. In conclusion, this section returns to the topic of integration—by offering a step-by-step introduction to the

system-side relationships of SAP SEM-BPS with other SAP applications—so that it can then show a complete integration flow.

Chapter 5: realization of profit and financial planning in SAP SEM-BPS

The third area *(Chapter 5)* begins with a general description of the project methodology that the chapter uses. It highlights the specific and unique characteristics of SAP SEM and SAP BW projects. The remainder of the chapter addresses project methodology. It describes the business blueprint, the IT design, and the implementation design of integrated profit and financial planning. Chapter 5 concludes with a presentation of various approaches to optimization that are relevant to SAP SEM-BPS.

Chapter 6: outlook

The book ends with *Chapter 6*, which measures SAP SEM-BPS against the requirements criteria described for planning software discussed in Chapter 2. It also provides readers with an overview of the newest developments in SAP SEM-BPS.

1.3 Using the Book

As noted, this book has two goals. First, it aims to offer the reader a theoretical and practical understanding of integrated business planning. Second, it provides a detailed description of SAP SEM-BPS, once again on a theoretical basis, and then with implementation.

The following two groups of readers make up the audience, which results from the book's dual goals:

Focus: integrated business planning

1. The first group consists of readers who want to deal with the topic of integration in business planning. The book is especially geared to students of business administration, controllers and managers of controlling departments, and enterprise consultants who create business designs for their clients.

   These readers should focus on Chapter 2 and the business blueprint in Chapter 5. In this context, the business blueprint should be seen as a detailed continuation of Chapter 2.

Focus: SAP SEM-BPS

2. The second group consists of readers who want to familiarize themselves with SAP SEM-BPS software or deepen their knowledge of it. This group may also include students, and managers of controlling or IT departments who need to consider the implementation of SAP SEM-BPS and can use this book in their decision-making process. It also includes all enterprise consultants who want to become familiar with SAP SEM-BPS for potential projects or, who have already implemented their first projects and now want to deepen their understanding of specific topics. Lastly, the book is intended for those employees in an

enterprise that has implemented SAP SEM-BPS and who now must deal with the topic as administrators or as end users.

This group of readers will find that it is worthwhile to read Chapter 4, which, because it is packed with information, may appear daunting at first. Chapter 5 describes how to implement specific functions and what system restrictions can be anticipated (see the comments on IT design and implementation design). Readers considering the implementation of SAP SEM-BPS should read Chapters 3 through 5.

2 Basics of Business Planning

"The man who doesn't know where he wants to go shouldn't be surprised when he ends up somewhere else."

Mark Twain

The goal of this chapter is to bring the reader up to speed with the state of business planning as it is discussed in the current SEM literature. This chapter is divided into three main sections. The first section introduces the *basics of business planning* with the structure, flow, and integration of planning. The second section addresses the subject of *dynamic simulation* to provide the reader with a foundation for the *Powersim* tool, which is discussed in Chapter 4. The third and final section of this chapter asks the question, "To what extent can planning software support the context discussed previously?" On the one hand, the planning software must include the requirement resulting from an integrated planning business scenario; on the other hand, the software can also include other functions that are an advantage for the planning scenario and therefore exceed the requirements. In this way, the reader is introduced to SAP Strategic Enterprise Management and Business Planning and Simulation (SEM-BPS). We will evaluate just how SAP SEM-BPS meets these requirements at the conclusion of this book.

2.1 Business Foundations for Planning

From an historical point of view, the term *business planning* refers to all future business accounts that are in direct relationship to operating accounting. The accounts include subareas such as planned revenue and budgeted balance sheets.[1] Over time, the concept of planning has changed and expanded beyond its previously rather narrow definition. Therefore, "enterprise planning today includes the institutionalization and formalization of all planning activities in an enterprise. The focus is on enterprise planning as a whole in coordination with all business subplans that are combined and integrated into the overall enterprise plan."[2]

1 Corefield, 1984, p. 23, also speaks of "financial number-crunching, so that a basis was provided for monitoring and controlling budgets year-on-year."

2 Schwinn, 1998, p. 25.

Structure of this chapter

Section 2.1.1 has more details on business planning and also defines frequently used terms such as *budget* and *forecast*. In Section 1.1.2, you will find extensive information on the structure of planning, including topics such as planning periods (long-, short-, and mid-term), planning levels (dispositive, operative, tactical, and strategic), and planning areas (value- and quantity-oriented plans). Section 2.1.3 deals with the dynamic side of planning, even when it addresses aspects of the organization model that are relevant to planning. This section also provides insight into the following topical areas: the direction of planning (top-down, bottom-up, and mixed), the organization of planning (centralized, decentralized, and so on), and various techniques for planning, such as planning versions, rolling planning, and so on.

In Section 2.1.4, where the business basics of planning are examined, you can delve into the central topic of the book—*planning integration* from various points of view. It could also have been assigned to the subject planning structure, however, because of the significance of planning integration, and because both structure- and flow-oriented aspects are part of the integration, it is addressed in a separate section. Figure 2.1 illustrates the main categories of *planning*, which reflect the structure of the book.

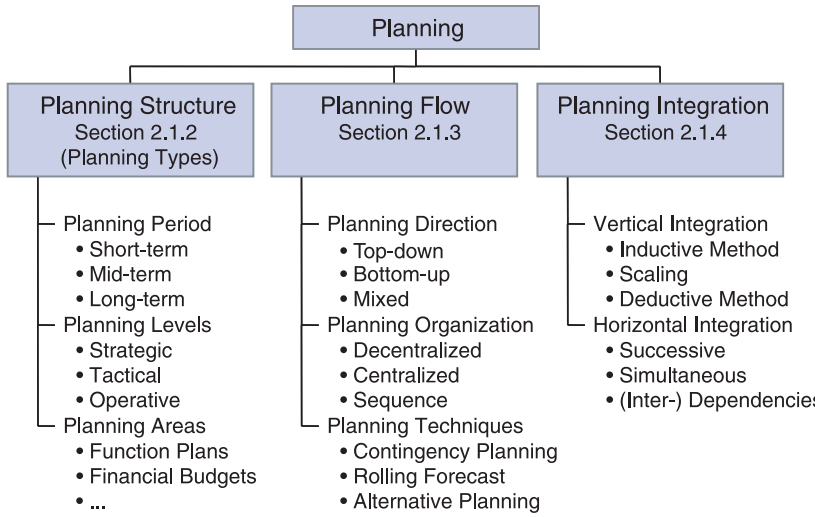

Figure 2.1 Basic Categories of Planning

2.1.1 Definition of the Term Planning

The quotation by Mark Twain, which was certainly not intended for enterprises or employers, describes the very essence of business planning because it deals with our theoretical preparation for future decisions. Planning should *design the future* of an enterprise with the aim of controlling the development of the enterprise toward its goals. By appending "organization" to the term, notes Gutenberg, we understand "planning" as the very design of an organization with the projection of business events in the future.[3]

Definition: planning system

Planning presupposes holistic thinking and action that integrates interdependent planning areas. This book will often refer to this aspect of integration. The characteristics of *organization* and *integration* lead to the term *integrated planning system*,[4] which is the foundation of all business planning. It serves to organize and create coordination among diverse planning activities so that various subplans can be combined into an overall plan, while still considering the diverse interdependencies involved. Kretschmer describes in great detail the requirements that a planning system must fulfill, regardless of which industry an enterprise belongs to. He notes the following criteria:

- The planning system must be goal-oriented.
- The planning system must be unambiguously future-oriented.
- Dispositive activities must be coordinated temporally and factually.
- Guidelines for a generally valid and formal process to create individual plans and planning steps must be defined, at least at the conceptual level.
- The dependencies of the subplans must be identified and considered in the holistic use of planning.
- Information on alternate plans must be available.

According to Franke, the literature mentioned these kinds of planning systems as early as the 1970s; however, until the publication of his book in the mid-eighties, they had not yet been implemented in enterprises.

Planning as a management instrument

The literature also generally mentions an additional aspect, that of *planning as a management instrument*, which maintains that planning is part of the management process. It is treated as the first level of ascertainment, after the formulation of enterprise policy.[5] In this context, planning can

3 Gutenberg cited by Ehrmann, 1999, p. 61.
4 Franke, 1985, pp. 11f. and Kretschmer, 1979, p. 48.
5 Unger, 1994, p. 163.

be only partially delegated (see Section 2.1.2). In addition, planning, itself, is seen as a central instrument of enterprise management. It includes enterprise activity in the broadest sense[6] to reveal the potential goals of the enterprise, make conflicting goals transparent, and use the available internal resources optimally to realize the goals.[7] In this context, changes in the market and in the competition are to be anticipated, identified, and considered in planning.

The notion of a systematic design of future action is closely linked to the idea of *alternate actions*. The alternate actions that can be realized in the future should be worked out first. Then, they are run through and their effects are evaluated. Only then are the optimal alternatives selected according to the goals set by management and ultimately defined as a reserved decision.

Preparation and determination of decisions

The planning criteria mentioned so far can be summarized in two principal, consecutive categories—planning can also be defined as a two-level process—*preparation for decisions* (a preview) and *determination of decisions* (making management decisions).[8] Preparation for decisions helps to determine future events: "information relevant to decisions is made available—information that can be used in working out alternate actions that can be realized in the future."[9] Based on the *preparation for decisions*, enterprise management can then work in the context of *determination of decisions* to determine future action, namely, the selection of the optimal alternate action. The actual operative realization of planning occurs in the context of budgeting.

Additional basic aspects of planning

The following points highlight some important aspects of planning to complement the criteria and definitions mentioned so far:[10]

1. **Dynamic**
   Planning is not static and therefore does not produce any ultimate solutions.
2. **Effective planning**
   Effective planning is characterized by objectivity, competence, creativity, and an orientation toward problems and solutions.

6 Fischer, 1996, p. 4.
7 Kretschmer, 1979, p. 15.
8 Frank, 1985, p. 3 and Schug, 1980, pp. 1f.
9 Schug, 1980, pp. 1f.
10 See Fischer, 1996, p. 4 for the first point; Ehrmann, 1999, pp. 19 and 61 for the second point, and Kretschmer, 1979, p. 135 for points 3 through 6 and p. 13 for point 9. Schwinn, 1998, pp. 27f. addresses points 7 and 8 in more detail.

3. **Completeness**
   Successful planning must be complete—it must capture all events and interdependencies in the enterprise.
4. **Interdependency of subplans**
   Optimally, the mutual dependence of the subplans should be considered part of planning (see the section on simultaneous planning and total planning).
5. **Equalization law of planning**
   In the short term, the overall plan must be adjusted to fix the specific bottleneck. In the long term, the tendency must be to eradicate the bottleneck.
6. **Principle of the relevant costs**
   When choosing plan alternatives, the cost aspect must be considered.
7. **Creativity function**
   The creativity of many involved employees who question traditional procedures can increase the efficiency of activities in an enterprise.
8. **Motivation function**
   The involvement of all employees in the planning process and their identification with the philosophy of the enterprise can elicit strong motivational effects.
9. **Security and control**
   Planning pursues the long-term security and goal-oriented management of the enterprise.

Integrated business planning

The attentive reader might have noticed that the term *integrated business planning* has not yet been explicitly defined. This intentional omission can be explained: The integration (of subplans, various planning periods, and various planning levels) is part of business planning. This definition of business planning reduces the adjective *integrated* to a verbal husk, but one that is nevertheless meaningful because it highlights an important aspect of enterprise planning.

Financial business planning

As noted, two significant subareas must be distinguished in business planning—*quantity plans* and *value plans*. For the aforementioned reasons, value plans are more closely examined in *financial business planning*; therefore, it is worthwhile to define this term in greater detail.

Financial business planning includes the planning of all payment procedures inherent in income and expenses: capital procurement (external financing), capital use (investment), capital disposal (disinvestment), and amortization. All financial transactions (even if not simultaneous) corre-

spond to payment movements, when the transactions result from goods movements. (Transactions that don't result from goods movements are purely financial transactions.) Financial business planning also includes the planning of expenses and income: profitability planning or profit and loss planning that are closely linked to the planning of goods movements (see Section 2.1.4). The goal of the planning of payment procedures is to maintain liquidity; the goal of profitability planning is to maximize profit or cost-effectiveness. The definition provided by Schug summarizes all the preceding comments regarding financial business planning: "thus includes the entire complex of activities involved in the creation and optimal design of payment processes, including the underlying goods movements."[11]

Here we must consider the terms *budget* and *forecast*. Although they appear often in the relevant literature, they are not always clearly distinguished.

Definition: budget

The term *budget* originated in the context of public administration. It referred to the comparison of revenues and expenditures. In business administration, *budget* has a broader meaning. Its most extreme interpretation even equates it with planning.[12]

The definition of *business planning* already indicated that preparation and determination of decisions results with the definition of the goal and the action plans. Budgeting makes real the implementation of the plans by supplementing quantity statements with values. This difference clearly distinguishes the *budget* from the *planning*. Corefield expresses it clearly: "Once it is agreed that the plan will be consistent with corporate objectives, the first year of the plan can be turned into a budget."[13] Without anticipating the details at the planning levels, the preceding comments clarify that realization of the operative plans for individual areas of the enterprise occurs in budgets. "Budgeting means determining what funds (financial resources) should be made available for a specific period, based upon agreements between organizational units (specific places or projects in the enterprise)."[14] The definition by Streitferd is very detailed: "A budget is a set of funds made available to an organizational unit for a specific period to fulfill the tasks in its area as part of its own responsibility

11 Schug, 1980, p. 3.
12 See also Unger, 1994, p. 167.
13 Corefield, 1984, pp. 23f.
14 Unger, 1994, p. 167.

and based on a binding agreement."[15] The budget is therefore *adopted planning*. As is also true of planning, budgeting performs essential functions. The functions and additional criteria can be described as follows:[16]

Functions of budgeting

- **Target function**
  The budget creates the framework by specifying (passing on) the significant plan parameters.
- **Integrating function**
  Budgeting ponders the success that can be achieved in the future and determines the funds needed to realize that success.
- **Approval and allocation function**
  The budget must decide how to allocate the use of limited resources.
- **Communication and coordinating function**
  Budgeting promotes communication and agreement across different functions (areas).
- **Control function**
  Budgeting sets performance benchmarks; reaching the benchmarks can be measured by comparing them to the actual values of completed periods.
- **Motivational function**
  The decentralized fulfillment of budgeting gives those responsible the freedom to make decisions.
- **Integration function**
  Budgeting serves as an instrument to integrate subplans.
- **Overall budget**
  The overall budget includes the total result of all individual budgets (the budgets of each functional area) and therefore, can permit statements about the profit, the financial status, and the liquidity of the enterprise.

Definition: forecast

If we assume that the *forecast* describes something that will occur in the future if certain preconditions are met, and that planning deals with determining which preconditions appear most attractive to the enterprise, it becomes apparent that the forecast is an indispensable part of planning. It must be seen as a part of planning and interpreted as a technique (instrument) of planning. Unlike budgeting, the *forecast* is part of the (extended) term *planning* and is therefore a component of *preparation for decisions*. Forecasts can be distinguished among the following types.

15 Streitferd, 1988, p. 37; cited by Unger, 1994, p. 167.
16 See Oehler, 2002, p. 152.

Short-term forecasts are valid for up to one year. *Mid-term forecasts* (business-cycle forecasts) are based on the most exact evaluation possible of the future business cycle over a period of one to five years. *Long-term forecasts* (growth forecasts) reflect a prediction of a developing trend. In addition, forecasts can be divided into the following categories, depending on the methodology used to produce them: *explorative*, *normative*, and *intuitive*. A fourth category, *integrated*, is the combination of all three aforementioned categories. Table 2.1 displays an overview of the common methodologies according to the stated differentiations.

Forecast Methodologies	Description	Methodologies (excerpt)
Explorative	Explorative methodologies are development-oriented methodologies that analyze the development of past and current data to extrapolate a trend analysis from it. They are hypothetical in nature; however, they do possess certain characteristics.	Extrapolation of time series Contextual mapping Substitution analysis Simulation of models Input-output analysis Cross-section analysis Historical analogy Scenario Iteration through synopsis
Normative	Normative methodologies are goal-oriented methodologies based on uniquely defined needs, purposes, and goals. They help to determine the optimum in a given parameter system.	Decision matrices Operations research techniques Network techniques System analysis Simple decision theory Decision trees Genetic algorithms (generate anomalous optimums)
Intuitive	Intuitive methodologies are characterized by an unstructured and unmethodical procedure. They are based on the principle of creative thinking.	Brainstorming Brainwriting Delphic methods Synectic

Table 2.1 Forecast Methodologies[17]

17 In the style of Kalscheuer, 1973, from Kretschmer, 1979, p. 141.

Forecast Methodologies	Description	Methodologies (excerpt)
Integrated	Integrated methodologies can be defined from any combination of the other methodologies, especially based on the principle of feedback. It intuitively checks trends determined by the explorative methodology, for example.	Combination model Integrated information system

Table 2.1 Forecast Methodologies (cont.)

In this book, forecasts are examined in more depth in the context of dynamic simulation (as part of the *explorative* forecast methodologies) because they are elements of SAP SEM-BPS functions in the *Powersim* simulation tool (see Section 1.2 and Chapter 4, Section 4.4). We discussed forecasting briefly here in order to clarify how it is used in the context of planning.

2.1.2 Planning Structure

This section deals with the categorization of various terms associated with planning that often appear in the literature. They provide a framework for planning in which the planning structure can orient itself.

Areas of the planning structure

The *planning structure*, also known as *plan types,*[18] includes the following categories:

- **Planning period or planning horizon**
  This category includes the temporal aspect of planning and is traditionally divided into short-, mid-, and long-term planning.
- **Planning level or planning purpose**
  This category is the factual aspect of planning, traditionally divided into operative, tactical, and strategic planning. The various planning levels have a hierarchical relationship to each other.
- **Planning area**
  This category divides planning in light of the various areas of the enterprise and follows the functional view of the organization as much as possible. Quantity plans (goods plans) are differentiated from value plans. Typical planning subareas include: procurement, warehouse, production, sales, human resources, finances, costs, revenues, and bal-

18 Ehrmann, 1999, pp. 21ff.

ance sheet. Depending on the level of detail, additional areas can be identified.

- **Data situation**
  This category distinguishes *planning with security* from *planning with insecurity*. In the latter category, explorative forecast methodologies, in particular, can help to reduce the insecurity factor. The data situation is strongly correlated first with the planning period, and then with the planning level (this will become evident).
- **Content**
  This category includes basic planning, goal planning, strategy planning, and measure planning.

In addition to these categories, the literature includes additional criteria; for example, *Mag* divides enterprise planning according to functions (correspond to planning areas), factors, terms (correspond to the planning period), and target figures.

It's easy to define additional categories that can be combined at will. Here it's best to select a representative and pragmatic approach. We will focus next on the three typical categories—planning period, planning level, and planning area. Close relationships exist among these individual categories, especially between the planning period and the planning level.

Readers familiar with this subject might well miss the *integration* category. However, we've already noted that a separate section (Section 2.1.4) is devoted to integration because it's easier to provide an overview of the significance of integration, and the interface for the areas of planning structure and planning flow, in a section devoted entirely to this category.

2.1.2.1 Period

According to the term or planning period, planning can be divided into the following categories:

Distinguishing planning by period

- **Very short-term planning**
  A period of less than three months, focusing on daily planning
- **Short-term planning**
  A period of one year with periodic intervals during the year (usually by month or quarter)

- **Mid-term planning**
  A period of one to five years; planning steps usually occur in annual increments
- **Long-term planning**
  A period of more than five years; no clear upper limit exists
  (Periods of 10 to 15 years are typical)

The relevant literature addresses all categories, with the exception of very short-term planning. Here, we focus on the same three significant categories.

No unanimity about the length of each category exists. You can look at the various categories and future periods in a timeline, but this would be impractical.[19] Ultimately, the period in which a decision can or must have an affect and the period for which the manager must plan is influenced by the planning period. Kretschmer even gives determination values that significantly influence the length of the planning period.[20] He speaks of the planning horizon (the predictability of future events), the scope of the goals (the temporal perspective of the goals), the effectivity horizon (the scope of the effects of the planned actions), and the reaction time (the required length of time needed to implement the desired condition or adaptation to meet changed conditions). Influenced by these factors, the length of planning is measured differently depending on the planning contents and the scope of the problems involved. Ultimately, only a differentiated concept can be made; for example, a boutique will need a different period than a power plant.

Short-term planning

Short-term planning with a planning horizon of one year is subdivided as needed into quarters or even periods of days (planning the liquidity status of banks, for example). As the nature of this term implies, short-term planning is *detailed planning*. The detail is reflected in a high degree of what is actually implemented: Completeness, differentiability, and flexibility are especially strong. The probability of realizing short-term planning goals is estimated as high. Short-term planning enables the realization of *mid-term plans* (our next planning category) in disaggregated, action-oriented, and measured plans.

Mid-term planning

Because it's subordinate to long-term planning in the hierarchy, *mid-term planning* is characterized by splitting up the long-term plan into subplans with a higher degree of detail. In this regard, the hierarchical relation of

19 Michel, 1991, p. 41.
20 Kretschmer, 1979, p. 60, following Wild, 1974.

mid-term planning to long-term planning is similar to the relationship between short-term planning and mid-term planning. Consequently, completeness, differentiability, and flexibility are less important here than they are in short-term planning. The planning horizon can last anywhere from two to five years, and planning is usually done on a yearly basis.

Long-term planning

For *long-term planning*, the planning period can last 15 years or more and can be viewed as a highly aggregated, global form of planning whose highest priority is the long-term survival of the enterprise. This planning period category focuses on innovations, technologies, diversifications, and other long-term topics. Bottlenecks should never be the reason for setting long-term goals (as defined by Gutenberg). Instead, one should take advantage of the freedom offered by the long planning horizon and use the time wisely and fully. According to Michel, a positive correlation exists between the size of the enterprise and the use of long-term planning.[21] He also finds that there is no correlation between the planning scope (in the context of long-term planning) and one's inability to see environmental changes.

2.1.2.2 Levels

In a stricter sense, the planning period feature defined previously considers only the planning period, which represents just one dimension of *planning*. Therefore, the planning period alone cannot serve as a structural criterion for planning. Another dimension must be added. If the planning term is differentiated according to factual aspects, another constitutive feature arises: the level of detail in planning. In this dimension, we can distinguish among the following planning levels, all of which have a hierarchical relationship to each other:

Overview of planning levels

- Strategic planning: doing the right thing
- Tactical planning
- Operative planning: doing things the right way
- Dispositive planning: making things right
  (this means corrections or adjustments)

Dispositive planning

Although the literature rarely mentions *dispositive planning*[22] (the initiation of corrective actions in the event of deviations and getting a perspective on the preview in periods of less than one year) and we don't discuss this topic at length in this book, the other terms have become quite com-

21 Michel, 1991, p. 41.
22 Grotheer, 1995, p. 138.

mon. However, note that the definitions of *operative* and *tactical planning levels* are not uniform and that the terms can be used interchangeably. Regarding the controversy over the distinctness of these two terms, Schwinn notes that in older sources for business planning, there is usually a preference to list three planning levels: tactical, operative, and strategic.[23] More recent sources speak of only two levels: operative and strategic. Regarding the planning-period dimension, the literature refers to short-term and mid-term operative planning and long-term strategic planning.

This development is understandable, given that, in the 1970s and 1980s, business planning as it is presented here was a topic for theoreticians only. Today, planning has become quite commonplace, as can be seen in the various software products that exist in this area. As a rule, software is sold only when a potential market exists. Consequently, the practitioners have set the tone: They avoid a strong differentiation and the term *tactical planning*, which has no single definition in any case.

Strategic Level

Looking at the planning levels in the order in which they are to be performed, it's best to start with *strategic planning*, the highest level in the hierarchy. As long-term planning, strategic planning essentially has the following task: "to recognize options for profit, to create new potentials, and to maintain those that exist" and to ensure the survival of the enterprise by securing its ability to earn revenue over the long term.[24] To ensure the survival of the enterprise, it is essential that the leadership (upper management) of the enterprise performs strategic planning—at least in theory. According to its character, long-term planning looks at the long term: a period of five to 10 years is realistic. In an extreme case, one also speaks of *planning without a time horizon*.[25] As far as the term is concerned, the parallelism to long-term planning as a characteristic of the planning period becomes clear here. Because of the broad planning horizon and the related rather limited basis of information, strategic planning enables only a rough view. Detailed planning or planning that focuses only on bottlenecks would be counterproductive here. The following typical characteristics also apply. Planning activities are first focused on the entire enterprise, including its subareas (business areas or business fields). The results of planning are primarily qualitative statements that can only

23 Schwinn, 1998, p. 29.
24 Ehrmann, 1999, p. 113.
25 Franke, 1985, p. 5.

be verbalized and not given as a number. No figures (quantitative) are planned.

Strategic decisions

At the start, we emphasized the long-term character of the strategic level. Here, however, we must note that it's entirely possible for strategic planning to have a short- or long-term character. Michel speaks of planning periods greater than one year.[26] However, this doesn't mean that strategic planning should be considered and implemented in the short term. Doing so would normally occur in the context of integrated planning. Instead, it's a matter of *strategic decisions* that are determined and implemented in short order. Such decisions might include make-or-buy decisions that have short-term results but also have a strategic significance because of their importance. These short-term decisions are characterized by a modicum of planning and therefore are of little interest in the context of strategic planning.

Main areas of strategic planning

Main Areas

According to Koch, there are three main areas to distinguish in strategic business planning:[27]

- Strategic perspective planning
- Preplanning individual strategic projects
- Integrated strategic planning

Strategic perspective planning

Strategic perspective planning occurs from the longest possible view. Its task is to create non-integrated and very global plans in the context of the production and sales programs. It uses primarily intuitive forecast methodologies to determine what product groups will be in demand among which sales markets in the distant future. Only long-term planners with a visionary feel for the market and a high level of creativity can master this task. Typical characteristics include minimal formalism (i.e., only a small amount of strictly defined procedures to follow) and a very global direction in planning. Strategic perspective planning does not pay attention to the financial details or expenses incurred as a result of this planning.

Individual strategic projects

The preplanning of *individual strategic projects*, however, deals with select, actual projects of strategic importance for the enterprise. Enterprise areas submit suggestions to upper management, which then examines the suggestions in terms of minimum profitability (i.e., the profitablity that these suggestions have to at least achieve) and security. The

26 Michel, 1991, p. 42.
27 Koch, 1977, pp. 4f. and 71ff.

nature of this planning is not linked to any time period. Depending on the size of the enterprise, suggestions for these kinds of projects are preselected from various levels of the hierarchy.

Integrated strategic planning

Unlike the preceding area of strategic enterprise planning, strictly formalized procedures and rules for the time planning characterize *integrated strategic planning*. "The practical importance of integrated strategic planning arises because it is the only form of action planning that meets the requirements of the long term and the integrity of planning comprehensively."[28] In his definition of strategic planning, Koch notes that it's not only a matter of target planning, but also action planning and execution planning, as is the case with operative and tactical planning. He states that not only does action planning define goals and strategies; it also sets global actions while coordinating the activities.

Therefore, integrated strategic planning applies to all areas of the enterprise and considers coordination at various levels. Unlike strategic perspective planning, integrated strategic planning also verifies whether the planned actions are financially feasible to implement, and thoroughly sound and secure for the enterprise as a whole and its personnel.

Because of the non-integrated nature of strategic perspective planning and preplanning of individual strategic projects, they are not addressed here. Given the complexity of integrated strategic planning, the following schematic overview would serve the reader well.

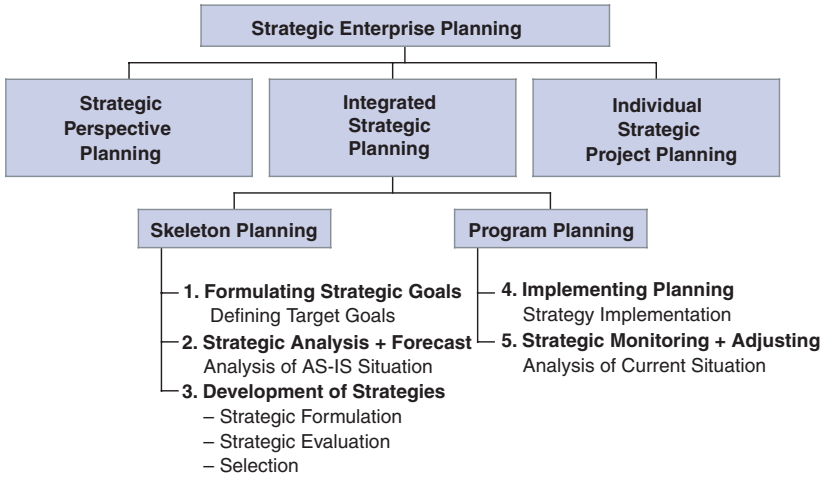

Figure 2.2 Overview of Strategic Enterprise Planning

28 Koch, 1977, p. 50.

Integrated Strategic Business Planning

Integrated strategic business planning consists of two consecutive primary processes: strategic skeleton planning and strategic program planning. Each can be subdivided into several main tasks.

Integrated planning: strategic skeleton planning

As a preliminary level of strategic program planning, *strategic skeleton planning* provides the framework for creating the strategic program. Its goal is to determine rough targets, key figures, and metrics for the activities in individual business areas. Examples include the rate of return on growth, profitability, and margin. Strategic skeleton planning consists of three primary activities: the formulation and determination of strategic goals (as target specifications), the strategic analysis of the as-is situation (as confirmation of that situation), and a forecast and development of strategies via strategic formulation, evaluation, and selection.

Integrated planning: strategic program planning

Strategic program planning builds on strategic skeleton planning. It deals with planning the strategic program. It rechecks the strategies defined in strategic skeleton planning for their ability to be implemented. If the strategies are accepted, it implements them in appropriate plans. If the term is expanded a bit, it also includes strategic control. Strategic program planning also includes two additional primary tasks: strategic implementation and strategic adjustment and control.

Integrated planning: planning steps

The five primary tasks (or detailed phases) of integrated strategic planning are performed consecutively. The following steps provide more details.

Step 1: formulating and defining goals

The first phase *formulates* and later *defines strategic goals*. As the driving force in this phase, upper management derives the formulated goals either from overall enterprise goals (preserving assets, capital, and so on) and the mission statement. It might also derive the goals from specific market or product-oriented goals, in which case the latter must agree with the former. It's entirely possible that the goals defined in this phase must be revised based on the strategy analysis of the second phase. However, the sequence of setting goals (as targets) followed by determining the strategy to achieve these goals should be maintained if the process is to remain honest.[29] Intuitive forecasting characterizes the first phase.

Step 2: analyzing the current situation

Strategic analysis of the current situation characterizes the second phase. Starting from the recognition that an enterprise is not an independently operating organization when considered globally, this phase uses a great deal of analysis aids to examine how the enterprise positions itself in the

29 See Mag, 1995, p. 158 and Schwinn, 1998, p. 30.

current and future environments, both internally and externally. The environment of the enterprise encompasses many aspects: economic, sociopolitical, and ecological. Starting from the current environment and future developments, this phase determines and staffs promising business areas in the long run and in light of the goals defined in the first phase. Implementation of the strategies is a reflection of how the strategies are developed and defined; see steps 3 and 4 below.

The analysis essentially focuses on the potential for success that lies inside and outside of the enterprise—namely, factors, sources, and activities that can produce current or future success. This potential for success arises from market activity, the quality of the enterprise's management and personnel, the intensity of investment, research and development efforts, and many other factors.[30] Recognition of the potential that already exists is integral to tapping into this wealth and creating new opportunities. They must also be quantified. Various analysis instruments have been developed to support the process of this second phase. Typical tools include strength–weakness profiles, chances–risks profiles, and other common analyses, such as gap, industry, and market analyses. In this context, the portfolio technique has proven useful; especially the portfolio matrix of the Boston Consulting Group (BCG matrix) has become well known. The BCG matrix represents strengths and weaknesses by relative market share and opportunities and risks by the market growth dimension. The result is four fields, traditionally known as stars, bad dogs, cash cows, and question marks. We do not delve further into these various techniques.[31]

Step 3: developing strategies

After analyzing potential strategies in phase two, the next task involves the *definition of the strategies* and the *evaluation of alternatives*. This phase quickly determines if the Greek sense of *strategy* (planned action) can be rewritten in the context of business to mean the use of the actual and potential strengths of an enterprise to accommodate environmental changes and still meet its goals.

Final determination and evolution of strategies can occur only in the context of the goals set in the first phase. If needed, the goals can be reworked if they conflict with the various strategies. The strategies must also be compatible unto themselves; otherwise, they cannot be implemented in the next phase. Unidirectional and multidimensional simulations can be used to support the selection of strategies.

30 Ehrmann, 1999, p. 114.
31 For more detailed information, see Mag, 1995, pp. 160ff.

Step 4: implementing planning

The fourth and penultimate phase, *strategy implementation*, involves two tasks. First, it implements the highly aggregated values from the first phase into a long-term operative or tactical plan. Second, it must create conditions for its acceptance among the planning subjects so that the strategies can, in fact, be converted into plans. In this phase, we move to a lower level in the hierarchy.

In addition, stretched planning must be distinguished from compact planning in the context of phase 3 regarding the time of making a decision. *Stretched planning* is also known as *drawer planning* and begins with the knowledge that various optimal strategies coexist, depending on certain hypothetical environmental conditions, so that a plan can be pulled out of a drawer on rather short notice when the hypothetical conditions become real. *Compact planning*, however, pursues only one optimal alternative, which is implemented in every case. Compact planning makes sense if the risk of an erroneous decision can be minimized.[32]

Step 5: monitoring and adjusting

The last phase of integrated business planning is *strategic monitoring*. The matter is less one of monitoring adherence to individual results, which come from plan–actual comparisons at the level of budget control. Other plan levels are responsible for this task. Rather, it should determine whether the goals defined by upper management and the strategies derived from the goals are being adhered to globally. In addition, monitoring planning can also be understood as *revolving planning*, which offers some additional security to strategic planning by serving as a periodic and permanent reworking of the currently planned values. The strategic plan is monitored annually. First, short-term actual and plan values are compared to long-term planning. Second, a year's data is transferred from a global view into a detailed view and can therefore be checked in more detail.

Mid-Term Operative Level (Tactical Level)

In actual practice, *mid-term operative planning* has established itself as a second level in the fact-oriented planning hierarchy; it is also known as *tactical planning*. The literature only rarely addresses it in detail, so that readers almost get the impression that mid-term operative planning is a residual product of the strategic plan minus the short-term operative plan. Its character would then be that of a stopgap or a collapsible zone. In fact, within the literature only Koch provides a detailed description,[33]

32 Koch, 1977, pp. 73f.
33 Koch, 1977, pp. 99ff.

which this book will follow for the most part. As noted in the fourth phase of integrated strategic business planning, mid-term operative planning deals with the translation of the defined strategies into detailed operative programs. Similar to a top-down procedure, the specifications of strategic planning are to be transformed into specifications or individual actions of the subareas in the enterprise. These affected areas include the operative business areas (such as divisions and subsidiaries) and operative central areas (such as finances and personnel). Planning does not yet affect the individual subareas of short-term operative planning (such as procurement plan and warehouse plan).

Two types of mid-term operative planning

Operative planning of the business areas also distinguishes two types of mid-term planning:

- **Special, product-related operations (product operations)**
  These operations target the development of new products, sales operations of various product types, and production operations in the sense of a capacity check and investment decision.
- **Infrastructural actions**
  These actions affect all product lines in the same manner. They serve ongoing operation of the business area, such as an expansion or a rationalization of administrative buildings and employees or the installation of larger computer facilities.

In many cases, the planning of the central areas (central invoicing, IT, main administration, financial department, and so on) can be derived from the planning of the operative business areas. Each business area maps an exact plan of the services that it receives from the central area. Planning of main administration and similar central functions is excluded here and should be planned originally in the context of strategic specifications.

Since the operative business areas receive relevant information from the central areas, the resulting mid-term operative planning can be regarded as harmonized concerning the relationship of the planning values between these areas. However, a closer examination shows that the integration is only partial. For example, there's no coordination of the business areas regarding common maximization of profit or enterprise security. These concerns are the purview of integrated strategic overall planning.

Planning period of mid-term operative planning

In general, the *planning period* usually lasts one to five years, where the planning is divided into annual increments. Good reasons exist for a flexible timeframe. According to the nature of mid-term planning, the desired level of detail requires a high degree of exactitude of the forecast. As of a certain planning horizon, it becomes increasingly more difficult to predict revenues and expenditures. As a rule, five years is the maximum time limit required to forecast profit and expense.

The minimum time limit for the mid-term operative planning should not fall below the average length of the capital allocations of a strategy. The mid-term plan should cover as a minimum the so-called *premature expense period* and should therefore minimize the risk of a strategic decision having too great a financial impact. In accounting, it clearly states that when revenue exceeds the costs of the investment, then the period is over. At this point, one can already refer to ongoing costs instead of investment costs.[34]

Revolving planning

As we already noted in strategic planning, *revolving planning* can also be used for operative planning to increase the quality of planning. Unlike strategic planning, in revolving planning, the planning occurs five times each year and is frozen only in the last period. In this way, the plan is always based on current data.

Centralized and decentralized planning

Now, let's look at the organizational aspects of operative planning and whether to use centralized or decentralized planning. *Centralized planning* means that upper management would produce an overall operative plan based on an optimal and simultaneous production and financial program. *Decentralized planning* means that the program would be run through a cycle starting with the temporary optimization of the partial production program of the business area and ending with a follow-up correction of the production program, if the previously defined financial needs weren't covered. Given that strategic planning is performed centrally, operative planning can occur in a decentralized manner without undermining the specifications of upper management.

Short-Term Operative Level

Short-term operative planning occupies the lowest point in the hierarchy of planning levels. According to the hierarchical planning logic, the details of the planning contents increase so that the need for information at the operative level is significantly higher than it is at the strategic level.

34 For more detailed information, see Koch, 1977, p. 102.

Because of the short planning period (usually one year), short-term operative plans are less tenuous, and more fixed and structured. This situation arises because the specifications are set centrally, starting with strategic planning and moving to mid-term planning. In this context, it must be emphasized that the character of short-term planning is mostly decentralized and it is also executed in a decentralized manner. Nonetheless, it is strongly integrated because of the specifications. The step from mid-term to short-term operative planning also means movement from business-oriented planning to departmental planning. Accordingly, the planning tasks are delegated to local management.

The operative budget is also attached to the shortest-term plan, which implements the operative (action) plan. At the same time, the budgets are used to monitor the achievement of goals. In this manner and according to upper management, the long-term planned specifications are adhered to at the lowest level. Usually, the operative level and the implementation level (budget responsibility) are one in the same department, and the same people work for both of these levels, and in terms of personnel. For more information on budgeting, see Section 1.1.1.

Revolving planning and follow-up planning

Two different procedures can be distinguished by regulating the planning in terms of time: revolving planning and follow-up planning. *Revolving planning* occurs in monthly intervals and is adjusted continuously. *Follow-up planning*, however, always looks at only three months in detail and at the rest of the fiscal year in quarters. As the planning year continues, the quarterly plans are supplemented by the numbers of the monthly plan. Neither of these procedures is preferable, albeit follow-up planning doesn't have to plan monthly numbers for the entire year. Typically, revolving planning is the more commonly used procedure.

Short-term operative planning: criticism

Now, let's consider the position of Krink, who refers to the typical inside-the-box approach to *short-term planning*.[35] By this, he means that planning is characterized by increases or decreases from one year to the next, and that operative goals reflect actions that have already been tested and tried versus new untested methods. He also sees a danger in optimal decisions made in the short term because they don't take into account long-term requirements. He writes that it is important for the goals set for the short-term to be part of a long-term planning concept so that the strategic goals are not undermined. Although this criticism might be considered superfluous when compared with the previously described plan-

35 Krink, 1984, p. 15.

ning levels, we must expressly emphasize the significance of the interplay between strategic and operative planning.

2.1.2.3 Closing Remarks on Periods and Levels

Readers might have already noticed that in some cases, the various hierarchical planning levels have been connected to the various planning periods. The connection is especially clear with operative planning, which is subdivided into short-term and long-term planning. In the interim, integrated business planning is the norm and it sets the tone for planning definitions. For practical reasons, congruence has developed between the three levels of the planning periods and the planning levels. Accordingly, strategic planning is always long-term and operative planning is either mid-term (formerly called *tactical planning*) or short-term. Consequently, the planning period should not be viewed as a dimension or characteristic in the strict sense. Instead, it should be seen as a descriptive characteristic or as an attribute of the characteristic planning level.

Integration of planning level and planning period

Figure 2.3 provides an overview of the interfaces between the planning periods and the planning levels, as well as of the terms used in this book. For the sake of completeness, some authors are noted who speak of tactical planning, whereby both viewpoints mentioned already are distinguished.

Planning Level \ Planning Horizon	Very short-term	Short-term	Mid-term	Long-term
Dispositive	Note1			
Operative				
Tactical		Note 2	Note 3	
Strategic		Note 4	Note 4	

Legend:

- Black: Definitions used in the book.
- White: Not known in relevant literature.
- Note 1: The relation exists, was defined, but will not be used.
- Note 2: Tactical planning is short-term, operative planning thus mid-term; representatives of this theory are Koch, Bransemann, Ehrmann etc. (see Ehrmann, 2002, p. 22).
- Note 3: Tactical planning is mid-term, operative planning thus short-term; representatives of this theory are Hamer, Olfert etc. (see Ehrmann, 2002, p. 22).
- Note 4: Short- and mid-term strategic planning in terms of strategic decisions that have to be made and implemented rapidly and can thus not be planned as well ahead of time.

Figure 2.3 Linking the Planning Level to the Planning Period

Procedures of strategic planning

As shown in the previous section, strategic planning frequently involves verbal statements—primarily qualitative statements and trends. It involves the analysis of *product–market combinations* or *strategic business areas.* The primary concern of strategic planning is making decisions on relationships among *strategic business areas (SBAs)* to secure the long-term success of the enterprise. In addition, goals for the SBA (and strategies used to attain these goals) must be formulated, and the means for their realization (strategic actions) must be worked out. The special difficulties of strategic decisions become recognizable when you try to imagine the specific characteristics of the planning type as a planning period that extends far into the future, a high level of dynamism in the environment involving complex decision-making, and so on.

This book does not address what these partially qualitative procedures are called or how they function, even if they can be quantified. Our concern is that the quantified, strategically oriented key figures can be part of an overall model of integrated planning supported by the tools and instruments of strategic enterprise management.

Dynamic simulation

Dynamic simulation is one exception that, in a certain sense, creates a connection between qualitative assumptions that can then be quantified rather easily and the consequences of which can be displayed rather quickly, as far as a qualitative statement can be mapped in a model. At the same time, dynamic simulation also considers the components of the dynamism: In other words, it looks at the temporal effect. This approach creates an interesting connection to the operative level: A number projected for 10 years in the future is projected into the present according to the context of the dynamic model.

2.1.2.4 Areas

One of the essential classification criteria of the structure of planning is the differentiation of planning in terms of the areas of the enterprise. Regardless of which method an enterprise chooses within the category "planning flow," planning among the different areas will always take place. Area planning is inherently a part of operative planning; however, it must also include or reflect strategic planning.

Quantity and value-oriented planning areas

All area plans can be divided into two principal categories: (1) quantity plans or functions and goods plans and (2) value plans. Note that some plans cannot be assigned automatically to either category, for example, the sales revenue plan, which examines valued quantities, and the per-

sonnel plan, which examines headcount. However, since the categories can be "quantity-oriented" or "value-oriented," they can still be assigned.

Quantity-oriented plans include:

- Sales, sales revenue, and marketing plans
- Production plan and capacity plan
- Procurement plan and inventory plan
- Personnel plan

Value-oriented plans include:

- Investment plan and maintenance plan
- Profitability plan (costs and revenues plan)
- Planned profit and loss statement
- Budgeted balance sheet
- Financial budget in the strict sense (i.e., the financial budget on its own). It differs from the financial budget in the wider sense, which includes the financial budget in the strict sense, the planned profit and loss (P&L) statement, and the budgeted balance sheet.

It's impossible to list and describe all the plans discussed in the relevant literature. This section seeks only to provide readers with a strong foundation in the essential and common subplans so that they can understand the subplans in the overall context.[36]

Sales, sales revenue, and marketing planning

The goal of field planning is to capture the entire product program that can be sold in terms of quantity and value. If it does not look at the entire product program, it does examine individual industries and services. The planned quantities valued at the planned prices of *sales planning* result in *sales revenue planning*, which is part of field planning. In addition to sales and sales revenue planning, *marketing planning* plans advertising in the context of budgeting for advertising and plans general sales strategies.

Whenever a buyer's market exists and the planned sales quantities are to be adapted to the demand, the sales plan becomes the primary plan, the goal of which is to determine the capacity for creating services in the future. Therefore, it has a direct influence on investment and disinvest-

36 The literature uses the terms field planning, sales planning, sales revenue planning, and marketing plan in extremely varied ways. The terms are outlined here according to Frank, 1985, p. 13. See Wöhe, 1990, pp. 620f.; Schröder, 1996, pp. 90f.; and Unger, 1993, pp. 315f.

ment. In terms of integration, this means that the data of the investment plans is derived directly from the data of the sales plan, taking into account the information from the production plan and the capacity plan that is derived from it.

Production plan and capacity plan

Following Gutenberg, the *production plan* is divided into a production program and planning for actual expenses. Based on the planned sales quantities, the planned production quantities are derived in the *production program*. The available warehouse stocks and planned minimum stocks are considered in the process. *Planning for actual expenses*, as staging planning, includes the production material required to implement the planned production quantities. This planning also includes machine capacities, planning of personnel, raw materials, auxiliary materials, and expendable supplies. Bills of material can be used to determine the usage quantities of the planned expendable supplies, and the work plan determines the planned workforce. Production planning must be closely coordinated with the warehouse stocks and the personnel plan. Capacities, including machine capacities, are contained in the *capacity plan*. If the available capacity is sufficient, the question of being able to use the free capacity for external processing arises. However, if the available capacity is insufficient and it cannot be compensated for with temporal (overtime or shifting production to a different period) or local (outsourcing or external production) shifting of the capacity load, the enterprise should consider expanding the capacity, which is the basis of investment planning.

Stock planning and procurement planning

Stock planning should be performed with production planning. First, you must determine what stock is available (inventory). The planned stock results from the production program and the planned minimum stocks. Stock planning includes all stocks of finished and unfinished goods (semi-finished goods and work in progress) as well as the raw materials, auxiliary materials, and expendable supplies. *Procurement planning* should be performed on the basis of the planned stocks. Procurement planning includes the procurement of materials and the planned investments. The goals of procurement planning are to secure the required materials and means of production and to optimize procurement in terms of time, costs, and quality. The procurement and stock plan is a derivative plan that contains information from the production and investment plan. In the case of trading goods, the quantities can be derived directly from the sales plan.

Personnel planning

Personnel planning "includes all the actions and procedures in the enterprise that aim at ensuring the availability of the required personnel capac-

ities, given the individual as the source of dispositive and object-oriented labor, in terms of both quantity and quality, and at the right time."[37] Personnel planning includes the planning of *personnel needs*, which are derived from various subplans (especially the production plan). It also uses *personnel fulfillment planning* to ensure the fulfillment of personnel needs via appropriate actions. Such actions affect internal (job rotation, overtime, and so on) and external (hiring in the market) personnel procurement and personnel redundancy. Personnel needs are also guaranteed by personnel development planning to ensure that personnel can support the required performance. At the very least, the personnel plan should result in information on the planned personnel levels, in consideration of entering and leaving the enterprise, wages and salaries, and additional financial actions, such as training and guaranteed pension payments.

Investment plan and maintenance plan

The *investment plan* can be divided into two areas: asset planning and investment accounting. *Asset planning* should ensure that the capacities required for the planned production volume exist in the enterprise. The following types of investments can be distinguished: replacement investments (reinvestments), expansion investments (net investments), and modernization or rationalization investments.[38] In addition to planning investments in objects (property, tangible assets, and so on), investment planning is also responsible for planning financial investments (such as shares in companies) and intangible investments (research and development investments). *Investment accounting* can be performed with asset planning. It uses financial and mathematical methods to evaluate planned investments to quantify and ultimately simplify decisions on investments. If the various actions are planned, *maintenance planning* ensures that the planned facilities can be used productively. Repairs and maintenance actions listed in the balance sheet as retrofits should be planned here.

Sales and profitability planning

All the planned sales revenues (from products and services), sales deductions, material costs, and all planned cost center budgets flow into *sales and profitability planning.* The profitability plan has a derivative character. Depending on the need for information, planned costs and earnings can be displayed at various levels of the product hierarchy. Where they are displayed depends on the original planning level of the costs and revenues and on the type of planning technique used (a top-down distribution of total costs to the product level and so on). The profitability plan

37 Kretschmer, 1979, p. 96.
38 Rachlin, 2001, pp. 94f.

delivers the planned operating profit that can also be expanded to take into account neutral results on enterprise profits. Note that this expansion occurs only in the planned profit and loss statement.

Period and cost of sales accounting

An essential criterion of setting up the profitability plan is the distinction between total costs and costs of sales. Depending on the design of the plan, planned costs are considered differently. The costs and revenue elements listed at the beginning follow the logic of period accounting, because all costs and revenues that occur in a planning year are planned independently of each other. Although this design establishes a connection between the planned sales quantities and the planned production quantity, the concept of period accounting does not require that it be specified.

If the enterprise wants to set up the profitability plan according to the cost-of-sales procedure, the costs of sales must be planned based on the planned sales quantity and thus the planned sales revenues. That also means that the products to be sold must be determined via a plan calculation. Each planned sales unit therefore results in at least the planned revenue (planned sales quantity times the planned sales price per unit) and the planned sales costs (planned sales quantity times the standard price of the product). To ensure consistency, this planning design no longer transfers all product-related costs, such as direct labor costs, material costs, and production overhead (all cost elements of the production costs) into the profitability plan.

Planned profit and loss statement

The *planned profit and loss statement* might be identical to the profitability plan, depending on its design. Assuming that the profitability plan maps only the operating profit, the planned profit and loss statement is a profitability plan enhanced by a neutral profit. In other words, it does not consider the expenses and revenue that do not occur because of operations, such as revenues from financial transactions or extraordinary losses in the event of fire, and so on.

The following additional details must correct this somewhat simplified presentation. The profitability plan can include costing-based values, such as those for amortizations. These costs should be replaced by accounting write-offs. The same holds true for capital costs that have been calculated, and for all additional, costing-based items that must be replaced by accounting-based values or that cannot be replaced, such as additional costs.

The following equation generally applies to planning:

Operating profit (from the profitability plan)
+ Costing-based items (from the profitability plan)
– Accounting-based items (according to costing-based items)
– Miscellaneous non-operating expenses
+ Miscellaneous non-operating income
= Enterprise profit

In the context of the budgeted balance sheet, the planned profit and loss statement must also consider the following case: the correction of asset balance sheet values. According to law in some countries, the values in the opening balance must correspond to the values of the closing balance in the previous year. If the asset balance sheet values in the plan's opening balance differ from those of the closing balance, the planned profit and loss statement must consider them as neutral expenses or neutral revenue.

Budgeted balance sheet

Unlike the previously noted value-related plans, the *budgeted balance sheet* is inventory planning: It displays the planned starting and closing inventory over time. The design must consider this factor in the integration of the various subplans so that non-cumulative values and cumulative values are not accidentally confused. Budgeted balance sheet planning is derived from the balance sheet items. Transferring the inventory values from the previous year and considering appropriate items in the planned profit and loss statement can calculate the closing inventory for the planning year from the opening inventory. However, original plan data should be captured for many items. Unlike the profitability plan and thus the planned profit and loss statement, the budgeted balance sheet is not easy to plan. Various methodologies can be used to support the process. Some methodologies are discussed below in a practical example.

Financial budget in the strict sense

The *financial budget* can be derived from the information of the planned profit and loss statement and the budgeted balance sheet. In this case, the enterprise should start with the financial budget in the strict sense, because the financial budget or financial budgeting is sometimes the totality of the plans being considered: the planned profit and loss statement, the budgeted balance sheet, and the financial budget in the wider sense. The financial budget includes all the future-related capital transactions. Unlike the plans discussed so far, the financial budget contains only payment-related values. The key statement of the financial budget is the comparison of the financial needs with the sources of funds, which must correspond to the context of planning. According to this principle, financial budgeting involves covering the planned actions with appropriate

funding. To enable such a statement, the gross coverage principle should be used: No offset of revenues and expenses should occur.

Depending on the planning horizon, short- and mid-term financial budgets can be distinguished from long-term financial budgets. While short-term budgets deal with liquidity planning, long-term financial budgets create a planning framework that does not seek to guarantee the short-term ability of the enterprise to meet its payment obligations.[39] From here on, we will consider only long-term financial budgets.

Various characteristics of the financial budget

The structure of a financial budget can take various forms, especially because the terms financial budgets, flow-of-fund analysis, and financial analysis cannot always be distinguished from each other. Accordingly, a financial budget is best mapped as a transaction balance enhanced with capital tie-up and capital transfer. The financial budget thus corresponds to the traditional structure of a transaction balance: It maps the planned changes of the balance-sheet items and distinguishes between the use of funds (increasing asset items and decreasing liabilities) and the source of funds (decreasing asset items and increasing liabilities). Financial funds that come from freeing up and loading capital are used for tying up and withdrawing capital expenses. The cash flow can be derived directly from the financial budget. See Chapter 5 for more details on the structure of the financial budget and on determining the cash flow.

2.1.3 Planning Flow

Areas can be differentiated in regard to the planning flow:

- Planning directions
- Planning organization
- Planning techniques

The planning direction displays the hierarchical relationship in which planning is to occur; the planning organization details practical execution of the planning direction. Ultimately, techniques display methodologies to support the execution of planning.

2.1.3.1 Direction

Consideration of the planning directions answers the question of the beginning of the planning initiative. The following three procedures can

39 Heinen, 1983, p. 864.

be discussed. The last procedure is actually a combination of the previous two options.

Various planning directions

- Top-down planning or retrograde planning
- Bottom-up planning or progressive planning
- Mixed top-down/bottom-up planning system or integrated, combined procedure

The three procedures should be viewed in relation to hierarchies and are therefore typically used with vertical integration. However, in actual practice, many situations plan at the horizontal level, but do so with various levels of granularity. Actual examples include planning at the level of cost centers or cost center groups. Overall, this approach involves simple cost center planning for each cost center range, but at various levels of aggregation. In this case as well, a hierarchical relationship can be displayed so that, logically, either the top-down or bottom-up method can be used. See Section 2.1.4 for detailed information on integration. The following descriptions assume the traditional use of the term: They refer to the vertical integration of planning levels.

Top-down planning

Top-down planning or *retrograde planning* inherits the goals of strategies worked out by upper management and listed in hierarchical levels. Its most extreme variant assumes all goals, strategies, actions, and data as immoveable matter. The procedure is typically centralized. The advantages of this methodology are the high level of integration between all subplans at the lowest level of the hierarchy and less of a need for coordination. The disadvantages include less motivation for planning among employees at the lower levels of the hierarchy.

Bottom-up planning

Bottom-up planning or *progressive planning* is the exact opposite of top-down planning. Starting at the level of execution, short-term plans are determined and then aggregated above in an additional step. Departmental plans are linked to the area plans and then to the overall enterprise plan. The active participation of employees makes their motivation correspondingly high. The disadvantages are the lack of actual goals and the danger that the new plans are created from additions and subtractions from the old plans or even real values. Doing so would lead to an adjusted continuation of the status quo at an enterprise. In addition, the planners might build in safety buffers so that the plan is always achieved. Long-term strategic planning would lose its means, and the meaning of planning, which should design the future through systematic preparation, would be

contradicted. In conclusion, it's important to note the high amount of effort needed for coordination between the several planning subjects.

Mixed top-down/bottom-up planning system

A mixed form has developed in response to the advantages and disadvantages of the previous procedures: the *integrated combination procedure* or *mixed top-down/bottom-up planning system*. The desired sequence is derived from the disadvantages noted above: top-down planning followed by bottom-up aggregation. With this approach, many of the disadvantages already noted fall away without a simultaneous loss of the advantages. One disadvantage that remains, however, is the effort for coordination required by bottom-up planning. And Michel indicates a need for increased time and therefore higher costs.[40] Nonetheless, experience shows that most enterprises plan according to the mixed top-down/bottom-up planning procedure.

The discussion of the disadvantages of the mixed top-down/bottom-up planning system repeatedly uses the terms *time* and *money*. Apart from the higher effort for coordination, which of course means more time, it's important to note the time advantage that a software product offers in the context of planning. If a well-functioning workflow is linked to the product, the time required to organize planning can also be reduced. Everyone can see the status of the plan and correct the plan data as needed.

2.1.3.2 Organization

According to Kretschmer, work management of planning can be divided into the following categories:[41]

- Organization of the planning work (who does what)
- The responsibility for planning (internal planners, employees, or external planners; the subdivision into central and decentral planning)
- Execution of planning (flexibility of planning, risks of planning, and planning fundamentals)

Because implementing planning with software takes care of the problem with work management, this book does not address this question further. It will define more exactly only the characteristics of centralized and decentralized planning because they will be used frequently in later discussions.

40 Michel, 1991, pp. 43f.
41 Kretschmer, 1979, pp. 127ff.

Centralized business planning

Centralized business planning means that "the entire upper management team makes planning decisions: on (long-term) planning of investments (perhaps including financing) and on short-term planning of ongoing production."[42] In addition, in the ideal case, a central planning instance also exists. This instance consists of upper management itself or a central controlling department and issues planning guidelines as a planning manual, specifies the general framework (premises, trends, and so on), and monitors adherence to the guidelines and framework (audit function).

Decentralized business planning

"The level of *decentralization* in business planning means the amount of planning functions that the uppermost level of management delegates to lower instances."[43] This type of planning exists as the opposite of centralized planning. Its extreme form can mean the delegation of all planning activities to business areas or functional areas. Upper management simply monitors the coordination of the activities. The employees who are eventually responsible for reaching the goals of the plan are intimately involved in creating the plans themselves. Employee motivation is therefore quite high.

As has become clear, both forms of work management present extremes. The ideal case requires a mixture of the two forms. An exact parallel to the mixed top-down/bottom-up planning system exists here. Top-down planning occurs first; it sets the long-term overall goals and strategies centrally. Bottom-up planning is then performed and a feedback process is initiated.

2.1.3.3 Techniques

Planning techniques display options that can simplify planning or increase its quality. The literature notes the following techniques:

Overview of planning techniques

- **Planning reserves**
  Integration of planning reserves to create buffers for the future. This design is avoided because of the potential for lack of clarity about the scope and effects of planning reserves in the context of plan integration.
- **Contingency planning**
  These desk-drawer or emergency plans can be helpful with the high risk of long-term planning; they consider worst-case scenarios.

42 Koch, 1977, p. 34.
43 Koch, 1977, p. 27.

- **Alternative planning**
  Planning versions that can store various alternatives for planning.
- **Rolling forecast**
  Maps expired planning to future planning.
- **Feedback**
  Ex-ante and ex-post feedback are two ways of influencing long-term planning by the use of short-term planning

Based on their significance for planning, the following techniques apply only to alternative planning, rolling planning, and feedback.

Planning technique: planning alternatives

Planning alternatives are used whenever some uncertainty about planning exists. The theoretical creation of alternate planning scenarios increases the level of security and lowers the risk of creating an erroneous plan, at least subjectively. Alternative planning can involve more effort, but the effort depends largely on how the numbers for the alternative plan were generated. If they were derived intuitively or as part of comprehensive benchmarking activities, they will require more effort. However, if they were generated by computer or even by extrapolation, no additional time is needed. As will become clear later on, integrated planning systems such as SAP SEM-BPS offer the appropriate functions.

Planning technique: rolling forecast

Rolling forecast refers to the ongoing updating of plan values along the temporal axis. The basic principle involves the transfer of new and more up-to-date knowledge into the existing plan data. The knowledge might come from deviations from the actual plan, or from the plan data itself. At the same planning level, the act of rolling planning means that the expired annual plan is included in the remaining annual plan. If the planning involves a sales organization, the remaining plan values are increased or decreased accordingly. Another example of the use of a rolling plan comes into play when the planning areas themselves are planned in a rolling manner. For example, the adjusted plan data from the short-term plan is updated into mid-term planning; it is recalculated and transferred to long-term planning. Ultimately, the new short-term plan created by rolling planning directly affects the long-term plan. However, this type of rolling planning should be used with caution so that the problems of bottom-up planning do not occur.

Unlike the following planning technique (feedback), rolling planning is a matter of calculation. Feedback has more to do with the information process.

Planning technique: feedback

Feedback[44] is a technique primarily used in hierarchical, vertical, or temporal integration. It signifies a clear delineation from the feedback used in the integration (horizontal integration) of subplans, which is called interdependence in this book. Feedback assumes that short-term planning must influence long-term planning along the hierarchical organization. This approach results in a high level of data conformity in planning.

Ex-ante feedback

Two procedures can be distinguished: *ex-ante* and *ex-post feedback*. *Ex-ante feedback* occurs during the short-term operative phase as the last step in overall planning. It begins with the principle that operative planning can produce results that might cause a rethinking of strategic planning. Actual values are not yet available for the planning period. Long-term planning is checked against the results of operative planning in a loop. It is corrected if necessary, so that the new default values are transferred to lower levels in a top-down approach. If needed, the loop can run through several cycles.

Ex-post feedback

Ex-post feedback, however, already includes actual data. Once the first deviations between the plan or target values and actual values have appeared, this data is transferred to mid-term and long-term planning in a bottom-up approach. Accordingly, the results of the deviation don't apply to the current planning period; they apply to later planning periods. Because of the time lag, this type of planning is also referred to as *planning in spirals*.

2.1.4 Planning Integration

Planning integration is an essential component of this book. This section discusses the basic issues of terminology and describes the integration of (functional) subplans at a more detailed level. Because of the importance of integration, we have chosen to address it as a separate section rather than as a part of the structure of planning section. Here, we will also show that planning integration cannot be depicted as separate from the flow of planning.

Planning types with a focus on integration

As illustrated in Figure 2.4 and as adapted from Ehrmann, four planning forms can be distinguished:[45]

- **Isolated area planning**
  This is planning without any kind of integration—an extreme case that is not relevant to actual practice.

44 See especially Koch, 1977, pp. 56f.
45 Ehrmann, 1999, pp. 62f.

- **Centralized business planning**
  This is completely integrated planning that considers all the potential interdependencies of the subplans. It begins with a total model that considers all dependencies and limits as auxiliary conditions. It is also known as *simultaneous planning*. It involves an additional and idealized design that is not relevant to actual practice.
- **Decentralized business planning**
  This approach follows the same principle that centralized business planning does, but with one essential difference. It is performed centrally and later submitted to a higher instance for approval. This is the most common planning model used.
- **Hierarchical business planning**
  This is an attempt to create the best possible combination of centralized and decentralized planning. It is characterized by horizontal and vertical integration that leads to processes for coordination and feedback. Out of all integration scenarios mentioned here, this is the only one considered in the book.

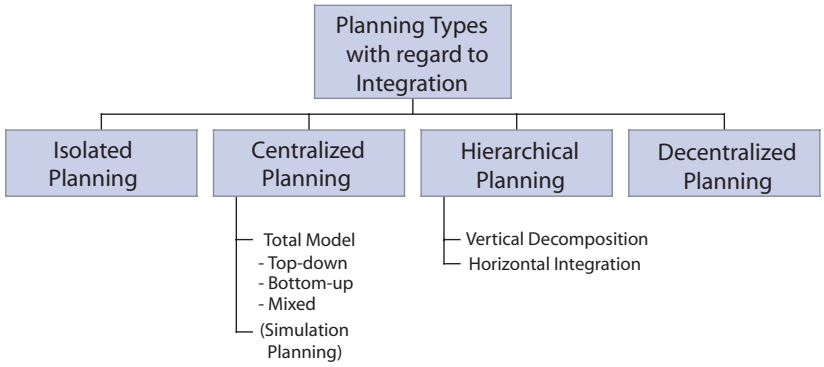

Figure 2.4 Planning Types Differentiated by Aspects of Integration

Hierarchical or integrated business planning

In theory, *hierarchical business planning* (also called *integrated business planning* in the following) is subdivided into a vertical and horizontal view and a temporal view. The subdivision would also theoretically pose four integration problems, as illustrated in Figure 2.5.

	Vertical	Horizontal
Factual (Planning Areas)	1 The problem in subplans is often the planning at different hierarchical levels (e.g., cost center group vs. cost center etc.).	2 Subplans are planned at the same level and are dependent of one another either unilaterally ormutually.
Temporal (Planning Levels)	3 Plans with a different time horizon or plans at different planning levels are always related to each other in a hierarchicalhierarchical order.	4 Nonexistent; the only possibility would be the distribution of e.g., annual figures on a monthly basis within one planning level.

Legend:
- Gray fields: classical integration areas
- White fields: exotic variants (both very practice-oriented)

Figure 2.5 Matrix of Various Integration Levels

The vertical and horizontal dimension

In practice, two additional dimensions can be examined in parallel, resulting in vertical or temporal integration (case 3) and horizontal or factual integration (case 2). The *vertical dimension* involves integration of various planning levels (strategic and short- or mid-term operative planning); the *horizontal dimension* involves integration of subplans within a planning level. Although cases 1 and 4 occur in real business scenarios, they don't warrant enough significance to be delved into here.[46] The practical section of this book, which deals with the relevant requirements, will show you how to implement the requirements with SAP SEM-BPS.

Coordination

A central element of integrated business planning is *coordination*. It can be understood as a coordinating process among the plans. Coordination becomes more difficult as planning becomes shorter. This situation occurs due to the increased involvement with planning and the resulting difficulty of distributing limited resources. It therefore comes down to the level of coordination that will determine the quality of planning and the performance of the overall planning system.

In vertical integration, the following principles apply: sequencing (inductive procedure, from short-term to long-term planning), scaling, and nesting (deductive procedure, from long-term to short-term planning). In horizontal integration, there are two categories of coordination—interdependence for coordinated plans and dependence of superordinate or

46 They are not mentioned in the literature.

subordinate plans. In the following sections, we'll look at the individual elements of coordination.

Figure 2.6 summarizes the problem of coordination and illustrates the dimensions of the period and planning level.

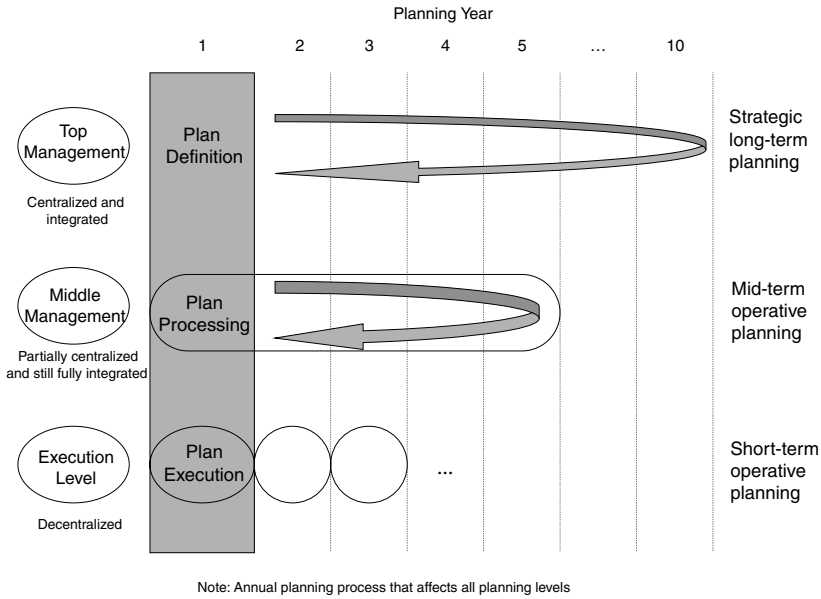

Figure 2.6 Vertical and Horizontal Coordination in Integrated Business Planning

2.1.4.1 Vertical or Temporal Integration

In SEM literature, the *vertical or temporal integration* of planning is becoming increasingly more important. Therefore, the goals of long-term planning are implemented in mid-term and short-term plans. However, the deviations identified at the level of short-term operative planning are analyzed and made transparent in terms of their effects on the long-term strategies.[47] In part, the use of the Balanced Scorecard deals with this aspect of integration and the traceability of planning specifications up to the lowest level of execution in an enterprise. The concept of the Balanced Scorecard begins with the vision of upper management, formulated in strategies. The strategies are then realized in operative target values that ultimately function as the basis for measuring the success of reaching the goals.

47 Friedl, 2002, p. 163.

The Balanced Scorecard is also part of the design of SAP SEM, but is assigned to the area of *Corporate Performance Monitor (CPM)* and not Business Planning and Simulation (BPS). A detailed description of this concept lies outside the scope of this book.

Coordinating approaches to vertical integration

As indicated, there are several coordinating approaches that can be used in the integration level of planning:

- Sequencing or inductive method
- Scaling
- Nesting or deductive method

With *sequencing* or the *inductive method*, coordination can involve everything from short-term operative plans to long-term strategic plans. This coordinating approach is top-down.

Scaling or *partially temporal superposition* is used when there is an overlap of the individual planning levels. This means that the second semiannual period of short-term planning can be identical to the first seimannual period of mid-term planning, or the third year of mid-term planning can correspond to the first year of the following long-term planning.[48]

The third approach is *nesting* or the *deductive method*, which is integrated planning. It *deductively* derives the mid-term and short-term planning inherent in long-term strategic planning. This approach is also top-down.

Comparison of coordinating approaches

When you compare the three coordinating approaches and have to select one of these methods, you see that only deductive planning can exist because it is the only approach derived from long-term planning. This method is the only way to fulfill long-term strategic goals. Because all three methods are available, it makes sense to use all three. However, the order is important. Always begin with a deductive approach, and then implement a mixture of the inductive method (method 1) and scaling (method 2). This approach results in an almost ideal version of vertical integration. The procedures described here are reminiscent of the feedback described in the planning techniques, which consider either ex-post or ex-ante feedback results from the operative level to the strategic level (see Section 2.1.3).

48 Bussiek, according to Ehrmann, 1999, p. 249.

Performing vertical integration with workflow management

In his book on business planning, Koch describes how to perform vertical integration in terms of workflow management.[49] According to Koch, the central instrument is the budget. The plan values of one level are given to the lower instance as a budget. In this sense, the term *budget—which previously was considered to be only the realization of the short-term operative plan*—must now be expanded to include the mid-term planning level. In principle, the expansion doesn't change the definition of the term; it simply enhances it.

The individual steps of vertical integration are described as follows (see Figure 2.7):

1. The management of the enterprise uses strategic planning to establish the guidelines of strategic actions for the managers of business areas. Long-term planning includes both qualitative statements and quantitative specifications that must be adhered to.
2. The management of the business areas recommends several operative plans that are later assembled into an overall operative plan. The plan contains the operative actions for executing the strategy defined for the area. It also provides some benchmark values (such as plan revenue, plan profit, plan costs, plan capital, and so on) that must be followed during the execution of the plan.
3. Management uses a brief feedback cycle to check and correct the planned actions and benchmarks. It then approves the overall operative plan, which is returned to the business areas. The mid-term operative plan is approved in this manner. The operative budget figures help to generate and control the mid-term plan.
4. The first period of the planning period (the first of five planned years) is thus binding and represents the short-term operative budget. The framework plans for the remaining two to five years function as orientation guidelines.
5. The specifcations from the operative budget now represent the attainment of the short-term operative plans in the functional departments. These plans deal with investments, disinvestments, sales quantities, production quantities, procurement quantities, and so on.
6. Monthly (by the department heads) and annual (by upper management) controls provide sustained monitoring of and adherence to the budget.
7. Ex-ante and ex-post feedback can provide upper management with valuable information.

49 Koch, 1977, pp. 53ff.

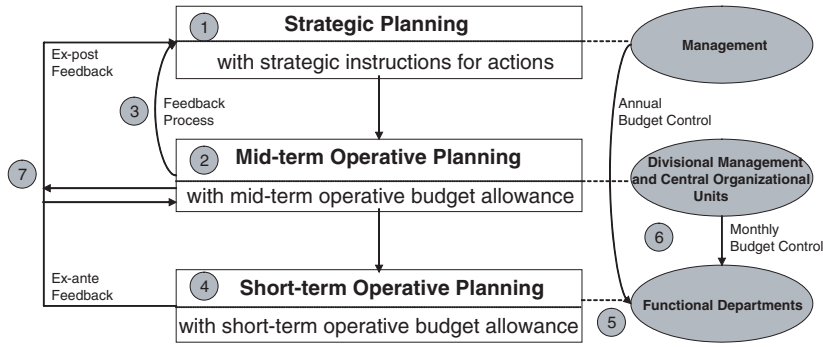

Figure 2.7 Coordinating Steps of Vertical Integration

2.1.4.2 Horizontal or Factual Integration

Horizontal integration deals with linking the plans into operational functions (sales, production, procurement, and so on). The problem of coordination primarily addresses the removal of *bottlenecks*, but only for short- and mid-term plans. It would be harmful for an enterprise to look at the long term by focusing on bottlenecks. The most common bottlenecks are related to sales (prevailing in a buyer's market), capacity (the number of incoming invoices overwhelms the capacity of production), or procurement (materials are difficult to procure or can be procured only in the long term). According to Gutenberg, the *equalization law of planning* applies when bottlenecks appear. This law maintains that while an enterprise must concentrate on bottlenecks in the short term, it should eliminate them in the long term. In general, two options are recommended to remove a bottleneck (also called a *minimum sector*): successive planning and simultaneous planning.

Horizontal integration: successive planning

Starting with a subplan that originates because of a bottleneck, *successive planning* processes all further subplans. In other words, based on this bottleneck or restriction, first planning values are given and are therefore the basis for other subplans that follow. That results in a coordinating problem for the sequence in which the subplans are to be created and approved. A closer look at the terms *interdependence* and *dependence* as coordinating instruments of horizontal planning can help.

Horizontal integration: interdependence and dependence

Interdependence begins with plans at the same level that have reciprocal relationships, in the sense of internal exchanges of services. Iterations can be used to calculate the reciprocal relationships to a selected break as exactly as possible. Planning software or at least a computer tool is indispensable here.

Dependence includes all the subplans with a unilateral relationship to each other. As a rule, only the starting plan (possibly even the bottleneck plan) should be set here: The other, derivative plans can be derived in a defined sequence. In actual practice, however, several plans might have a dependent relationship to each other, much like in a chain. The first and last links (subplan) of the chain have an interdependent relationship to each other. In this case, the way to a solution is much more complicated.

Horizontal integration: simultaneous planning

Simultaneous planning is the theoretical answer to the requirement that all planning (in consideration of the bottleneck) is to be created in one act and as a unit. A mathematical decision model looks at all the subplans and their dependencies. It considers the restrictions as auxiliary conditions and creates an overall goal from the relationships. The result is a calculated optimum. Various procedures in the area of operations research are used to deal with these total models. They are a part of centralized planning. Because they have little practical significance, we will not discuss them any further here.

Along with the subplans already described, we'll now look at the dependencies and interdependencies between the individual subplans. We'll look first at a global view and then at integrated financial budgeting, which is an essential foundation for the later practical section.

Plan Areas (Subareas) Overall

Figure 2.8 illustrates the subplans described above in light of their dependent and interdependent relationships. The figure distinguishes among the pure relationships of the subplans, the quantity flows, and the value flows.

Assumptions of the planning scenario

The integration scenario displayed here considers two essential approaches:

- From the logistics view (quantity planning), the planned sales quantity rather than the production or procurement plan is considered as a bottleneck.
- From the financial view (value planning), planning is mapped formally according to the overall cost procedure.
- Regarding planning integration, the distinction between cost of sales accounting and period accounting is important, especially when planning material costs and production costs (all costs that flow into the cost of sales and thus into manufacturing costs).

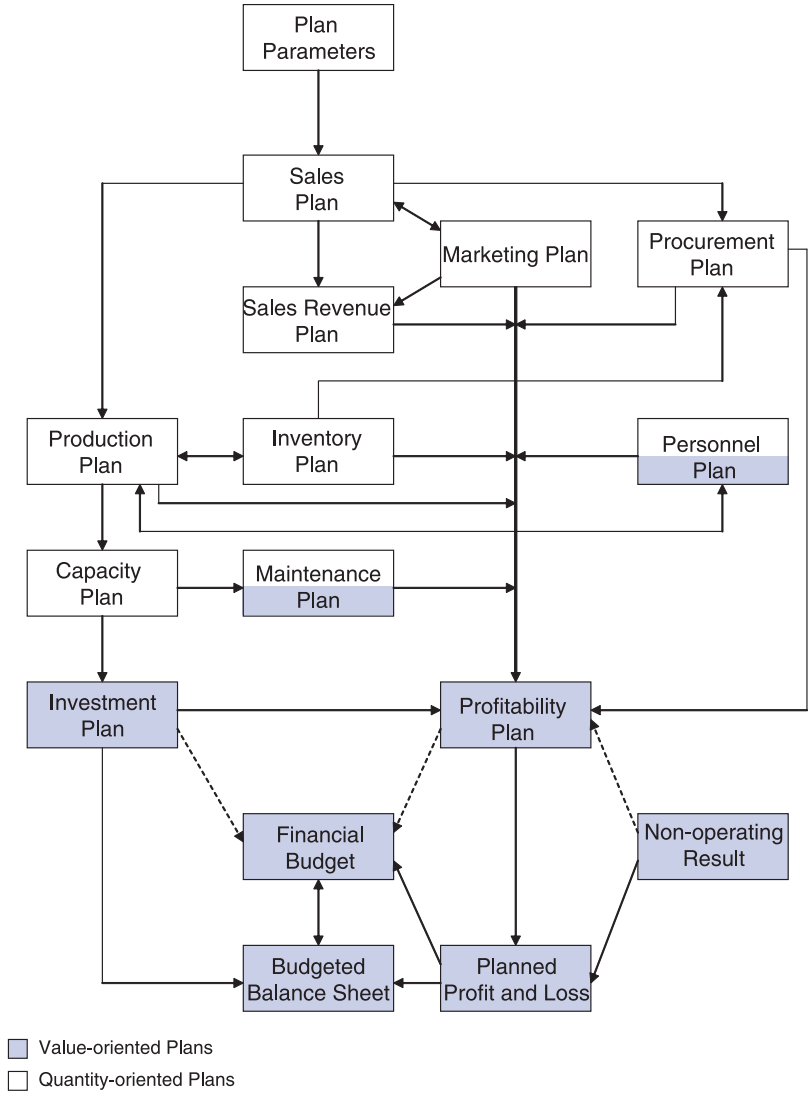

Figure 2.8 Integrated Quantity and Value Flows of Plan Areas (according to Schröder, 1996, p. 94) [50]

Sales and revenue planning

Starting from the planned *sales quantities*, which are the result of intensive market research and are a part of the marketing plan, information can be transferred directly to procurement. In addition, planned *revenue* is calculated based on the planned sales prices. Revenue decreases should be planned for or taken into account as part of the overall sales plan.

50 For other integration scenarios, see Fischer, 1996, p. 49; Mag, 1995, p. 131; Kretschmer, 1979, p. 84; and Frank, 1985, p. 14.

For the profitability plan, the results include directional information on the planned revenues, decreased revenues, and the overhead sales costs of the various sales and marketing cost centers.

Production planning

As soon as the planned sales quantities have been determined, the *production plan* can be created. *Investment decisions* must be made, depending on the existing *production capacities*. At the same time, the *inventories* of raw materials, auxiliary materials, and expendable materials are to be planned according to the planned output of production. The investment decisions, the planned inventories, and the planned goods from the sales plan flow into the *procurement plan*, which then redirects the resulting procurement costs into the profitability plan. As part of production planning, the bill of materials (BOM) explosion results in planning the materials to be used. The planned workforce can be derived from the work plan. The personnel plan can be used to calculate wages.

For the profitability plan, direct labor and overhead production costs, as well as material costs, can be derived from the production cost centers.

Plant maintenance planning

The *plant maintenance plan,* which is for the maintenance of existing and planned facilities, can be created according to the capacity plan. The planned costs of plant maintenance have a direct impact on the profitability plan. And given that plant maintenance provides services to third parties (other companies in the group or within the enterprise), planned revenues are also transferred to the profitability plan.

Personnel planning

The result of the *personnel plan* includes the information for the production plan and administrative costs that are transferred to the profitability plan.

Profitability planning

Completion of the *profitability plan* lacks only the information from the investment plan that includes amortizations, additional overhead costs to be planned (such as research and development costs, common administrative costs, service costs that have not yet been distributed to the final cost centers as part of allocations in general or cost allocations, and similar data. Depending on the planning principle, the neutral result must be recorded. The neutral result tells you what other factors are not directly connected to an enterprise's operation that will influence the overall result.

Financial budgeting in the wider sense

The *planned profit and loss statement* is derived directly from the profitability plan, with the possible additional consideration of the neutral result. Depending on the planning logic, differences can exist between the *budgeted balance sheet*, the *financial budget*, and the planned profit and loss statement because various dependent and interdependent relationships can exist between the information in the investment plan and

the profitability plan. Regardless, profit and loss information flows into the budgeted balance sheet and the financial budget is derived primarily from the budgeted balance sheet and the profit and loss statement.

Special Aspects of Financial Budgeting

A more precise examination of the value flow of this planning scenario reveals several dependent and interdependent relationships that require more attention.

Some basics from business administration

For the cumulative values (in contrast to the non-cumulative values of the budget balance sheet), it is inevitable that you will repeat some basic definitions and limitations from business administration. The description of the subplans has already displayed some differences between the profitability plan (in the stricter sense as operating profit controlling) and the planned profit and loss statement. Similar limitations apply to the financial budget. It's best to illustrate the various terms with the steps familiar from the related literature (see Figure 2.9).

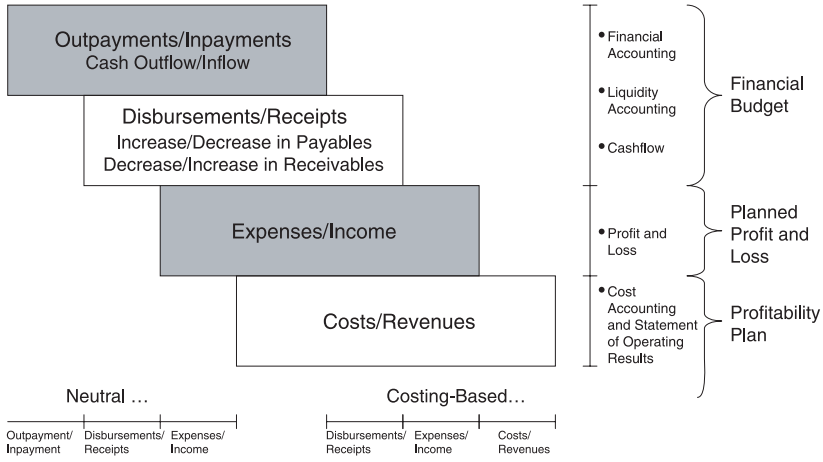

Figure 2.9 Differentiation of Costs and Revenues from Outpayments/Inpayments

Description of the step function

Without going into detail,[51] the steps are a simple way of showing that the values that are part of the planned profit and loss statement differ from those of the profitability plan in regard to the costing-based costs and the neutral expenses and revenues. In the same way, when considering the financial budget, it must be noted that not all expenses and revenues go into the profit and loss statement. The profit and loss statement includes only the expenses and revenues that are linked to the payment

51 For more detailed information, see Wöhe, 1990, pp. 964ff.

of an incoming or outgoing expense or revenue. This differentiation is important and helps us to understand why amortizations are not part of the financial budget. They are financially neutral and unrelated to financial accounting.[52] Table 2.2 can help to summarize the distinctions between the profit and loss statement and financial accounting.

Profitability Planning	Profit and Loss Statement	Financial Statement
+ External activities + Internal activities	+ Sales revenues + Activated internal activity + …	+ Receipts from sales revenues (time lag) + Receipts from …
= Total Revenue	= Total Income	= Total Receipts
– Material costs – Personnel costs – … – Costing-based interest – Costing-based risks – Costing-based amortization – Costing-based employer's salary	– Material expenses – Personnel expenses – … – Interest – Provisions – Amortization – Commercial earnings tax – Corporate taxes	– Disbursement for material – Disbursement for personnel – … – Disbursement for interest – ~~Provisions~~ – ~~Amortization~~ – Commercial earnings tax – Corporate tax
= Operating Profit	**= Result (Profit and Loss)**	**= Surplus and Deficit Funds/Outgoing and Incoming Funds**

Table 2.2 Differentiation of Profitability Analysis, Profit and Loss Statement, and Financial Statement[53]

Now that it has become clear which differentiations are to be made, we can look at the next step—the relationships between the individual subplans in light of the budgeted balance sheet.

Budgeted balance sheet and planned profit and loss statement

The *profit and loss statement* indicates the expenses and revenues that can be derived from the profitability plan, but the financial budget shows all the planned income and expenses related to capital. The latter can be derived directly from the planned profit and loss statement and can be determined directly from integration with the *budgeted balance sheet*. If

52 See Michel, 1999, p. 59f.

53 Adapted from Michel, 1999, p. 60. In the financial accounting column, outgoing and incoming payments are also to be considered theoretically in addition to expenses and revenues.

the influence of the planned profit and loss statement on the budgeted balance sheet is also considered, the planned profit and loss statement (in the context of expanded, integrated financial budgeting) corresponds to the original plan with the financial budget as a derivative plan. In this context, the budgeted balance sheet appears intermediate. Regarding integration, the budgeted balance sheet records (from the other side, according to accounting logic) the account balances of both flow items (the planned profit and loss statement and the financial budget). In the ideal case, the balances of both plans are balanced. In terms of values, the following equations are applicable:

- Planned profit and loss: expenses = income
- Budgeted balance sheet: assets = liabilities
- Financial budget: use of funds = source of funds

As you will see in the "practical section" (see Chapter 5), the ideal case is rarely available. Nonetheless, you'll learn how to create a balance in planning with the help of calculations.

Figure 2.10 clarifies the interplay of the subplans and also references various transactions in the enterprise.

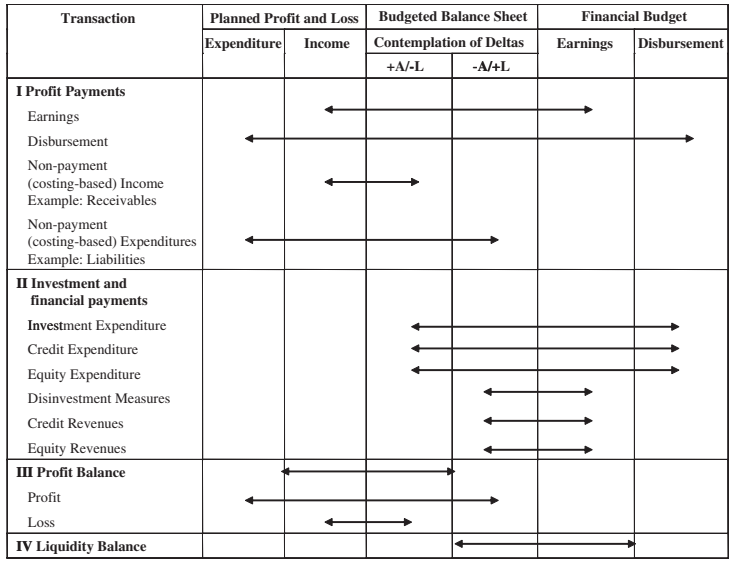

Figure 2.10 Interdependencies of Planned Profit and Loss, Budgeted Balance Sheet, and Financial Budget (Changed According to Lachnit, 1989, p. 133)

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