

HEC MONTREAL ERP SIMULATION GAME

Manufacturing Game

powered by ERPsim

PARTICIPANT'S GUIDE

2011-2012 Edition

**A Serious Game for Learning
Enterprise Resource Planning Concepts**

Powered by **ERPsim**
Compatible with **SAP™ ERP ECC 6.0 & 6.4**

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FOREWORD BY PIERRE-MAJORIQUE LÉGER

When hired as a young professor at HEC Montréal, I was given the responsibility to teach ERP systems to undergraduate and MBA students. I was looking for new ways to teach ERP Systems using SAP® when I attended a training seminar led by Dirk-Jan Schenk and Casper Draijer, organized by SAP Canada in Halifax. These two professors from HES Amsterdam had developed a role playing game and it turned out to be truly inspirational. It convinced me then that this was the way to go.

After returning to Montreal, I spent the summer developing an ERP Simulation game. It was first used in October 2004. While it generated much enthusiasm from the participating students, the simulation game lacked a well developed and realistic economic story line. To address these issues, I invited Professor Jacques Robert, a friend and colleague at HEC Montréal, to participate in the development of this market game. Professor Robert is an economist and a trained game theorist. He developed a very challenging market algorithm to support the game. Since then, he has been instrumental in the development of most aspects of the actual game version.

Building on this market model, a first prototype of the simulation software was developed in Excel. The simulation engine generated text files that were uploaded and executed using a CATT script in SAP®. The simulation software created customer orders per quarter, but it had two problems. First, it required far too much human intervention to operate the simulation game, and second, orders could only be created in batches once per quarter.

This is when Professors Gilbert Babin and Robert Pellerin came into play. Professor Babin, also a friend and colleague at HEC Montréal, is a computer scientist specializing in distributed systems. Professor Pellerin is an industrial engineer from École Polytechnique de Montréal and a former doctoral colleague. Thanks to both of these researchers, ERPsim was developed. ERPsim is a Java-based application that supports almost every aspect of the simulation game. Sales orders are now automatically recorded in the system in real time. Both Professors Babin and Pellerin have significantly contributed in the development of the simulation game. Finally, Professor Bret Wagner from Western Michigan University joined our team in December 2006. With his help, a dedicated simulation client was developed to support the simulation game. Our team is a truly interdisciplinary team.

We have also benefited from the assistance and insightful comments of many faculty members of the SAP University Alliance. The ERP Simulation Game is now used by more than 100 faculty members and in more than 35 universities worldwide. We would like to thank all these colleagues for their comments that have helped to improve the software and streamline the simulation game.

Moreover, we would like to thank all the professionals and assistants who were involved in the development of all aspects of this simulation game for their great work: Olivier Dressler, Éric Provost, Jean-François Dubois, Louis Quach, Carl St-Pierre, Virginie Boulay, Cynthia Binette, Nicholas Bourgon, Mona Yazbech, Jonathan Grimaudo, Lesley-Anne Salès, Nicolas Bergeron, Derick Lyle, Jean-François Millaire, Marc-Antoine Boucher, Alexandre Rimthong, Simon Leblanc, Jonathan Fredette, Jean-François Michon, William Ha, Marc-André Paré, Julien Perret, Sebastien Rothlisberger, Tristan Grebot and Jonathan Dahan.

Since September 2008, the ERP Simulation Game is used commercially by Baton Simulations (www.batonsimulations.com). Professionals at many Fortune 1000 organizations are now introduced to SAP by playing the simulation game. We would like to thank Harvey Feldstein for his invaluable insight in the recent development of ERPsim.

Finally, we would like to thank SAP University Alliance in Canada for the continuous support for the development and diffusion of this game.

As of June 2009, the game has been played in the USA, Canada, Australia, Italy, India, and Russia. We believe that this is only the beginning. Much can be done using simulation to teach ERP Systems. Our team still has a lot of new ideas to refine and improve on the different aspects of the game. Some of these ideas are already under development and new versions of the software will be released in the future. We are open to your suggestions or ideas, so do not hesitate to contact us with your comments. We believe in the premise that learning should be fun... Enjoy !

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TABLE OF CONTENTS

PART 1 : WELCOME TO YOUR NEW JOB!

> CHAPTER 1 – INTRODUCTION: MUESLI AG

1.1	Description of our new company	18
1.2	Description of the marketplace	23
1.3	Decision area	30
1.4	Review of the major rules	37
1.5	Elements of a winning strategy	39

> CHAPTER 2 – INTRODUCTORY GAME

2.1	Introduction to SAP	42
2.2	Description of the integrated business process	43
2.3	Game settings	45
2.4	Sales process - Quarter 1	46
2.5	Production process - Quarter 2	50
2.6	Planning process - Quarter 3	52
2.7	Procurement process	56
2.8	Conclusion	57

PART 2 : EXTENDED GAME

> CHAPTER 3 – FINANCIAL BUSINESS PROCESSES

3.1	Pre-game financial transactions	62
3.2	Recurring financial transactions	65
3.3	Other useful financial transactions	70

➤ **CHAPTER 4 – OPERATIONAL BUSINESS PROCESSES**

4.1	Planning process	73
4.2	Procurement process	76
4.3	Production process	82
4.4	Sales process	87
4.5	Performing the full cash-to-cash cycle	94

➤ **CHAPTER 5 – BUSINESS DECISIONS**

5.1	New product development	95
5.2	Production planning decision	97
5.3	Procurement decision	98
5.4	Production execution decision	98
5.5	Production improvement decision	99
5.6	Pricing decision	100
5.7	Marketing decision	101
5.8	Financing decision	102

➤ **CHAPTER 6 – REPORTING AND ANALYTICAL TOOLS**

6.1	OLTP reporting for SAP	104
6.2	Business Intelligence for the Muesli game	111

PART 3: SAP IMPLEMENTATION AT MUESLI AG

➤ **CHAPTER 7 – SETTING UP THE SIMULATION COMPANIES**

7.1	Master data	118
7.2	Creating a sample of the master data	121
7.3	Creating the complete material masters	127
7.4	Vendor master data	139
7.5	Customers masters	141

7.6	Production Master data	141
7.7	Sales price	145
7.8	Info Records	148
7.9	Source list	149
7.10	Controlling master data	151
>	CHAPTER 8 – ORGANIZATIONAL ELEMENTS	
8.1	Create company code	158
8.2	Define and assign credit control area	159
8.3	Enter global parameters for company code	160
8.4	Define and assign controlling area	160
8.5	Define and assign plant	163
8.6	Create storage location	164
8.7	Define and assign sales organization	165
8.8	Create and assign distribution channel	166
8.9	Create and assign division	167
8.10	Set up sales area	168
8.11	Assign sales organization - distribution channel to plant	169
8.12	Define and assign purchasing organization	169
8.13	Create purchasing groups	170
8.14	Define and assign shipping point	171
>	CHAPTER 9 – CONFIGURING THE FINANCIAL BUSINESS PROCESSES	
9.1	Configuring the financial accounting processes	174
9.2	Create the financial master data	179
9.3	Testing the financial processes	186
9.4	Documenting the unit tests	187
>	CHAPTER 10 – CONFIGURING THE PLANNING PROCESS	
10.1	Configuring the planning process	181
10.2	Master data	200
10.3	Testing the planning process	205
10.4	Documenting the unit tests	208

<ul style="list-style-type: none"> <ul style="list-style-type: none"> 11.1 Configuring the procurement process 210 11.2 Master data 212 11.3 Testing the procurement process 216 11.4 Documenting the unit tests 221 	<p> > CHAPTER 11 – CONFIGURING THE PROCUREMENT PROCESS </p>	
<ul style="list-style-type: none"> <ul style="list-style-type: none"> 12.1 Production execution configuration 223 12.2 Master data 230 12.3 Testing the production execution process 233 12.4 Documenting the unit tests 235 	<p> > CHAPTER 12 – CONFIGURING THE PRODUCTION EXECUTION PROCESS </p>	
<ul style="list-style-type: none"> <ul style="list-style-type: none"> 13.1 Sales process configuration 237 13.2 Master data 239 13.3 Testing the sales process 243 13.4 Documenting the unit tests 248 	<p> > CHAPTER 13 – CONFIGURING THE SALES PROCESS </p>	
<ul style="list-style-type: none"> <ul style="list-style-type: none"> 14.1 Configuring project system 249 14.2 Master data 267 14.3 Testing the project system process 277 	<p> > CHAPTER 14 – CONFIGURING THE PROJECT SYSTEM MODULE </p>	
<p>PART 4: SAP BUSINESS ONE® IMPLEMENTATION AT MUESLI AMERICA</p>		
<ul style="list-style-type: none"> <ul style="list-style-type: none"> 15.1 Creating the company 303 15.2 Configuration of the financial processes 306 15.3 Configuration of the inventory management 310 15.4 Configuration of the purchasing and sales processes 311 15.5 Configuration steps check list 315 	<p> > CHAPTER 15 – CONFIGURING MUESLI AMERICA </p>	

<ul style="list-style-type: none"> <ul style="list-style-type: none"> 16.1 Price Lists 317 16.2 Business partners 318 16.3 Items Master Data 320 16.4 Labor 323 16.5 Bill of Material 324 	<p> > CHAPTER 16 – CREATING MASTER DATA IN SAP BUSINESS ONE® </p>	
<ul style="list-style-type: none"> <ul style="list-style-type: none"> 17.1 Planning process 326 17.2 Procurement process 330 17.3 Production process 336 17.4 Sales process 340 17.5 Unit tests 346 	<p> > CHAPTER 17 – OPERATIONAL BUSINESS PROCESSES </p>	
<ul style="list-style-type: none"> <ul style="list-style-type: none"> 18.1 Reporting 348 18.2 Drag & Relate reports 350 18.3 Query Generator 351 	<p> > CHAPTER 18 – REPORTING AND ANALYTICAL TOOLS </p>	
<p>PART 5: SPECIAL TOPICS</p>		
<ul style="list-style-type: none"> <ul style="list-style-type: none"> 19.1 Create the infoset 355 19.2 Assign the infoset to a user group 357 19.3 Create the query 358 19.4 Test the query 361 	<p> > CHAPTER 19 – SAP QUERY </p>	
<ul style="list-style-type: none"> <ul style="list-style-type: none"> 20.1 Creating a model 362 20.2 Creating a more complex model 365 20.3 Connecting two BAPIs 369 20.4 Create a toolbar 370 	<p> > CHAPTER 20 – VIZUAL COMPOSER </p>	

20.5 Create a popup iView	370
20.6 Add a chart view	372
20.7 Final result	374

APPENDIX

> APPENDIX 1 - INTEGRATED BUSINESS PROCESSES

1.1 Integrated Business Processes	376
1.2 Integrated Business Processes : Transactions Performed by Participants	377
1.3 Transactional Documents	378

> APPENDIX 2 - ERPSIM DATA DICTIONNARY

2.1 Sales and Distribution	379
2.2 Customer Data	381
2.3 Purchasing	383
2.4 Production	385
2.5 Material	390
2.6 Times	391
2.7 Global Sim Informations	392

ABOUT ERPSIM

This book can only be used if your university or college is part of the SAP University Alliance and that your instructors have access to an education version of ERPSim.

ERPSim is a unique business simulation technology developed at HEC Montréal that enables the simulation of near-real-life business contexts of large corporate information systems. There are other simulation games which allow you to take a strategic view of an enterprise, but ERPSim is closely coupled with ERP technologies so participants have to use a real ERP system like they would in a real context.

So what exactly does ERPSim do if it is entangled with an ERP system such as SAP? ERPSim serves three functions. First, it provides the simulation of a market for buyers so that the participants playing the game have a reasonable market that responds just like one in the real world would.

Secondly, ERPSim automates some of the business functions that are more administrative to make the game a little easier to play so that participants focus on the decision making processes in the real world system while experiencing the full value of reports and decision support tools that exist in the system. Participants are put in a situation where they have to run their business using a real life ERP system similar to those used by the world's largest companies. The essential feature of the simulation is that the only interface between the simulator and the participants is a real ERP system. All decisions made by the participants must be introduced into the system; all information about the evolution of the game must be retrieved from standard or customized reports from the system. For the participant, this is like using a flight simulator, but in a real plane cockpit. This creates a unique learning environment where participants can learn hands-on about the integrated business system.

The third and final aspect that ERPSim provides is the simulation of the passing of time. ERPSim compresses time into a short space but still creates the appearance of time evolving so that the impact of the decisions taken overtime can be evaluated. In this virtual time, participants of the game are able to adjust their decision making processes and take better business decisions over time as they learn to play the game and see the results of the decisions they have taken.

ERPSim is built on a standard technology platform: Java. It uses a set of connectors and integrators to connect with real world ERP systems, for example the BAPI architecture of SAP. In addition to the Java technology, custom reports have been developed inside the ERP application as well as a specific configuration environment to provide the actual game context in SAP.

The simulation is a make to stock manufacturing company where participants must operate the full business cycle (plan, procure, produce and sell) to experience the value of up and downstream information flows through this real world system, process integration across functional silo to understand the impact of not making a decision in time or how a poor decision can impact the follow on of a business cycle. By experiencing the simulation, participants really get to understand what it really takes to operate a real company in an integrated system as opposed to a simulated environment that only focuses on strategy.

ERPsim is a proprietary technology developed by Prof. Pierre-Majorique Léger, Ph.D., Prof. Jacques Robert, Ph.D., Prof. Gilbert Babin, Ph.D, Prof Robert Pellerin, Ph.D. and Prof Bret Wagner, Ph.D. Free of charge licences for the use of ERPsim in the academic world has been granted to the UCCs and the SAP University Alliance. In the non-academic world, Baton Simulations has the exclusive rights to use the ERPsim technology and all related intellectual property in all countries for commercial use.

REDISTRIBUTION OF THIS PARTICIPANT GUIDE

Purchase of this electronic book through the ERPsim Learning Portal website grants you the right to use it for the purpose of playing the simulation game. Please visit <http://erpsim.hec.ca> for more details.

HOW TO ACCESS ERPSIM AND THE LEARNING PORTAL

Purchase through the ERPsim Learning Portal website additionally grants you access to the HEC Montreal ERP simulation game and its associated material ONLY for the class you registered the account for.

At the beginning of the game, your instructor will provide your login and connection details to the SAP system and the ERPsim webserver. As a participant you log into ERPsim with the same login details as the SAP system. ERPsim will use these credentials to open a connection to the SAP system. If the password is changed in SAP, the new password must be used in ERPsim, so it is best that you log in to SAP first. Once authenticated via the SAP system, the simulator will grant access to the game that is associated with that SAP server and client.

HEC MONTRÉAL
ERP SIMULATION GAME Powered by ERPsim

Authentication Release ERPsim-skin/June09r1

Access to SAP

ackbar ▾

SAP

Username

Password

Login

HOW TO USE THIS BOOK

We chose to avoid screenshots in this book to facilitate its use during the simulation game. This avoids creating a voluminous book that would render it difficult to flip from one section to the other rapidly during the game. Furthermore, our objective, when we designed the book was not to have you change pages when processing a transaction in the system. Yet, we have reproduced the SAP® icons whenever appropriate to facilitate the navigation in the SAP® screens.

Whenever you need to process a transaction in SAP®, the following box will appear on the left hand side of the page. This box is threefold. First, on the top, you have the transaction code that you may key in the transaction field of SAP® to access directly a function in the system. Then, the navigation path is provided. This path will direct you in the SAP® Easy Access Menu to the same transaction. Finally, at the bottom, there is a number that corresponds to a flash animation tutorial that will provide you a step-by-step explanation about this transaction. The flash animations are available on the website of the simulation game (<http://erpsim.hec.ca>).

TRANSACTION CODE	→	XK01
NAVIGATION PATH	→	Logistics / Materials Management / Purchasing / Master Data / Vendor / Central / Create
FLASH TUTORIAL	→	205

INTRODUCTION

Teaching the concepts underlying an Enterprise Resource Planning (ERP) system is a difficult task. Many students have very little IT experience to which they can relate these concepts. They may have acquired business experience in one or two functional areas, but many of them have only a limited understanding of the operational aspects supporting the value creation process in modern firms. Moreover, they usually have had no firsthand experience with the functional non-integrated software that the ERP system was designed to replace. For these students, the horizontal integration of the firm, one of the greatest benefits of implementing an ERP system, can be very abstract due to their lack of hands-on experience with legacy systems.

Yet business students are very computer-literate these days. Born after the first personal computers came onto the market, many of them have never experienced life without a keyboard or a mouse. Therefore, if they get hands-on experience with an ERP system, undergraduate and graduate students can learn the system and its core concepts very quickly.

The ERP Simulation game is an innovative “learning-by-doing” approach to teaching ERP concepts. During this game, students have to run a business with a real-life ERP (SAP®). Groups of five to six students each operate a firm in a make-to-stock manufacturing supply chain, and must interact with suppliers and customers by sending and receiving orders, delivering their products, and completing the whole cash-to-cash cycle. A simulation software program was developed to automate the sales process, so that each firm receives a large number of orders every quarter of the simulation. Using the ERP’s standard and customized reports, students must analyze these transactions and make business decisions to ensure the profitability of their operations. The pedagogical objectives of this game are fivefold: i) to develop a hands-on understanding of the concepts underlying enterprise systems, ii) to experience the benefits of enterprise integration firsthand, iii) to develop technical skills using ERP software, iv) to learn how to work in a team, and v) to learn how to strategize in a real-time business environment.

The book is organized in five parts. Part 1 contains two chapters. The first chapter offers an introduction to the Muesli business game. It provides a short introduction to the full cash-to-cash business processes of the Muesli make-to-stock company. It presents the market environment for the business game, and lists the main decisions that the teams will need to perform within the simulation. Ideally, the students should read this chapter before the first class. The second chapter presents the Introductory Manufacturing Game. This chapter is structured so that students can get a quick introduction to the system and the business processes. Rather than presenting the transactions starting with planning and procurement then moving on to production and sales, we propose the reverse order. In the Introductory Game, each team begins the simulation with enough finished product inventory and raw material for at least two quarters.

In Quarter 1, teams only have to focus on selling their stock of finished product. In Quarter 2, we introduce production; teams use their available stock of raw materials in order to produce and keep on selling. Finally, in Quarter 3, procurement and planning are introduced. By the end of Quarter 3, teams will have learned the basic transactions of the Muesli game.

In Part two, all the transactions required to play the Manufacturing Extended Game are presented and documented in more detail. The first chapter of part three presents all the financial transactions necessary to play. The second chapter presents all the SAP transactions required to process the full cash-to-cash cycle, from planning to sales. These include the transactions presented in the second part, but also transactions that are automated in the simulation and not necessarily performed by participants in the business simulation. The chapter highlights how all the different elements of the business process are integrated together into the system. The third chapter of Part 3 focuses on reporting and analytic. The final chapter reviews the decisions required in order to run the Muesli company.

The third part covers the more technical aspect of ERPs. It focuses on the work that must be done on the system before it can actually be used. This includes the configuration of the different modules, the creation of the organizational elements, and the creation of the master data. These are covered in detail in Part 3. These chapters provide a long list of exercises that can together be used to fully configure the Muesli client.

In the fourth section of the book, we cover the implementation of another ERP system: SAP Business One® . This software application was acquired by SAP® several years ago and included in their product portfolio. SAP Business One® targets small and medium organizations ranging from 50 to 250 employees. The objective of this section is to implement SAP Business One® for the same company that students have been working with so far. In this short case, Muesli AG has decided to expand its operations to the United States, and a small manufacturing plant called Muesli America was recently opened in the state of New York. Chapters 15 to 18 present how to create, configure, and use SAP Business One to support Muesli America.

Finally, the fifth part presents special topics. Chapter 19 covers SAP Query and Chapter 20 Visual Composer.

**A Serious Game for Learning
Enterprise Resource Planning Concepts**

Part 1
Welcome to your new job!

HEC MONTRÉAL
ERP SIMULATION GAME
Manufacturing Game

CHAPTER 1 – INTRODUCTION: MUESLI AG

1.1 Description of our new company

1.1.1 Introduction

As a participant in the HEC Montréal ERP Simulation game, you've just accepted a new job in the industry of pre-packaged muesli cereal at Muesli AG.

Muesli is a popular breakfast dish. Dry muesli is primarily a mixture of rolled oats and wheat flakes, with nuts and pieces of dried fruit. According to Wikipedia, "Muesli was invented in 1900 by Swiss doctor Maximilian Bircher-Benner for patients in his hospital". Muesli was first popularized in Germany and Switzerland. In the late 1980s, the company Kellogg® marketed its brand Mueslix® in North America. Since then, an interest in Germany's local brand of muesli has developed. Today, dry muesli is widely available in the form of pre-packaged mixes. It can be stored for many months and served mixed with yogurt or milk, and pieces of fresh fruit. Some like it in hot milk. Muesli provides an excellent source of essential ingredients as it is rich in fiber and essential trace elements. In the local market, about 18,000 boxes of local brands of muesli per company per day were produced on average in 2006.

Your new company produces pre-packaged muesli boxes. The market is surprisingly fragmented. This could be explained by the fact that entry costs in the industry are relatively small. In 2006, there were eight local companies competing in this relatively small but competitive market. Each firm is located in a different city in Germany (Figure 1.1).



Figure 1.1: Location of the 26 companies in Germany

You are part of a small executive team leading one of these companies. As a member of the executive team, you will have to make strategic decisions for a number of years. You will have to select the recipe for your products, forecast sales, plan production, make pricing decisions and determine the advertising budget. Your team will also be responsible for accounting functions, including reporting quarterly profits. Unethical behavior, such as falsifying financial reports, not paying suppliers or the bank loan on time, or violating industry regulations are unacceptable and will be severely punished. Otherwise, the name of the game is to make the most profit.

1.1.2 Make-to-stock business processes

Your muesli company, Muesli AG, is a make-to-stock manufacturer. It can only sell products that are held in inventory. Therefore, cereal boxes have to be manufactured in advance. This determines some of the business processes that your company will need to perform.

Your executive team will need to forecast the number of products the firm intends to sell in the next period. Based on this forecast, production is planned. Material requirements are met by purchasing raw materials from the appropriate supplier. Production is done in batches. Purchasing raw materials requires cash flow. If you choose to produce a large number of boxes in advance, you will have to borrow the necessary funds from the bank on which you will have to pay interest.

Because this is a small company, your team will have to supervise almost all of the operations of the company and take an active part in some of the day-to-day processes. There are tasks that you simply cannot delegate and the success of your company depends on your team. Your responsibilities in operations could include some of the following processes within the full cash-to-cash cycle (Table 1.1).

More importantly, there is a list of managerial and strategic activities that you will have to undertake. The strategic decisions involve setting the price, allocating advertising expenditures, and choosing the recipes for your product. You will also have to manage your cash flow. This is hard and challenging work but this is why you accepted the job.

Table 1.1: Operations in the cash-to-cash cycle

Operations	Description
Forecasting	All plants in the simulation are using a make-to-stock approach. Therefore, the sales manager needs to forecast demand to create independent requirements.
Production Planning	Based on the forecasted sales unit for the next period, represented by independent requirements, the planner then runs the materials requirements plan (MRP), which automatically generates the raw materials purchase requisitions.
Purchase Order Creation	When a purchase requisition is received, the purchasing manager contacts the suppliers of the products required. After assigning the chosen vendor to the purchase requisition, a formal purchase order is created.
Goods Receipt	When the goods are received, the receiving clerk checks that the goods delivered correspond to the purchase order and records the goods receipt in the system.
Invoice Receipt	The invoice sent with the product is forwarded to accounting and posted by an accounting clerk.
Payment	Since the goods are payable upon an agreed term of payment, the accounting clerk carries out the transaction required to pay the vendor. A check for the amount owed is issued and sent to the vendor.
Production Order Release	Once all raw materials required for production are available, a production order is created and released.
Production Order Execution	The raw materials required are transferred from the warehouse to the production line. Confirmation of this transfer is recorded in the system. At the end of the production process, the production order is confirmed and the finished products are transferred from the production line to the warehouse. This transfer is again confirmed in the system.
Sales Order Creation	Regularly, retailers ask the manufacturers for a quotation. The retailer sends the order to the manufacturer whose products best meet their needs. The sales representative records this order.
Shipping	The finished products are shipped to the customers and the inventory of finished products is adjusted (goods issue).
Invoicing	Accounting sends an invoice to the customer.
Incoming Payment Reception	Upon receipt of payment from the customer, the accounting clerk clears the customer account and records the deposit of the payment.

1.1.3 The ERP system

Considering all your responsibilities, your team will be kept pretty busy. Fortunately, the company has acquired a new ERP system: SAP™ ERP. Presumably, none of you has any practical experience with SAP™ ERP or another ERP system, but you are entrepreneurial and resourceful, so you are looking forward to fully exploiting the possibilities of the ERP system. You will quickly have to:

- Become familiar with the Enterprise Resource Planning (ERP) software,
- Develop a practical understanding of the main concepts underlying an ERP software, and
- Identify the benefits of intra-company integration.

ERP software is an integrated information system that manages enterprise data, helps integrate business processes and provides data for business intelligence. One of your first tasks is to learn how to perform the various operational tasks to plan production, order raw materials, produce goods, enter prices and advertising budgets, etc. As the system stores all relevant information on your company, you must learn to use the system to exploit that information. You will need to track purchasing orders, follow the evolution of production and inventory levels, draw financial reports, and acquire market business intelligence.

1.1.4 Physical layout and logistics

On your first day at your new job, the administrative assistant, Ms. Christie, kindly proposes a tour of the factory. The main entrance leads to the reception area and to the offices of the executive team, which in turn, leads you to a large shop floor.

As you enter the shop floor, you begin to get a better understanding of your new business. Mr. Jack, the production manager, comes to greet you and begins to explain how the machines work. You listen carefully. On the shop floor, the production machines are lined up. On the right of the shop floor, a door leads to the raw material warehouse. About twice a day, the raw materials are distributed in large receptacles. The raw materials are then mixed by a calibrated machine that processes the programmed recipe. Another machine makes plastic bags, fills them with muesli, and seals the boxes. A final machine packs the boxes into cardboard shipping cases. Each case is identified with the product name and stored in the finished product warehouse, which can be accessed at the left of the shop. Adjacent to the shop floor are more offices. These offices belong to the salespeople, who are in charge of receiving and processing the sales orders, billing and payments.

Further in the back, you visit the two warehouses. The one at the right is the raw materials warehouse. The delivery trucks stop at the reception dock located at the back of the factory, where they unload the raw materials. On the left side is the finished product warehouse. Cases of finished cereal are stored in this warehouse. There are six different sections, one for each of the company's product lines.

When an order is received from a customer, the salespeople prepare a shipment order and a delivery truck comes to the loading dock to load the cases of finished product boxes.

“Clearly,” Mr. Jack says, “you do not want to have a delivery truck come in when there is no product in stock, so as a rule we never produce a shipment order if the desired product is out of stock. It happens from time to time. When it does, we lose a sale. Once, an employee had forgotten to put the finished products in the finished product warehouse and we lost a lot of money. The boss was not very happy.”

1.1.5 Assembly lines

Muesli AG produces muesli on a single production line. This line operates 24 hours a day. The assembly line capacity is 21,000 boxes per day.

The assembly line will process production orders in the order that they were released. Whenever a new production order is processed for a different recipe the machines must be reconfigured and an allergen cleanup is required, which takes 12 hours. During the simulation game, you can invest in process improvement activities that will reduce the time to perform this cleanup.

The simulation will process the released production orders automatically and will confirm production daily. The confirmed production quantities are then available for sale.

The standard production order size is 50,000 units per order. When you plan your production, the MRP (Material Requirement Planning) will create as many planned order of 50,000 units as needed. The last planned order may be less than 50,000 if your production needs are not a multiple of this number.

A critical strategic decision is how long to make production campaigns. A campaign corresponds to a series of consecutive production orders of the same product. Long production campaigns will reduce the average setup time (there is no setup time between production orders of the same product). On the other hand, producing in small campaigns will allow a wider offering to the customer but reduce total output because of the capacity lost to machine setup. Finding the right balance between small production campaigns that allow you to respond to changing markets and long production campaigns that reduce production costs is a key element of the simulation game. Note : Automated setup, therefore setup time, is an optional feature. Check with your instructor to see if automated production is implemented. Also note that production orders cannot be cancelled once they are released.

1.1.6 Automated procurement functions

The simulator can perform the goods receipt, invoice receipt, and payment. When the goods receipt function is automated, a goods receipt for a purchase order will be created automatically in three to five days after the purchase order is created. It is important to keep this delay in mind, as production orders cannot be released (and therefore, boxes of muesli cereal cannot be produced) until all raw materials are in stock.

When the invoice receipt function is automated, the invoice receipt is recorded immediately after the goods receipt. The payment terms that you agreed to with your vendors allows you to pay them up to 15 days after receiving the invoice. When you automate the vendor payment, the payment will be automatically posted 15 days after receiving the raw materials. Thanks to your vendor's generous payment terms, you have extra working capital to use to pay other expenses for 15 days!

1.2 Description of the marketplace

1.2.1 Supply of raw materials and inputs

To produce a box of muesli cereal, one can use up to six different ingredients: wheat, oats, nuts, raisins, strawberries, and blueberries. Each firm must determine the proportion of each ingredient; therefore each firm must select the composition (recipe) of each of its products.

Table 1.2: Muesli Manufacturing Association Label Regulation

Labels	Ingredients					
	Wheat	Oats	Blueberries	Strawberries	Raisins	Nuts
Original	Min 20%	Min 30%	No	No	No	No
Blueberries	Min 20%	Min 20%	Min 20%	No	No	No
Strawberries	Min 20%	Min 20%	No	Min 20%	No	No
Raisins	Min 20%	Min 20%	No	No	Min 20%	No
Nuts	Min 20%	Min 20%	No	No	No	Min 20%
Mixed fruits	Min 20%	Min 20%	Min 30% (All fruits included)			

It is customary in the muesli industry to classify muesli cereal into six different categories depending on the composition of the product: original, raisins, nuts, blueberries, strawberries, and mixed fruits. In fact, every muesli company belongs to

the Muesli Manufacturing Association (MMA) which has developed a set of product categories with recipe regulations. As consumers are looking for products with specific ingredients, the regulations require that a product referred to as “Blueberry Müesli” contains only blueberries, wheat and oats with a minimum of 20% for each. The same applies for Nuts, Strawberry, and Raisin Müesli. Products labeled as “Original recipe” must contain only oats and wheat with a minimum of 20% wheat and 30% oats. Products labeled “Mixed fruit” must contain all six ingredients with a total of at least 30% non-cereal ingredients. The Table 1.2 summarizes the labeling regulations. Your firm is a member of the MMA and has agreed to follow the MMA labeling regulations.

Boxes come in two sizes: 500 g (small) and 1 kg (large). Some distribution channels will sell only small boxes; others, only the larger boxes (see the retail section). Packaging is comprised of two components: plastic bags and cardboard boxes.

All the ingredients going into the production of muesli cereals are produced within highly competitive markets. Wheat, oats, raisins, strawberries, blueberries, and nuts are all commodities whose prices are determined by the Global Commodities Market. Each individual firm in the local muesli industry is too small to have any impact on the commodity market prices. Distribution of these commodities (i.e., raw material) is provided by a single firm: FoodBrokers Inc.

The product cost includes the cost of the raw materials and packaging. Raisins, blueberries, and strawberries are typically the most expensive ingredients while wheat and oats are the cheapest. Prices of raw materials vary with the market conditions, the quality of the harvests and the seasons.

Table 1.3: Input Cost (at low seasonal price)

Cost of inputs	2006	2007
Wheat	0.95	0.97
Oats	0.92	0.90
Raisins	1.02	1.07
Strawberries	3.86	3.94
Blueberries	3.74	3.92
Nuts	1.60	2.19
Packaging 0.5 kg	0.29	0.29
Packaging 1 kg	0.38	0.39

A study has shown that, except for packaging, the raw materials exhibit seasonal variation. Strawberries and blueberries are particularly seasonal. The prices during the off season periods may be much higher than what they are during the harvest season. In 2006, the price of raisins was at an all time low due to a price war between producing countries. In 2006, the price of nuts sharply increased because of the coup d'état and subsequent civil war in Dementia, the world's largest producer of nuts.

Depending on how the game is set, the buyers need to track the raw material prices using the simulation viewer page.

The plastic bags and the cardboard boxes used for packaging are produced mainly by specialized printing companies. The companies purchase the boxes from the cardboard producers and then print the brand logos according to specifications. The plastic bags are typically sold by the same companies. The only source for packaging material for your firm is Continental Printing Co.

1.2.2 Retail

There are three distribution channels for muesli cereal in the local market: independent grocers, traditional grocery stores, and hypermarkets (large discount outlets).

Grocery stores

Grocery stores are still the main distribution channel for the muesli industry. In 2006, 37.0% of total sales were through the traditional grocery stores. Grocery stores offer their customers more variety than the other types of stores. A typical store would carry 4 different labels of muesli on their shelves and would sell both small and large boxes. In 2006, there were 59 grocery stores in the local market. Grocery stores are reliable and they will pay their bill between 10 and 15 days.

Independent grocers

Independent grocers or convenience stores are small proximity stores. They sell a small variety of products: beverages, beer, dairy products, candies and chips, newspapers and magazines, and some everyday non-perishable food products including muesli cereals. Convenience stores will only sell 0.5 kg boxes. Their consumers are less sensitive to prices. Convenience stores will typically order in small quantities and will stock the shelves with only one or two labels. In 2006, the estimated market share of convenience stores was 33.6%. Prices are on average 10% to 15% higher in convenience stores than in traditional grocery stores. In 2006, there were 123 convenience stores in the local market. Because their internal process is mainly manual, the payment delay of the independent grocer will vary: they will pay you within 5 to 10 days.

Hypermarkets

Large discount stores or hypermarkets are a growing phenomenon. They not only sell food, they also sell books, CDs, clothing, and electronic appliances. These stores have managed to attract a large number of consumers looking for cheaper prices. In 2006, 29.3% of sales were at hypermarkets, a major increase from the previous decade. Hypermarkets will only sell 1.0 kg boxes and will offer a more limited variety than the grocery stores. Many studies have shown that outlet consumers are highly sensitive to price. Typically, the products are sold at prices 5% to 10% lower than in traditional grocery stores. In 2006, there were 12 outlets in the local market. Hypermarkets will tend to stretch the payment terms to their limits: they will pay you in exactly 20 days after receiving your invoice.

Also, retail stores are not distributed evenly through Germany. Germany is divided into 16 states or Länders. The following table provides an economic overview of each of the 16 German regions as well as the number of retailers located in each state.

Table 1.4: Number of stores by geographical area

Credit ratings	Hypermarkets	Grocery stores	Independent grocers	Total
West	3	17	40	60
South	7	23	38	68
North	2	19	45	66



Table 1.5: Number of retailers per Länders

Länders	GDP in 2003*	Population in 2003**	Grocery chains	Hypermarkets	Independent grocers	Area
Baden-Württemberg	314,940	10,693	8	2	14	South
Bavaria	371,256	12,423	10	3	10	South
Berlin	77,274	3,388	2	1	6	North
Brandenburg	45,010	2,575	2		2	North
Bremen	23,366	663	1		1	North
Hamburg	77,080	1,734	2		5	North
Hesse	193,673	6,089	5	2	11	South
Mecklenburg-Western	29,700	1,732	1		2	North
Lower Saxony	183,094	7,993	6	1	9	North
North Rhine-Westphalia	466,878	18,080	15	3	33	West
Rhineland-Palatinate	92,733	4,059	2		6	West
Saarland	25,783	1,061			1	West
Saxony	77,098	4,321	2		8	North
Saxony-Anhalt	44,221	2,523	1		5	North
Schleswig-Holstein	65,923	2,823	2		7	North
Thuringia	41,832	2,373			3	South
		Total	59	12	123	
* M euros ** In thousands						

1.2.3 Consumers

In 2006, consumer spending on muesli averaged 90,000 euros per company per day. While the total demand for ready-to-eat cereal was relatively stable throughout the year (except for a minor increase during the winter) the net sale of local brands of muesli cereal was not. Traditional ready-to-eat cereal seems to offer genuine competition to the local muesli brands. During the second quarter of 2006, a strike in one of the local muesli plants substantially reduced the supply of muesli cereal, as a result many consumers switched to ready-to-eat cereal, and a significant proportion of these customers have not returned to muesli cereal.

1.2.4 Banks

It may not come as a surprise to you, but your company needs money to make money. You have to purchase and hold inventory of raw materials and produce finished goods ahead of demand. To pay for the raw materials and production you will need cash. Your company has had a good relationship with the Weizen Bank. The Bank currently offers you a good credit rate and extends a sufficiently large credit line. After each quarter, your company will have to produce a full financial statement to your banker.

Your total bank loan is 12 million euros. Your shareholders have invested an additional 8 million euros. Of this 20 million euros, 17 are invested in assets. This leaves you with 3 million euros in liquidity. Your responsibility is to effectively manage this money and obtain the highest possible return for your shareholders and, if possible, begin to pay back your bank loan. The payment of the interest on your loan is automated so you will not have to do it manually. The interest is accrued on a daily basis and posted every 5 days. However, be aware that your firm must have positive cash balance at all time.

Your banker, a smart but rigid fellow named Mathias, does not like amateurs and risk-takers. Your banker will continue to extend you favorable credit only if your company makes interest payments on time. He does not like companies that take too many risks and have excessive unsold merchandise. He dislikes managers that fail to pay bills on time – to their bank or suppliers. But most of all, he dislikes managers that do not respect the law or fail to respect elementary ethical rules. He will not hesitate to reduce credit ratings, refuse to increase credit lines or simply recall your bank loan. As your boss often says: “I have worked hard to build my company’s reputation, do not damage it by bad management.” Your bank loan bears a flexible interest rate.

Table 1.6: Risk premium on credit ratings

Credit ratings	Risk Premium
AAA	–
AA+	+0.5%
AA-	+0.75%
A	+1.25%
BBB+	+2.25%
BBB	+3.0%
BBB-	+3.5%
BB+	+5.25%
BB	+6.25%
CC	+8%

The prime interest rate has been relatively stable during the last decade. A sound monetary and fiscal policy has kept inflation down and the interest rates (namely, the business prime rates of the chartered banks) were between 5% – 6%. For most companies what really matters is their credit rating. The difference between a good credit rating and a bad one can lead up to an 8-point difference in the interest rate charged by the bank. The following chart lists the risk premium for each credit rating.

Currently your company has an A credit rating. This is the highest rating given for companies of your size. If you run out of cash, the banker will automatically extend your credit line in order to cover your credit needs. However, if the bank must do so, it will immediately decrease your credit rating and increase your interest rate. To regain your previous credit rating, you will need to stay out of the “red” for one entire quarter.

You are free to repay your loan at anytime. Since the interest is calculated every day, a reduction in the loan balance will immediately reduce your interest payment. Hence, making payments on your loan is a smart move if you have enough cash. Doing so bears some risks, however, if you miscalculate your future cash requirements, you will not be able to extend your loan until you actually run out of cash and, consequently, you will suffer the credit rating penalty.

1.3 Decision areas

1.3.1 Products and recipes

In the simulation game, firms can produce up to six different types of muesli cereal. For each of these types, the firm must specify its recipe (composition) and the size of the box (large or small).

Each team must define, according to its own strategy, the recipes that it wishes to produce and market. One of the strategic objectives is to try to find niches, i.e. recipes that are unique in the market and which are desired by a sufficiently large number of consumers. Another objective is to appropriately target the various distribution channels. One must recall that small boxes are only ordered by convenience stores and grocery chains while large boxes are sold only to hypermarkets and grocery chains. Also, cost must be considered for the more price sensitive markets.

HERE IS A TIP: The market for muesli cereal is relatively segmented. Consumers have different preferences about muesli cereal and shop in different distribution channels. The key to success is to find the right niches. If you are the only firm serving a particular niche (say, small boxes of mixed fruit in grocery stores) you will be able to sell your product to this segment without fearing competition from alternative local brands.

While a firm may choose to change the recipe of one of its products, it cannot do so while there are still units of that product in stock. To introduce a “new recipe”, one must first sell out the inventory of the old product. The retailers use the description of your product to make their purchase decision. If you advertise one recipe but instead deliver some old boxes based on another recipe, not only is it unethical but also illegal. If your company ever does so, you will be sued and it will seriously damage your reputation.

Technically, a recipe must be specified in the Bill Of Materials (BOM) in your ERP system. You define the bill of material by entering into the ERP system the quantity of each ingredient: wheat, oats, strawberries, blueberries, raisins, and nuts, used in your box of muesli. It is very important that the quantities of all the ingredients sum up to the package weight. Also the percentage of each ingredient must respect the labeling guidelines presented in Table 1.1. The Muesli Manufacturing Association is a serious organization and it monitors product labeling carefully. As your boss often says, “If you cannot add a few numbers and adhere to simple arithmetical rules, you should not be here.”

HERE IS A TIP: Failure to sell a given product may be caused by inconsistencies in your bills of materials. If the box and bag sizes are not consistent with the amount of food products, retailers will not order your product. A customized transaction in the system verifies that the numbers are correct and match one of the six labels of the MMA.

1.3.2 Forecasting, procurement

The next decision your executive team will have to make is how much and when to produce each product.

A manufacturer can only sell products that are in inventory. Therefore, boxes of cereal have to be manufactured according to a make-to-stock manufacturing strategy. Your executive team will need to forecast the number of units of each product you plan to sell in the next period. Muesli production is done in batches, but before producing a batch you need to have all of the required raw materials in inventory. Recall that your executive team has many operational responsibilities: you must forecast demand and develop production plans, create purchase orders for raw materials, receive the raw materials into inventory, post invoices and pay the suppliers, and finally release the production orders. Further, purchasing raw materials requires liquidity. If you choose to produce a large number of boxes in advance, you will have to borrow the necessary funds from the bank on which you will have to pay interest. All this requires careful planning.

As mentioned previously, the price of some raw materials (in particular, blueberries and strawberries) is highly seasonal. For those products it is preferable to buy the raw materials for future production when the price is low. Planning becomes even more important in these cases.

Delivery time: This is an optional feature because it requires the automation of the goods receipt. Check with your instructor if this feature is used in the simulation game you are playing. Delivery from your suppliers is quite efficient. You will receive delivery of raw material within 3 to 5 days after the purchase order is created.

1.3.3 Production

Your company operates in a make-to-stock environment and sales will not occur unless your product is in stock. Therefore, it is critical that production provides the correct products at the correct time to support your business strategy. Of course, it is equally important that your business strategy is consistent with your production capabilities.

If production control is automated, then capacity becomes an issue, and it is critical to size production orders so that you have the correct balance between flexibility and production efficiency. It is not very useful to efficiently produce products that no one wants, but it is also not very useful to try to be flexible to the point that all your production capacity is spent in machine setup.

All raw materials must be received before production of an order begins. As part of your procurement strategy, you may want to consider not only strategic purchases that minimize procurement costs, but also advance purchases that will allow production of a new order to begin immediately. In other words, you may want to maintain a sufficient stock of raw materials so that any of your products can be produced at any time.

Finally, production process productivity may be your strategic weapon, and you will need to consider investing in your production facilities. You start the simulation with production equipment that cost 5 million Euros has a production capacity of 21,000 boxes per day with a setup time between production batches of different products of 12 hours.

You can make additional investments in your production equipment to increase the production capacity and reduce the setup time. For an investment of 100,000 euros you can increase production capacity by 400 boxes per day. Hence, an additional 1 million Euros will provide you with a total daily capacity of 25,000 boxes. You may invest additional money to increase your capacity at any time.

$$\text{Total Daily Capacity} = 21,000 + (0.004 * \text{Additional Machinery Investment})$$

Furthermore, your company can reduce the setup time between production runs of different recipes by investing in production line improvements. If you plan to offer product variety, and wish to run small production batches, such an investment could be quite profitable.

The following table shows the setup time as a function of your investment. If you invest nothing, the setup time remains at 12 hours. You can bring down this setup time to 10.5 hours if you invest 44,117.65 €. Notice that each additional hour of setup time reduction requires greater investment than the hour before.

Table 1.7: Production improvements

Setup time (hours)	Investment (euros)	Marginal investment (euros)
12	–	–
11.5	13,157.89	13,157.89
11	27,777.78	14,619.88
10.5	44,117.65	16,339.87
10	62,500.00	18,382.35
9.5	83,333.33	20,833.33
9	107,142.86	23,809.52
8.5	134,615.38	27,472.53
8	166,666.67	32,051.28
7.5	204,545.45	37,878.79

Setup time (hours)	Investment (euros)	Marginal investment (euros)
7	250,000.00	45,454.55
6.5	305,555.56	55,555.56
6	375,000.00	69,444.44
5.5	464,285.71	89,285.71
5	583,333.33	119,047.62
4.5	750,000.00	166,666.67
4	1,000,000.00	250,000.00
3.5	1,416,666.67	416,666.67
3	2,250,000.00	833,333.33
2.5	4,750,000.00	2,500,000.00

The optimal setup time reduction depends on the number of times you expect to switch recipes and the expected profit per box sold. For example, suppose you intend to switch products every two days, that you have a total daily capacity of 25,000 boxes and that you expect to sell each box 2 euros above the variable costs. An investment in setup time reduction of an hour will provide 60 hours of extra production time over a period of 120 days. In 60 hours, you can produce about 62,500 extra boxes over this 120-day period. So you should be willing to pay up to 125,000 € for an extra half hour reduction in setup time.

The exact formula for calculating the set up time as a function of investment is the following:

$$\text{Setup time} = 2 + \frac{2,500,000}{250,000 + \text{Investments}}$$

1.3.4 Inventory storage costs

The company has two warehouses. The finished product warehouse (storage location 02) has enough space for 250,000 boxes of finished product. The raw material warehouse (storage location 88) has enough room for 250,000 kg of raw materials and 500,000 boxes and 500,000 bags. If your company requires more space warehouse space, you can rent additional space on a daily basis. The additional space can be rented at a cost of: 50€/day for each 100,000 additional empty boxes and bags, 350€/day for each additional 100,000 kg of raw materials and 200€/day for each additional 100,000 boxes of finished products. The cost of additional storage will be automatically billed, and paid immediately.

HERE IS A TIP: Storage costs can be onerous and quickly drain cash reserves. Make sure that you manage your replenishing strategy to keep these costs under control.

1.3.5 Product costing

Table 1.10 shows the cost breakdown for an average 1 kg box of muesli cereal. Materials make up approximately 54% of the cost of goods sold (COGS), while direct labor makes up 6% and manufacturing overhead makes up 39%. The remaining 5% of COGS is depreciation. Because of union labor rules, it is not possible to lay workers off for short periods of time. As a result, labor and manufacturing overhead costs are essentially a constant that will be incurred each week. To maximize profit, a company must avoid idling the production facility. This can happen through poor process management. For example, production orders may not be released when needed, raw materials may not be ordered in a timely fashion or production runs that are too small may cause large amounts of production capacity to be used for equipment setups.

During the simulation, you will be able to use the cost estimating capabilities of the SAP® system to estimate your product costs based on the current value of your raw materials in stock and an estimate of the labor and overhead expenses. The following table contains the list of the various fixed costs that the company pay every week (each 5 open days).

Table 1.8: Fixed costs per week

Cost	Amount
Direct Labor	21,120 €
Factory overhead	14,400 €
SG&A	46,400 €

To this, one must add the interest expenses, the additional warehousing costs, the cost of depreciation, and any additional advertising expenditures.

Table 1.9: Average breakdown of manufacturer prices and costs per one kg box

Selling price				4,23
Direct material	Grain	0,67		
	Other ingredients	0,69		
	Packaging	0,40		
	Sub total	<u>1,76</u>	1,76	
Direct labor			0,20	
Manufacturing overhead (1)	Depreciation (2)	0,16		
	Other manufacturing overhead	0,14		
	Warehousing costs (3)	0,05		
	Sub total	<u>0,35</u>	0,35	
Cost of goods sold			2,31	(2,31)
SG&A (1)	Advertizing (4)	0,48		
	Other SG&A	0,44		
	Sub total	<u>0,92</u>		(0,92)
Operating income				<u>1,00</u>
Interest	Interest on bank loan (5)			<u>(0,19)</u>
Net profit				<u>0,81</u>

Notes: (1) All fixed costs are calculated under the assumption of a production capacity of 21,000 boxes per day. (2) Annual depreciation is calculated as 5% of building value and 10% of machinery value at 5 million. (3) Based on average space rentals of 1,000 Euros a day. (4) Based on daily advertising expenditures of 10,000 euros. (5) The interest payment calculation is based on a 7.5% interest rate over a 12 million loan.

1.3.6 Pricing

A firm may choose to change its selling price whenever it desires. Pricing is a key element of your strategy. If your prices are too high, demand will be low and your production will sit as inventory; if your prices are too low, you will not make enough money to cover your expenses. Note that your pricing need not be the same for all distribution channels. Because convenience store customers are less price sensitive, it is smart to charge these stores a higher price than traditional grocery stores. Similarly, calculating the optimal price for each product and distribution channel is a complex task. Business acumen is required to make the correct pricing decisions. Remember that muesli consumption accounts for a small proportion of ready-to-eat cereal consumption. Consumers have other options. They can buy something else if muesli cereal is out of their price range. Remember also that you have advertising expenditures, interest payments, and payments for the raw materials; you must price your products correctly so that you do not lose money. As your boss often says, “ We do not run a charity down here.” You must make a profit.

Considering the fixed cost, you should have a mark-up above cost of goods sold of at least 2 euros, and preferably 3 euros, per box. Optimal pricing depends on many things: (i) the prices charged by competitors; (ii) the size and cost of the product; (iii) the distribution channel; and (iv) ultimately the strategy of the firm including its advertising strategy.

1.3.7 Advertising

Advertising is optional: check with your instructor if this simulation feature is enabled in the game you are playing.

You must decide on how much to invest in marketing. You must determine the *daily* advertising budget for each of your products (up to 6) and each of the 3 regional areas.

Advertising campaigns are organized around 3 main geographical areas: South (Bavaria, Baden-Wurtemberg, Hesse, Thuringia), North (Saxony, Saxony-Anhalt, Brandenburg, Berlin, Mecklenburg-Vorpomm, Schleswig-Holstein North, Hamburg, Lower Saxony, Bremen) and West (North Rhine Westfalia, Rhineland Palatinate, Saarland).

Because the preferences of consumers might differ from one area to the other, it may be optimal to target advertising expenditures differently from one area to the other. The difficulty, of course, is to know how much should be invested for marketing each product in each area.

You may change your daily marketing budget at anytime.

HERE IS A TIP: Advertising is good but not always necessary, especially if your product has the desired recipe. Do not spend all your available cash on advertising; you will end up losing money. Marketing expenses only affect demand for the current period and its benefits are not carried over to the future. Hence, it is useless to spend on marketing on any given day for a product that you do not have in stock.

In the Muesli industry, marketing is persuasive. It seeks to convince consumers that your product is the one they should prefer. Globally, it is like a zero-sum game. If a firm increases advertising for one of its products, it attracts consumers away from other products of the same company in the same area. Note that sensitivity to advertising is segmented. Those who buy at corner stores are more easily influenced than those looking for low prices in hypermarkets.

HERE IS A TIP: Try to avoid spending a lot of advertising money for two different products in the same geographic area. One euro spent on a product hurts the sale of the other and vice versa.

1.4 Review of the major rules

In this section we will provide several important tips to help you as you start to learn the simulation game. We've attempted to make the game sufficiently challenging and fast-paced so that you will not be bored. First, we wish to remind you of the important rules of the game. Second, we will provide strategy tips to prepare you for the simulation.

The rules proposed below have two main objectives. The first and most important one is fairness. The second objective is to make the game challenging and instructive.

At the end of the game, raw material and finished goods inventory may be liquidated at a reduced price

The end game inventory liquidation is optional: check with your instructor to see if this simulation feature is enabled in the game you are playing.

In the end game inventory liquidation, inventory of grain and fruits, including the quantity reserved for unfinished production orders, are sold at a price lower than the current market price. The packaging goods cannot be resold and inventories are written off. Finally, the finished goods are salvaged at the value of the grain and fruits they contain.

You may not change the recipe of a product if you are still carrying inventory

In the simulation game, changing a recipe in the BOM is equivalent to changing the label on the box. If you change the BOM of a product for which you still have boxes in inventory, it is similar to changing the recipe on the labels of those boxes. It is simply not done!

Interest payment and loan renegotiation

You can repay your bank loan with the bank at anytime. Interest is accrued daily and will be charged automatically at the end of every week (every five days). Consequently, you will not have to do it during the game.

Your instructor will act as the banker. After each quarter, you may ask the banker for an extension of the bank loan. Your instructor has the discretion to grant your request. In principle, as you accumulate profits, you should be able to begin paying back your loan and you should not need to borrow additional funds.

You should, at no time during the game, have a negative cash balance. If you do, your banker will automatically reduce your credit rating.

Customers do not change throughout the game, hence you may learn from their past behaviour

At the beginning of the simulation, the simulator creates a large population of consumers, each endowed with a “preferred recipe”. These preferences help determine the purchase orders issued by the retailers.

As the game progresses, you may infer the “preferences” of the retailers using your transactional data and adapt your plans accordingly.

The company displaying the highest shareholder’s equity at the end of the simulation wins the game

We compare the performance of the teams by simply using the equity value of the companies at the end.

During the game, your equity value includes the value of inventories evaluated at standard costs. If standard costs of finished products do not correctly reflect the potential return accruing from the sale of these inventories, your equity value will be biased. Beware of this. Because the standard cost of finished products is higher than the material costs of production, it is always better to produce finished product rather than not producing.

Be aware that the investments in marketing as well as investments to reduce your setup time are recorded as direct expenses. Although they have value in increasing sales and productivity, their immediate impact on profit is negative. Investment in capacity increases the assets of the company. Hence, the cost of investing in machinery is only reflected in the increase in depreciation.

You must behave ethically at all times

The simulation game is fun when it is played competitively. As in real-life, cheating may prove to be an easy way to get a head start, but it should never be an option. We ask participants of the simulation game to act as they would in real life, with the highest ethical standards. Cheating in this game includes the use of any transaction not explicitly permitted in this book and that is used for the sole purpose of increasing the firm’s equity.

Albeit, there are several ways to cheat in this game, remember however, that the ERP system and the simulation software keeps track of all illicit transactions, thus cheaters will be prosecuted by the appropriate financial authorities!

1.5 Elements of a winning strategy

Use the ERP system efficiently

The ERP system that you are using for the ERP simulation game is one of the most complex pieces of software available in the marketplace. Business systems are complex because running a business is a complex affair. We provide you with instructions to use the system properly for the purpose of the game. Do your homework. If not, you are likely to run into trouble.

During the simulation game, you will only use a very small portion of the mySAP™ ERP. When it comes to the operational transactions, we urge you to stick to the instructions provided in this book and not to be too imaginative. Unless you are very experienced, doing otherwise is more likely to get you into trouble. Conversely, when it comes to reports and analytics, you are invited to browse and explore some of the available reports in the system. There are many reports available in the menu “information systems” that could help you.

Doing the operational transactions quickly and correctly is a prerequisite for winning the game, but is it not sufficient. You must know when and what to produce. Properly analyzing your data is very important as well.

In the end, all teams should use the ERP system properly. What should matter is team organization and strategy.

Do not run out of stock

One of the first tips for participants of the game is “do not run out of stock”. Even if you have the best marketing strategy, if you do not have products to sell, it will not matter.

This is particularly important at the beginning of the game. Before you manage to have finished products in inventory, you must perform a series of tasks. If you are too slow to perform these tasks you will miss lucrative opportunities to sell. You need to learn quickly how to perform the operational transactions to create finished product inventories.

One of your objectives should be to hold inventories of a large range of products. To do so is harder than you think. Your popular brand may sell quickly and unexpectedly; unless, you react quickly to this information you may run out of stock before you realize it. There are two actions you can take to avoid running out of stock: increase supply by initiating production or reduce demand by increasing the price. Managing inventories of popular brands requires operational excellence and is a key element in a winning strategy.

Delays, production capacities and liquidity constraints are important elements of the game

When the production and procurement processes are automated, delays and capacity constraints are built into the simulation. These features are important because they limit your ability to react quickly to changes in the marketplace.

To have a product available for the customer, you will have to account for the delays in deliveries of raw materials and production capacity limitations. This means that you will need to plan in advance and start building the inventories of raw materials and finished products.

If you have enough inventory, it will be easy to respond quickly to shifts in demand. However, this will require some liquidity. At the beginning of the game, you have 3 millions euros in cash and part of it will be invested in machinery. Since you are not permitted to run out of cash, you must be careful not to buy too much raw material or hold too much finished goods inventory.

The challenge is to be able to find the right balance between low inventory levels and readiness to respond to market demand.

Exploration and exploitation

Beginning the game with a precise strategy is a little presumptuous. You must accept that the simulated marketplace is full of surprises. Learning and adapting should be your motto. Use your data to learn and use the system to adapt to the market.

Most members of your team have the misfortune of having little experience in the Muesli industry. Fortunately for you, it is the same amongst your competitors. To fully exploit the full potential of your business, you will need to learn more about the market and industry. You should use a strategy of “exploration and exploitation”.

The initial part of the game should be devoted to exploration. You should experiment with different recipes and advertising and pricing strategies with the objective of learning more about the market and what works and what does not.

Once you have identified a profitable niche (or niches), you should design your strategy around these niches and exploit them as much as possible.

There is a lot of “hype” today in the business world around the idea of building customer-centric and flexible companies. One of the virtues of an ERP system is it allows you to extract and process transactional data. This data provides information about customers. You must use that information to respond to the customers’ needs.

Organization may be the most important factor in your team's success.

A large number of tasks need to be coordinated. Your team needs to (i) keep track of market and sales information, (ii) follow the evolution of stocks of goods and cash, (iii) select the right recipes, (iv) produce goods in a timely fashion, etc. Good team work is essential.

If your team members work in silos, you will undoubtedly fail. You cannot do this if the roles and the information flow within the team is not well adapted to the requirements of this fast-paced game. You are faced with the challenge of organization and must learn how to delegate roles within your team. There are many possibilities for innovation that will make your team more efficient. This innovation may ultimately make the difference.

Have fun!

This is only a game! So enjoy being a manager using a real-life ERP system. Ultimately, this is about learning not winning.

The business simulation presented in this book is an obvious simplification of reality. There are numerous elements of running a business that have not been included. Yet the game remains a complex affair. You must be able to extract the information necessary to make timely decisions from a large set of transactional data. You need to operate this virtual enterprise in an accelerated time frame.

We have taken the point of view that if there is no challenge then it's no fun, and if the simulation is no fun and unchallenging then one does not learn as much. You are asked to run a company at an accelerated pace with a real-life highly complex ERP system. You are bound at one point or another in the game to make errors and find yourself in trouble. Cursing the computer will generally not help. Ask your friends or the instructor for help and keep smiling.

Ultimately, what matters is what you have learned from the experience. There are many things for you to learn from the ERP business simulation. We hope you do.

CHAPTER 2 – INTRODUCTORY GAME

In this chapter, we introduce a simple game. The objective is to provide a quick hands-on experience of an integrated business process in order to get an overview of both the ERP simulation game and of the SAP system.

As a make-to-stock manufacturing company, there are a set of processes that must be performed to run your business. There are four main processes that are presented here: (i) the planning process, (ii) the procurement process, (iii) the production process, and (iv) the sales process (See figure 2.1). Each process can be decomposed into transactions. In SAP®, a transaction corresponds to an operation that interacts with the centralized data of the ERP system.

2.1 Introduction to SAP

Each company in the game is using an integrated information system to manage its operation. The idea is to use all existing information to avoid data re-entry, and to create and store new data for future use in other transactions. A transaction may require using information stored in the organizational elements or the master data; it also creates new transactional and accounting documents.

The organizational elements represent the structure in the ERP system. They help portray the specific organizational structure of a business in the system. Master data is one of the cornerstones of an ERP. This is data stored in the system's central database and used in a number of the organization's business processes. More information on organizational elements is provided in chapters 7 and 8.

An enterprise system is built around an integrated database. A system like SAP contains tens of thousands of data tables. When a user creates, changes or views data in the system, he or she performs a transaction. Data changed or created by one user can be exploited by all other users (ex. reporting, tracking, execution of orders, etc.). This is the virtue of an integrated system.

A large number of pre-programmed transactions exist in SAP. All transactions are traceable; for legal and controlling purposes, transactions with financial impacts can be reversed but not erased.

Each transaction has a transaction code or technical name – a user can execute a transaction if one knows the transaction code. An alternative way to select a transaction is to use the SAP menu. One can browse the SAP menu by drilling down through the successive folders and finding the desired transaction.

The SAP menu provides access to a very large number of transactions; to facilitate the navigation one can create a user menu or a list of favourites with the most commonly used transactions. For the purpose of the ERP Simulation Game, we have created a user menu that contains all of the transactions mentioned in this book. For each transaction that you will use, we provide in this book the transaction code and the path in the user menu to access it. Finally, a list of favourites or commonly used transactions can be maintained by each user.

Reports and queries are transactions that allows the user to view existing data. A typical query is performed as follows. In the first page of the transaction, you must enter the selection criteria for the query (ex. Company code, product code, etc.). In order to execute the query click on . A table containing the requested data will appear. For some reports, the display and layout can be modified.

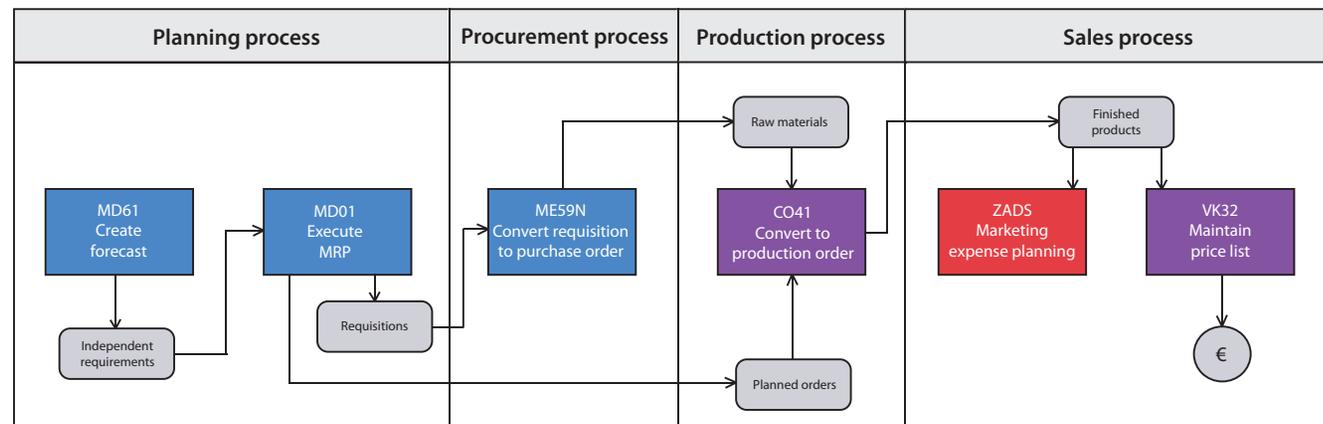
Use the navigation buttons to go back () or get out of a transaction ( ).

You can open up to 6 sessions or windows. Click on  to open a new session.

2.2 Description of the integrated business process

In this introductory game, a total of 12 transactions need to be performed in SAP. However, because part of those transactions are automated by ERPsim, we need only to focus on the decision making transactions. To operate your company in this introductory game, only 6 transactions need to be executed. Figure 2.1 provides an overview of what needs to be done by each team.

Figure 2.1: The operational processes



The first transaction in the business process is the creation of the independent requirements or forecasts. This transaction creates a planning document. An independent requirement of 100,000 units of Product 1 corresponds to the forecasted consumption of 100,000 boxes of Product 1 in the next period. The second transaction is the MRP calculation process. The MRP process creates new planning documents. The MRP process calculates how many units of each finished product must be produced in order to meet the independent requirements taking into consideration the quantities of finished products available. The MRP process creates planned orders accordingly . A planned order for 50,000 units of product 1 is an internal planning document that represents a plan to produce 50,000 units of product 1. A planned order, like any other planning document, can be deleted or changed. Based on the planned orders created, the MRP process also creates dependent requirements for raw materials. For every planned order, the MRP process calculates how much of each raw material is required to complete it. Finally, for each raw material, the MRP process calculates the quantity that must be purchased to meet those requirements taking into consideration the available raw material inventory. Purchase requisitions for each raw material are created accordingly.

The third transaction consists in transforming the purchase requisitions into purchase orders. The system takes the purchase requisitions for all raw materials and creates one purchase order per vendor. While the purchase requisition is a planning document and can be erased or modified, the purchase order is a formal contract between your company and your vendor and, and in the simulation game, cannot be changed.

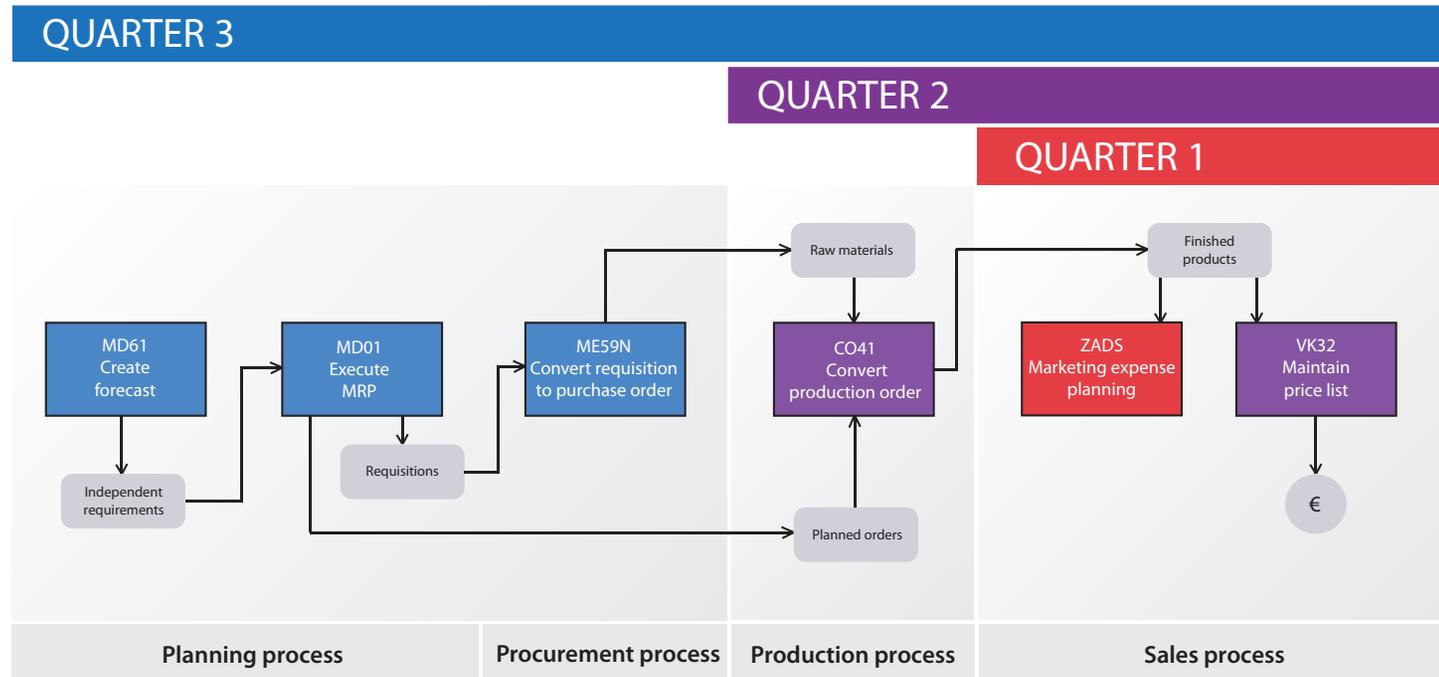
Once the raw materials are delivered by the vendor - processed automatically by ERPsim- your team can begin production. Consequently, the fourth transaction is to convert the planned orders into production orders. It consists of checking the availability of the required raw materials and the release of the production order to the shop floor. Once the production orders are released, the system reserves the required raw materials and a time slot on the production line. In this game, once a production order is released, it cannot be changed.

Once the production of finished products are confirmed and the produced boxes are put into the finished product warehouse - again, is done automatically by ERPsim - your company can now sell those boxes. The final two transactions consists of setting the sales price for the different finished products in the different distribution channels and investing in marketing.

2.3 Game settings

To provide a quick hands-on experience in the introductory game, you will be gradually introduced to each of the the required transactions over 3 quarters lasting 30 days each. In quarter 1 you will be introduced to sales transactions, in quarter 2 you will be introduced to production transactions, followed by planning and procurement transaction in quarter 3 (see figure 2.2). In the beginning of the game, each team has 100,000 boxes of 6 different products (for a total of 600,000 boxes) and enough raw materials to produce 100,000 additional boxes of each product. In the first quarter, the only task of each team is to price and sell existing inventory of finished products. In Quarter 2, teams will be able to produce additional finished products using the raw materials in inventory. Teams will be allowed to buy more raw materials only in Quarter 3 and beyond. Using this approach, we add a extra layer of complexity in each new quarter.

Figure 2.2: Transactions for each quarter



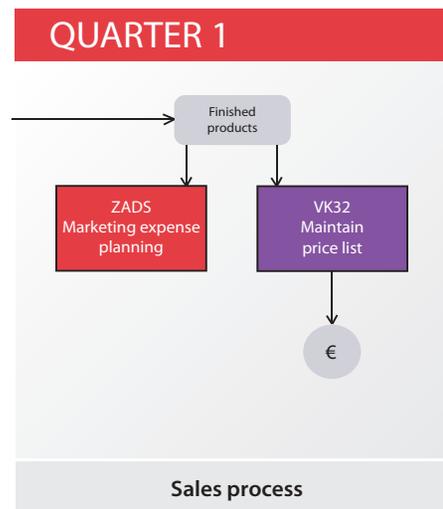
The following sections present in detail the transactions used in every quarter of this introductory game. At the end of this book, you will find job aids that summarize all the procedures to execute these transactions.

2.4 Sales process - Quarter 1

The game starts in quarter one and each company begins with 100,000 boxes of each of the 6 products. Your only task in the first quarter is to price and promote those products correctly. Before the quarter begins, you can also check product costing and the existing price list. After each day, you will get new updated reports on sales and inventory levels. Every five days, you will also get a summary market report on sales in the industry (you and your competitors). All these reports will be instrumental in setting your prices and your marketing strategy. Because this is a continuous-time game, you can change your prices and advertising expenditures at any time during the game. The simulator will adjust the demand for your products accordingly in the next day. So you must constantly monitor the relevant reports and adjust your decisions throughout the game. Please note that you may not produce in quarter 1 of this introductory game.

The sales process consists of two transactions and six reports (See figure 2.3).

Figure 2.3: Quarter 1: the sale process



Product cost planning

Pricing is a major challenge in the simulation. What you should charge for your products depends on the market, your finished product inventory levels, and the actions of your competitors. Whether the price you can get for your product will earn you a profit depends on what it costs you to bring that product to market.

ZCK11Quarter 1 / Reporting /
ERPsim: Product Cost
Planning**611**

We have developed a modified version of the SAP product cost planning tool to help you estimate the costs for your product (transaction ZCK11).

When the transaction is executed, the tool will calculate the unit cost of the selected product based on the price of the raw materials and the material content of each product. At the beginning of the introductory game, the product cost displayed in this report corresponds to the cost of producing your initial inventory. Note that although there are no fixed costs in the introductory game, this transaction includes considerations for fixed costs.

Maintain price list

In SAP®, a price list is a condition record. When a sales order is created, the transaction uses a pricing procedure to determine the price automatically. The pricing procedure looks for condition records to set the prices based on the various conditions applicable when a product is sold. These condition records include the price list, discounts, surcharges, transportation costs and taxes. You must specify a sales price condition record for each finished product that you wish to sell to every sales area (a unique combination of sales organization, division and distribution channel) Each of these price conditions is contained in a price list.

You will be able to change these prices during the simulation by using the following instructions.

On the “Create Condition Records: Overview” screen, open the “price” folder and click on “price list”. Click on the icon and then enter the following information:

Fields	Data to input
<i>Sales organization</i>	\$\$
<i>Distribution channel</i>	12

Click on 

On “Change Condition Records: Overview”, enter the following information:

Field	Data to input
<i>Amount</i>	<i>The new sale price of your material</i>

Click on  to save.

VK32Quarter 1 / Condition
Maintenance: Change**711**

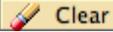
Marketing expense planning

ZADS

Quarter 1 / ERPsim:
Marketing expense
planning

501

You may invest in marketing at any point in time in the game. Remember that the marketing budget is only valid in the quarter in which it is invested and that customers have no memory, so the effect of marketing does not carry over into future quarters.

When you enter in this transaction, you will have defaulted values, you can click on  to clear the values in the table. Enter the following information:

Fields	Data to input		
Material / Area	North	South	West
\$\$-F01	It's up to you!		
\$\$-F02			
\$\$-F03			
\$\$-F04			
\$\$-F05			
\$\$-F06			

Click on  to save.

Inventory management

One of the key elements of the game is to be able to react to customer demand and ensure that the inventory of your products is maintained at the right level. Each time production for a given product is confirmed, the inventory of the finished product goes up. Each time a sale is processed the inventory goes down accordingly. Tracking the evolution of inventory levels provides you with a useful diagnostic on how well your production schedule matches the pace of sales. If stocks deplete quickly, you will either have to issue larger production orders, produce new batches more often, or increase the sales price to take advantage of high demand. Monitoring inventory levels will help you forecast demand and decide when you should issue production orders. It also provides information about the raw materials available.

ZMB52Quarter 1 / Reporting /
ERPsim: Inventory
Report**602**

To view the stock level in the various warehouses, we have created an easy-to-access customized report. Transaction code ZMB52 shows the inventory level for each product. Unlike transaction MD07, transaction ZMB52 has a refresh button () and it also displays the simulated day on which the report was last refreshed.

Sales order report

A fundamental task in your business is monitoring and analyzing sales orders to understand the market demand for your products.

ZVC2Quarter 1 / Reporting /
ERPsim: Summary Sales
Report**605**

You can use the summary sales report (transaction ZVC2) to monitor the sales of your company. This report will display for each day and each product - the total number of orders (Orders), the sum of all boxes sold (Qty), and the total sales revenue (Value).

To review the sales orders received by your company in detail, use the sales order report (transaction ZVA05). This report will display all of your sales orders and provide the following information: quarter and day when the order was received (Quarter, Day), where the product was sold (Distribution channel, Area), which product was sold (Material description), to who (sold-to-party), the number of boxes in the order (Qty), the sales revenues from the order (Value), the price at which these products were sold (Price), and when cash payment is expected (A/R Qtr, A\R Day).

ZVA05Quarter 1 / Reporting /
ERPsim: Sales Order
Report**606**

Notice that the sales report can be refreshed quickly by clicking on the refresh button (). Furthermore, the display can be customized according to your needs. For instance, you can sort the information in descend quarter and days in order to have the more recent data on the top of the screen (select the quarter and day columns and click on the  button). You create totals and subtotals by clicking on the summation signs ( and ) in the top menu. You are encouraged to experiment with different ways to display your data.

Market report**ZMARKET**Quarter 1 / Reporting /
ERPsim: Price Market
Report**607**

Another very interesting transaction is the market report (ZMARKET). Your company subscribes to a service that provides summary data for the entire muesli market. At the end of every five days, this report is updated to reflect the latest changes in industry sales and market prices. For each product and distribution channel, you have the total sales in both revenue and boxes (units) and the weighted average price for that 5 day period. You may refresh this report with () .

Financial statements

In SAP®, you can get current financial statements at any point in time during the simulation to get a snapshot of your financial situation.

F.01

Quarter 1 / Reporting /
ABAP Report: Financial
Statements

608

Transaction F.01 is used to display your financial statement. Enter the following information:

Fields	Data to input
Company Code	\$\$
Financial Statement Version	SIM1
ALV Tree Control	Check the radio button (optional)

This standard report provides you with the balance sheet and the income statement of your company. If you have selected the ALV Tree Control display, you can get more details on each section of this report by clicking on the triangle on the left hand side of every item.

The net income line corresponds to the cumulative profit (or loss) of your firm since the beginning of the game. Note that from the second quarter on, the report will show the financial results at the end of the previous quarter under the heading "tot.cmp.pr" so that the "Abs.diff." column will show changes for the current quarter, giving you a good idea of your current performance.

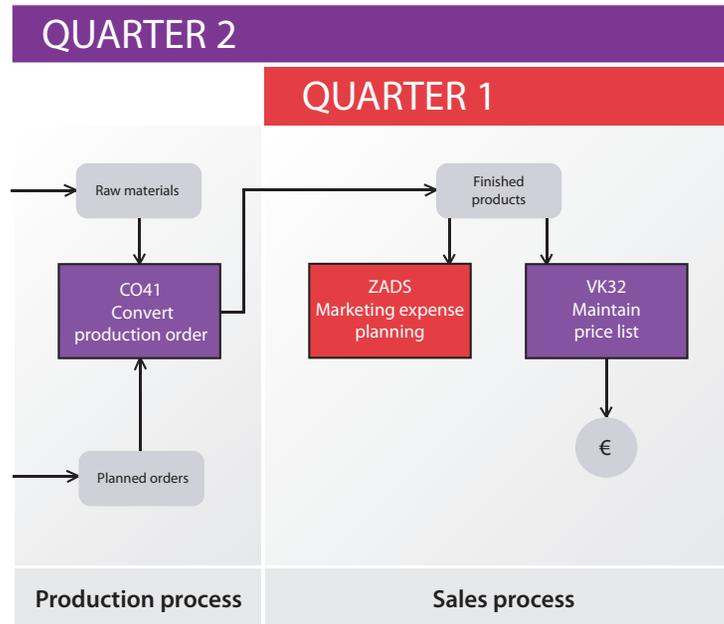
This report is a standard SAP transaction and has not been modified for this game. This report does not contain a refresh button. To refresh the data, you will need to go back to the selection screen using  and execute the query again with .

2.5 Production process - Quarter 2

After Quarter 1, your initial stock of finished products has most likely depleted considerably. To be able to sustain sales, you must begin production. In the introductory game, planned orders have been created in advance. All raw materials required to put this order into production are available in your warehouse.

Your task is to convert planned orders to production orders, and to monitor the production schedule. Hence, the production process is composed of one transaction and one report (See figure 2.4). In the introductory game, you have a daily production capacity of 25,000 units and there is no time lost between production runs (setup).

Figure 2.4: Quarter 2: the production process



Release production orders

The transaction Collective Conversion of Planned Orders (CO41) will allow you to convert multiple planned orders into production orders. After entering the transaction code, input the following information in the first screen and then click  to execute.

CO41
Quarter 2 / Collective conversion of planned orders
410

Fields	Data to input
Production Plant	\$\$
MRP Controller	101

If there are no planned orders available for conversion, you will get the following message: "Planned order could not be selected".

The next screen will provide a list of planned orders. You can convert one, many or all available planned orders into production orders. To do this, select the planned orders you wish to convert by clicking on the selection box on the left hand side of the list. You can use the "select all" icon () at the bottom of the screen to select all planned orders.

Once you have selected the desired planned orders, click on the "convert" icon () at the bottom of the screen. You will receive a confirmation that the selected planned orders were converted to production orders. If the planned order can not be converted a red "X" () will appear. Click on  in order to see why the conversion failed, most likely because raw material are not available.

Planned orders are planning documents that specify the quantity of each product to be produced.

Production schedule

ZCOOIS

Quarter 2 / Reporting /
ERPsim: Production
Schedule

604

When you release a production order, it sits in the production order queue until it can be processed. To keep track of these production orders, use the production schedule report (transaction ZCOOIS). This custom report provides detailed schedule information for each production order : the order number, the material description, the quarter and day when production will start (Start Qtr, Start Day), the quarter and day when production will end (End Qtr, End Day), the duration of the setup in hours (Setup hour), when the production order was released (Rel Qtr, Rel Day), the target quantity of the production order (Total Qty) and the confirmed quantity so far (Conf Qty).

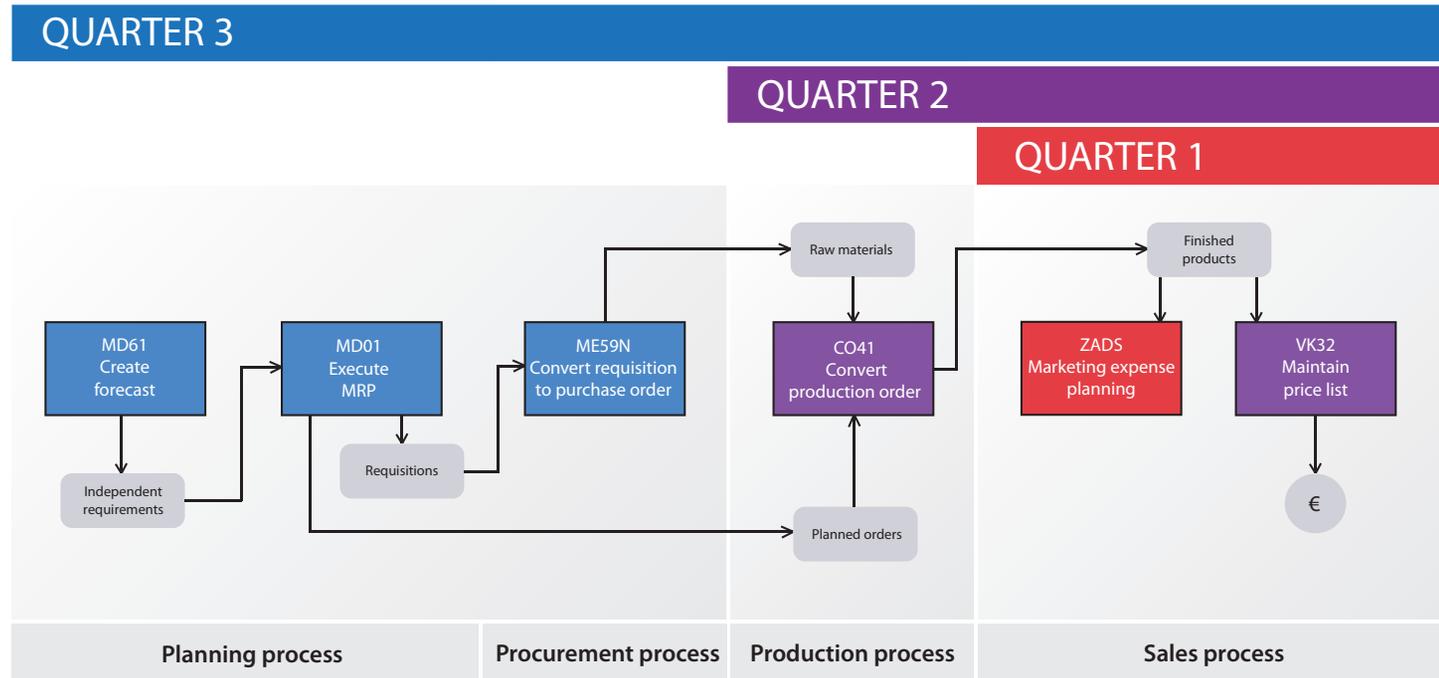
In Quarter 2, you have enough raw materials to release all existing planned orders in the system and confirm production of 100,000 boxes for each of the 6 products available. Given the existing production capacity (25,000 boxes per day), production of all 600,000 boxes will take 24 days. Because production takes time, the sequence in which the production orders are released matters.. Use the sales and inventory / stock reports to aid you in your deciding how to release production orders.

2.6 Planning process - Quarter 3

By the end of Quarter 2, you should have converted all your planned orders, confirmed all production, and used all your raw materials. To continue production, you need to buy more raw materials and create new planned orders. This subsection explains the planning process while the next subsection explains how to do procurement.

Before Quarter 3, you need to create planned orders and requisitions. This is done with the planning process, which is composed of two transactions (See figure 2.5).

Figure 2.5: Quarter 3: the planning and procurement process



Forecasting

Forecasting (MD61) is where you enter independent requirements which are in turn used to execute the MRP (material requirements planning) process. The MRP process uses the BOM to calculate all of the raw materials required for the production process. The MRP process will also create the purchase requisitions automatically. Purchase requisitions are internal documents to be used by the company's purchasing department to produce purchase orders. Please note that a forecast has to be entered for every product you plan to produce.

Creating the forecast			
First screen	Create Planned Independent Requirements: Initial Screen		
	Fields	Data to input	
	Product group	\$\$	
	Plant	\$\$	
	Task	Navigation	Result
	Continue		A second screen appears.
Second screen	Plnd ind. reqmts Create: Planning Table		
	Field	Data to input	
	Planned Independent Requirements	Enter the forecasted quantity in the next month and press "enter". (For example, if you run the game in September 2009, then enter your forecast in the month of October 2009.)	
	Tasks	Navigation	Results
Save the independent requirements.	Press 	The independent requirements for this material are now saved.	

Run the MRP calculation process

The second transaction (MRP calculation process) uses the independent requirements to calculate the raw material requirements. If you wish to produce 1000 large boxes of muesli, each containing 0.570 kg of wheat and 0.430 kg of oats, then you must acquire 570 kg of wheat, 430 kg of oats, 1000 large bags and 1000 large boxes before production. The MRP process calculates the requirements for all components in the BOM. The system also takes into consideration the inventory that you already have. Hence, if you already have 400 kg of wheat, only 170 extra kg will be put in the purchase requisition.

MD01
Quarter 3 / MRP Run
402

Execute MRP			
First screen	MRP Run Screen		
	Fields	Data to input	
	Plant	\$\$	
	Processing Key	NEUPL	
	Create purchase req.	1	
	Schedule lines	3	
	Create MRP list	1	
	Planning mode	3	
	Scheduling	1	
	Planning date	Today	
	Display material list	x	
	Tasks	Navigation	Results
	Continue		A notice pops up at the bottom of the page.
	Ignore the notice	press "enter"	The notice disappears.
Start the planning run		The planning run is carried out.	

You may save the MRP settings by using the following pull down menu path: settings / save. You will need to press enter to confirm saving these settings. You should get the following message if you are successful: "Selection parameters were saved". These are user-specific settings.

2.7 Procurement process - Quarter 3

The MRP process creates requisitions which are internal documents. To place orders with your vendors you need to create and send purchase orders.

You will need to know how to convert purchase requisitions into purchase orders, and how to monitor purchase orders. The procurement process is typically performed by the purchasing department. For your firm, it includes one transaction and one report (See figure 2.5).

To generate purchase requisitions, the system used two other documents, the info-record and the source list. Your firm has selected a single vendor for each material, so the source list was configured to be relevant to the MRP calculation. Therefore, the approved vendor was automatically assigned to the purchase requisition when it was generated by the system.

Purchase order

The purchase requisitions must be converted into purchase orders. A purchase order constitutes an official request to the supplier for the purchase of a specific quantity of material. The transaction ME59N automatically creates consolidated purchase orders for each vendor. In other words, if more than one requisition was assigned to the same vendor, only one purchase order with multiple items will be created. To complete the transaction, you must enter your purchasing organization number and plant to extract only the relevant open requisitions.

ME59N Quarter 3 / Automatic generation of PO 403	Generating automatically consolidated purchase orders from purchase requisitions		
	Automatic creation of purchase order from requisitions		
First screen	Fields	Data to input	
	Purchasing organization	\$\$	
	Plant	\$\$	
	Tasks	Navigation	Results
	Execute the query	Click  .	A report is displayed confirming the conversion of the purchase requisition and creation of the consolidated PO. The PO number should be highlighted in green.

Should you get the message at the bottom level of the screen saying that “no suitable requisition found”, it means that either the MRP calculation did not recreate new requisitions or that someone else in your team already converted the requisitions into a purchase order.

Monitor purchase orders

ZME2N

Quarter 3 / Reporting /
ERPsim: Purchase Order
Tracking

601

Managing procurement efficiently is critical to the success of your company. A report was specifically designed for the simulation game to track purchase orders (transaction ZME2N). In this report, you will find a list of your purchase orders. This report will be very useful to determine the status of your purchase orders in the purchasing cycle. For each order, you will see all the items included in the order and their quantities. The report provides the material, the quantity, the quarter and day at which the purchase order was created (PO Qtr, PO Day), the day of actual or expected goods receipt (Exp MIGO Qtr, Exp MIGO Day) as well as the day at which payment to the vendor will be (or was) made (Vendor payment Qtr, Vendor payment Day).

2.8 Conclusion

The objective of this chapter was to provide a quick overview of the ERP simulation and an introduction to the navigation in SAP. The next chapters present an extended version of this simulation and a more detailed description of the underlying business processes and decision support tools.

Part 2: Extended Game

**A Serious Game for Learning
Enterprise Resource Planning Concepts**

HEC MONTRÉAL
ERP SIMULATION GAME
Manufacturing Game

CHAPTER 3 – FINANCIAL BUSINESS PROCESSES

This chapter and the next show how to execute the different business processes required to run your organization in SAP®. There are two types of business processes you will perform in the course of the simulation game. This chapter presents the financial business processes, which are processed as transactions in the general ledger. Chapter 4 presents the operational business processes, which are used to manage the production of muesli cereal. In this chapter we will start with the financial transactions that are processed before the simulation begins. This will be followed by a description of the financial transactions that are executed during the simulation.

Before we execute these transactions in the system, we shall first review some basic accounting concepts and examine how SAP®'s financial accounting module is organized.

The Financial Accounting (FI) module of SAP® contains the necessary components to comply with all Generally Accepted Accounting Principles (GAAP). The financial module manages accounting-related business transactions following the document principle; this insures that all postings are stored in the form of documents to ensure an unbroken audit trail throughout the financial statement. The FI module is tightly integrated with the other modules in SAP®, and most postings to the FI module are performed automatically. For example, posting an invoice in the sales and distribution module will automatically create the associated financial accounting transactions in FI.

There are two important organizational elements in the financial module: the company code and the chart of accounts. The company code is the smallest organizational unit for which a complete self-contained set of accounts can be drawn to produce legal financial statements. In the simulation game, each team is represented by a unique company code.

Each company code is assigned to a chart of accounts. The chart of accounts is a classification scheme consisting of a group of general ledger (G/L) accounts used in the preparation of financial statements. These accounts can be classified into five categories: Assets, Liability, Equity, Sales Revenues, Cost of Goods Sold and Other Costs. The main master data used in the FI module are the G/L accounts. G/L accounts are structures that record value transactions in a company code. The account holds the transactional data generated by the accounting transactions. All accounting-relevant transactions are recorded in the appropriate G/L accounts.

The followings tables present all of the balanced sheet and the profit and loss statement accounts that you will be using during the simulation game.

Table 3.1: Chart of accounts – Balanced Sheet

Account categories			Accounts	Account number
Assets	Current Assets	Cash	WeizenBank Cash Account	113 300
		Inventory	Finished Goods	792 000
			Raw materials	300 000
		Receivables	Customers – Domestic Receivables	140 000
	Long-term assets	Land	Land	1 000
		Buildings	Buildings	2 000
			Accumulated depreciation – Buildings	2 010
		Machinery and equipment	Machinery and equipment	11 000
	Accumulated depreciation – Machinery and equipment		11 010	
	Liabilities	Current liabilities	Accounts payables	GR/IR Clearing – External procurement
Accounts payable – Domestic				160 000
Bank		WeizenBank Bankloan	113 101	
Equity	Common stock		Common stock	70 000
	Retained earnings		Calculated profit	From P/L

Table 3.2: Chart of accounts – Profit and loss statement

Account categories			Accounts	Account number	
Sales Revenues			Sales Revenues – Domestic	800 000	
Cost of Goods Sold	Cost of Goods Manufactured		Consumption Raw Materials	400 000	
			Direct Labor Costs	500 000	
			Factory Overhead Expenses	510 000	
			Depreciation Expenses: Building	211 120	
			Depreciation Expenses: Machinery and Equipment	211 130	
			Warehousing costs	478 100	
	Ending Inventory		Total Finished Products Sold	893 010	
			Total Finished Products Produced	895 000	
	Gain / Loss from valuation of inventory		Loss from Valuation of Own Materials	232 500	
Gain from Valuation of Own Materials			282 500		
Other Costs	SG&A		Sales, General and Administrative Expenses	520 000	
	Production Improvement Expenses		Lean Manufacturing Program Expenses	478 000	
	Marketing expenses	Marketing expenses in northern Germany		Advertizing North-01	477 001
				Advertizing North-02	477 004
				Advertizing North-03	477 007
				Advertizing North-04	477 010
				Advertizing North-05	477 013
				Advertizing North-06	477 016
		Marketing expenses in southern Germany		Advertizing South-01	477 002
				Advertizing South-02	477 005
				Advertizing South-03	477 008
				Advertizing South-04	477 011
				Advertizing South-05	477 014
				Advertizing South-06	477 017
		Marketing expenses in western Germany		Advertizing West-01	477 003
				Advertizing West-02	477 006
				Advertizing West-03	477 009
				Advertizing West-04	477 012
				Advertizing West-05	477 015
				Advertizing West-06	477 018
	Interest expenses		Interest expenses	476 900	

3.1 Pre-game financial transactions

The simulation game requires a number of financial transactions to be posted before the simulation begins: initial capitalization of the firm through both equity and liability and the acquisition of assets (land, building and equipment). These transactions are executed through postings to balance sheet accounts.

The company's board of directors has approved the issue of 1,000,000 shares of common stock at 8 euros per share, so each team must post an initial capitalization of 8 million euros. In addition, the board of directors has also approved the acquisition of a loan for 12 million euros to complete the financing of the firm, so this loan must also be posted. Using this 20 million euro of funding, the company will acquire land for 2 million euros, a building for 10 million euros and an assembly line for 5 million euros, leaving the company with 3 million euros to begin operations. Remember that the investment of 5 million euro for the assembly line provides your company a daily production capacity of 21,000 boxes. Refer to chapter 5 to learn how to further invest in your assembly line to increase the daily production capacity.

Whenever you post a transaction in the G/L, you need to provide certain information. On the header of the transaction, you need to input the date of the financial posting (Field Document Date) and to describe the posting (Field Doc. Header Text). For each line of the document, you then need to set the G/L account (Field G/L acct), determine if the line is a debit or credit (Field D/C) and input the amount posted in the account (Field amount). Remember that debits and credits must balance: when posting to the general ledger the values entered in all lines (a G/L transaction may involve postings to more than 2 lines) must conform to the double-entry accounting principle.

The following table explains how to post the capitalization and your bank loan.

FB50		Posting Initial capitalization	Posting bank loan
Accounting / G/L Acct Pstg: Single Screen Trans.	301		
	302		
Fields			
<i>Header</i>	<i>Document Date</i>	Today	
	<i>Doc. Header Text</i>	Initial capitalization	Bank loan
<i>On the first line</i>	<i>G/L acct</i>	113300 (Weizen bank, cash)	
	<i>D/C</i>	Debit	
	<i>Amount in doc. curr</i>	Enter amount	Loan amount
<i>On the second line</i>	<i>G/L acct</i>	70000 (Common stock)	113101 (Weizen bank, bank loan)
	<i>D/C</i>	Credit	
	<i>Amount in doc. curr</i>	8 million euros	12 million euros

Now that you have 20 million euros in cash, we can now process the transactions to record the purchase of the physical assets (land, building and assembly line).

The following table explains how to post the acquisition of the land and building. The building has a useful life of 20 years and will be used for production and inventory storage. Your firm will use simple straight line depreciation for the building. Note that it is customary to assume that land does not lose value and thus is not depreciated.

FB50
Accounting / G/L Acct
Pstg: Single Screen
Trans.

303 **304**

Fields		Acquiring Land	Acquiring Building
Header	Document Date	Today	
	Doc. Header Text	Land	Building
On the first line	G/L acct	1000 (Land)	2000 (Building)
	D/C	Debit	
	Amount in doc. curr	2 million euros	10 million euros
On the second line	G/L acct	113300 (Weizen bank, cash)	
	D/C	Credit	
	Amount in doc. curr	2 million euros	10 million euros

Next the acquisition of the assembly line must be posted to the general ledger. The assembly line has a useful life of 10 years with no residual value. Your firm will also use simple straight line depreciation for the assembly line.

FB50
Accounting / G/L Acct
Pstg: Single Screen
Trans.

305

Fields		Acquiring Assembly Line
Header	Document Date	Today
	Doc. Header Text	Assembly line
On the first line	G/L acct	11000 (Machinery and equipment)
	D/C	Debit
	Amount in doc. curr	5 million euros
On the second line	G/L acct	113300 (Weizen bank, cash)
	D/C	Credit
	Amount in doc. curr	5 million euros

3.2 Recurring financial transactions

The following section presents transactions that you will perform throughout the simulation game to reflect your business decisions.

These transactions post expenses in profit and loss accounts. Because of this, you must also specify the appropriate cost center when posting these transactions (cost centers \$\$).

3.2.1 Marketing investments

The next transactions involve the payment of marketing expenses. The marketing expenses must be posted in the appropriate account(s) and you must spend a total of 100,000 euros in marketing for the first quarter. You can market each of your six products in the three areas (18 accounts numbered 477001 to 477018).

The following table gives the G/L account number that represents an investment in marketing for a specific product in a specific area.

Table 3.3: Marketing account table

Area / Product	\$\$-F01	\$\$-F02	\$\$-F03	\$\$-F04	\$\$-F05	\$\$-F06
North	477001	477004	477007	477010	477013	477016
South	477002	477005	477008	477011	477014	477017
West	477003	477006	477009	477012	477015	477018

For instance, a posting in account 477014, would correspond to a marketing investment for product \$\$-F05 in southern Germany.

Fields		Marketing investments
Header	Document Date	Today
	Doc. Header Text	Advertizing
On the first line	G/L acct	113300 (Wiezen Bank)
	D/C	Credit
	Amount in doc. curr	100,000 euros for the first quarter. In later quarters, you must decide how much to invest
On the next lines	G/L acct	Enter the appropriate G/L accounts for the products and area you wish to invest in. You can use multiple lines to post all marketing investments in a single transaction, as long as the total of the debits equals the credit amount.
	D/C	Debit
	Cost center	\$\$
	Amount in doc. curr	Advertizing

Press "enter" and then click on "Simulate" to test the transaction. Click on "Back" to return to the transaction screen.

Save by clicking on  and note the document number.

Please note that a customized transaction has been developed to simplify the marketing investment during the game. The technical name of this transaction is ZADS and will be described in chapter 5.

3.2.2 Interest payment transaction

Please note that for the first quarter of the game, the interest on the bank loan will be at a rate of 7.5%.

FB50
Accounting / G/L Acct Pstg: Single Screen Trans.
307

Fields		Interest payment
<i>Header</i>	<i>Document Date</i>	Today's date
	<i>Doc. Header Text</i>	Interest payment
<i>On the first line</i>	<i>G/L acct</i>	113300 (Weizen bank)
	<i>D/C</i>	Credit
	<i>Amount in doc. curr</i>	Loan amount x Quarterly interest rate (122,727.27 for first 30 days)
<i>On the second line</i>	<i>G/L acct</i>	476900 (Interest expenses)
	<i>D/C</i>	Debit
	<i>Cost center</i>	\$\$
	<i>Amount in doc. curr</i>	Loan x Quarterly interest rate (122,727.27 for first 30 days)

Press "enter" and then click on "Simulate" to test the transaction. Click on "Back" to return to the transaction screen.

Save by clicking on  and note the document number.

IMPORTANT: If you are playing a game where interest payment is automated, you will not need to manually process this transaction after the first quarter. In other words, you will only post the interest expense in the first quarter of the game, and the simulator will automatically post the interest expense in each of the following quarters.

3.2.3 Depreciation expenses

We recognize that our building and equipment have a finite life by making postings to the appropriate depreciation expense accounts. While depreciation is not an actual cash expense like labor or raw material expenses, it is important to recognize the use of these finite resources to get an appropriate picture of the company's profitability.

The following table shows the postings required to post the building and equipment depreciation expenses.

Fields		Building depreciation	Machinery depreciation
Header	Document Date	Today's date	
	Doc. Header Text	Building depreciation	Machinery depreciation
On the first line	G/L acct	2010 (Accumulated Depreciation – Building)	11010 (Accumulated Depreciation – Machinery)
	D/C	Credit	
	Amount in doc. curr	68,181.82 euros per 30 days (5% annually)	68,181.82 euros per 30 days (10% annually)
On the second line	G/L acct	211120 (Depreciation Expenses – Building)	211130 (Depreciation Expenses – Equipment)
	D/C	Debit	
	Cost center	\$\$	
	Amount in doc. curr	68,181.82 euros per 30 days (5% annually)	68,181.82 euros per 30 days (10% annually)

IMPORTANT: If you are playing a game where depreciation is automated, you will not need to manually process this transaction after the first quarter. In other words, you will only post depreciation in the first quarter of the game and the simulator will automatically post the depreciation expense for all of the remaining quarters.

3.2.4 Production improvement transactions

Production improvements will increase the actual production throughput of your plant. More specifically, this transaction will reduce the time to perform the allergen cleanup and set up the assembly line.

In the first quarter, all firms must invest 50 000 euros to reduce the setup time.

FB50
Accounting / G/L Acct Pstg: Single Screen Trans.
310

Fields		Lean manufacturing investments
Header	Document Date	Today's date
	Doc. Header Text	Lean manufacturing
On the first line	G/L acct	113300 (Weizen bank)
	D/C	Credit
	Amount in doc. curr	For the first quarter, you must invest 50,000 euros. After that, it's up to you!
On the second line	G/L acct	478 000 (Lean manufacturing expenses)
	D/C	Debit
	Cost center	\$\$
	Amount in doc. curr	For the first quarter, you must invest 50,000 euros. After that, it's up to you!

3.2.5 Other expenses

The other expenses in producing muesli cereals can be classified as direct labor, manufacturing “overhead (in addition to assembly line depreciation and building depreciation) and SG&A. The following table gives the information to post these expenses each quarter.

FB50	
Accounting / G/L Acct Pstg: Single Screen Trans.	
311	312
313	

Fields		Direct labor expenses	Factory overhead expenses	SG&A expenses
Header	Document Date	Today's date		
	Doc. Header Text	Direct labor cost	Factory overhead	SG&A
On the first line	G/L acct	113300 (Weizen bank)		
	D/C	Credit		
	Amount in doc. curr	126,720 euros per 30 days	86,400 euros per 30 days	278,400 euros per 30 days
On the second line	G/L acct	500000 (Direct labor expenses)	510000 (Factory overhead)	520000 (SG&A)
	D/C	Debit		
	Cost center	\$\$		
	Amount in doc. curr	126,720 euros per 30 days	86,400 euros per 30 days	278,400 euros per 30 days

IMPORTANT: If you are playing a game where these expenses are automated, you will not need to manually process this transaction after the first quarter. In other words, you will only post these expenses in the first quarter of the game and the simulator will automatically post these expenses for all of the remaining quarters

FB08	
Accounting / Reverse Document	
314	

3.3 Other useful financial transactions

3.3.1 Reversing a transaction

The document principle in accounting requires an unbroken audit trail. Consequently, whenever you post an erroneous transaction, you must reverse it to preserve the audit trail.

In the screen "Reverse Document Header data" , enter the following information:

Fields	Data to input
<i>Document Number</i>	Number of the document to be reversed
<i>Company code</i>	\$\$
<i>Fiscal year</i>	<i>Current fiscal year</i>
<i>Reversal reason</i>	<i>Your reason to reverse the transaction</i>

Click on "Display before reversal". In the screen "Document overview-Display", click on  Then, click on  in the dialogue box.

3.3.2 To unpark a financial document

FBV0

Accounting / Unpark Document

315

Enter the following information:

Fields	Data to input
<i>Document Number</i>	Number of the document to be displayed
<i>Company code</i>	\$\$

Click on , then click on  to post the document.

FB03

Accounting / Display Document

316

3.3.3 To display a financial document

Enter the following information:

Fields	Data to input
<i>Document Number</i>	Number of the document to be displayed
<i>Company code</i>	\$\$
<i>Fiscal Year</i>	<i>Current fiscal year</i>

Click on .

CHAPTER 4 – OPERATIONAL BUSINESS PROCESSES

As a make-to-stock manufacturing company, there is a set of processes that must be performed to run your business. There are four main processes that are presented here: (i) the planning process, (ii) the procurement process, (iii) the production process, and (iv) the sales process (See figure 3.1).

Each process can be decomposed into transactions. In SAP®, a transaction corresponds to an operation that interacts with the centralized data of the ERP system. To complete the four processes mentioned above, a total of 12 transactions must be performed.

Most of the transactions involved in these processes are operational in nature, such as purchasing materials or delivering finished products. We will also cover some financial transactions that are associated with these integrated business processes.

We are managing these processes with SAP®, which is an integrated system. For any business process, each transaction is related in some way to one or many other building blocks of the system. The idea behind an integrated system is to use all existing information to avoid data re-entry, and to create and store new data for future use in other transactions.

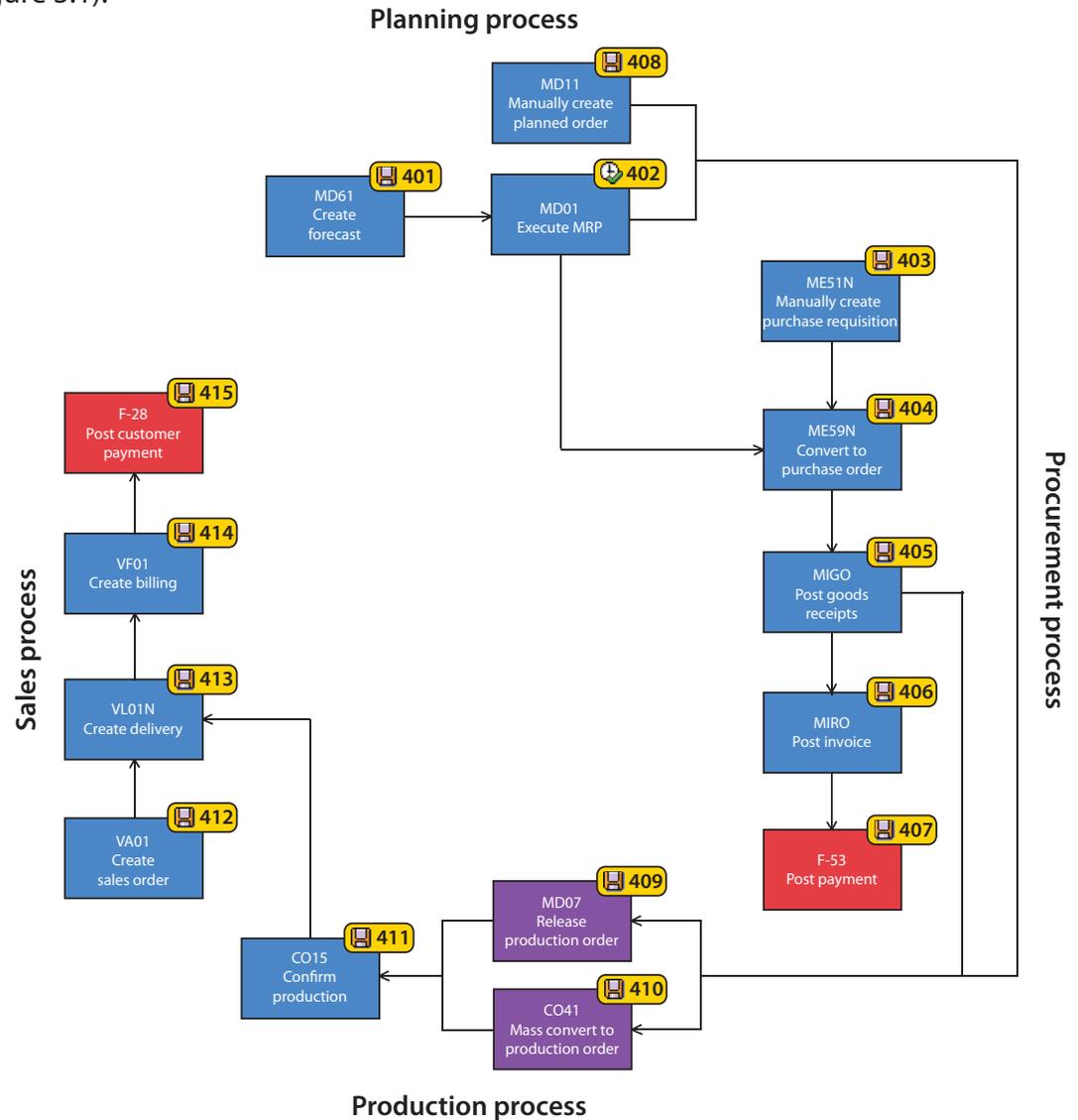


Figure 4.1: The operational processes

A transaction may require using information stored in the organizational elements or the master data; it also creates new transactional and accounting documents.

Figure 4.2 provides the notation used to represent the business processes in this chapter.

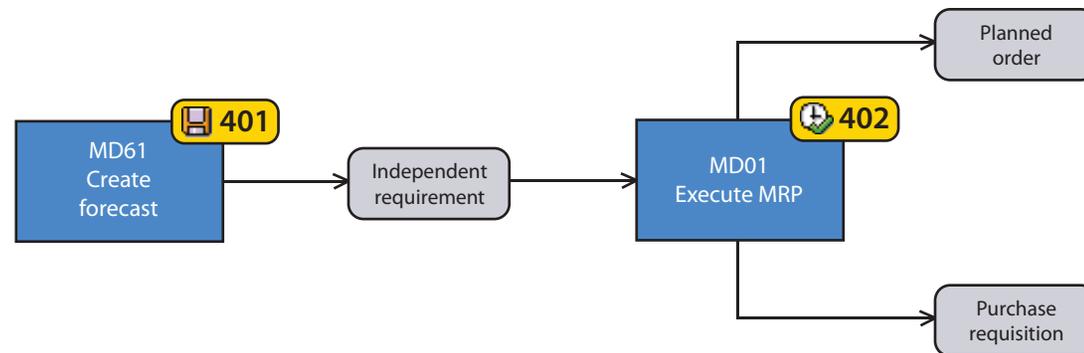
Figure 4.2: Notation



4.1 Planning process

Before we can produce finished products, we need to procure the raw materials in the required quantity in time for production. The planning process facilitates the accurate calculation of raw material requirements. First, we create a forecast for each finished product (the quantity needed to fulfill expected sales). Forecasting (MD61) generates the independent requirements for each finished product, which are used as an input to the MRP (material requirement planning) process. The MRP process calculates all of the raw materials required for the production process using the BOM (bill of material) and the independent requirements. The MRP process will also automatically create the purchase requisitions, which are internal documents to be used by the company's purchasing department to create purchase orders, which are external documents used to communicate these raw material needs to the vendors. Please note that a forecast has to be done for every product you plan to produce.

Figure 4.3: The planning process



MD61

Logistics / Production Planning / Material Forecast / Create Planned Independent Requirements

401

Creating the forecast			
First screen	Create Planned Independent Requirements: Initial Screen		
	Fields	Data to input	
	Material	\$\$-F%%	
	Plant	\$\$	
	Task	Navigation	Result
	Continue		A second screen appears.
Second screen	Plnd ind. reqmts Create: Planning Table		
	Field	Data to input	
	Planned Independent Requirements	Enter the forecasted quantity in the next month and press "enter". (For example, if you run the game in September 2008, then enter your forecast in the month of October 2008.)	
	Tasks	Navigation	Results
Save the independent requirements.	Press "save"	The independent requirements for this material are now saved.	

The second transaction, execute MRP, uses the independent requirements and the BOM to calculate the raw material requirements. If you wish to produce 1000 large boxes of muesli, each containing 570 grams of wheat and 430 grams of oats, then you must acquire 570 kilos of wheat, 430 kilos of oats, 1000 large bags and 1000 large boxes before production can start. The MRP process calculates these requirements for all components in the BOM. The system also takes into consideration the stock of material that you already have. Hence, if you already have 400 kilos of wheat, only 170 extra kilos will be put in the purchase requisition.

To execute the MRP process (MD01), you need to enter your plant number. The system will then automatically extract the independent requirements previously generated for your plant, pull the information from the BOM of the finished products mentioned in the document, calculate the quantity of raw materials you need, subtract the quantity of raw materials you already have in stock, then create purchase requisitions for the net quantity of raw materials required.

MD01
Logistics / Production Planning / MRP / MRP Run
402

Execute MRP			
First screen	MRP Run Screen		
	Fields	Data to input	
	Plant	\$\$	
	Processing Key	NEUPL	
	Create purchase req.	1	
	Schedule lines	3	
	Create MRP list	1	
	Planning mode	3	
	Scheduling	1	
	Planning date	Today	
	Display material list	x	
	Tasks	Navigation	Results
	Continue		A notice pops up at the bottom of the page.
	Ignore the notice	press "enter"	The notice disappears.
Start the planning run		The planning run is carried out.	

You may save the MRP settings by using the following pull down menu path: settings / save. You will need to press enter to confirm saving these settings. You should get the following message if you are successful: "Selection parameters were saved". Remember that these are user-specific settings.

You can view the stock / requirement lists using the transaction code MD04, which will show you the results of the MRP planning process.

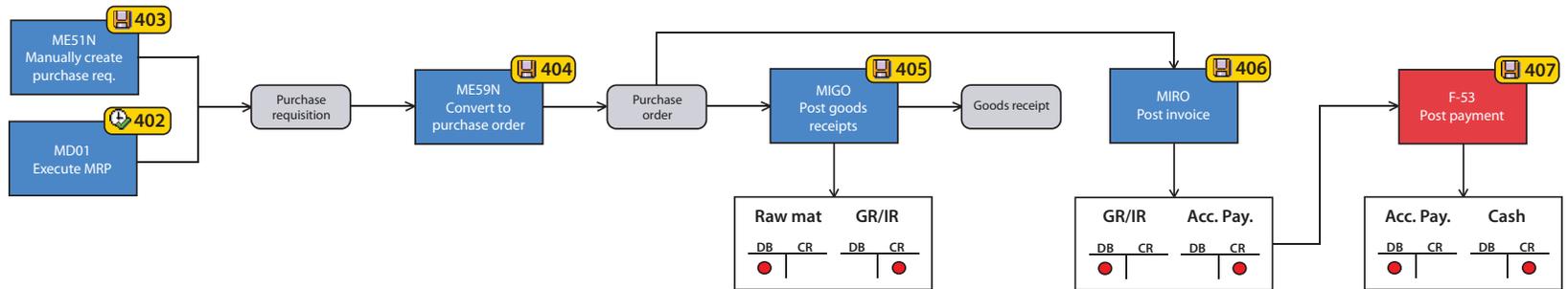
MD04 (individual) or MD07 (collective) Logistics / Shop Floor Control / Order / Create / Display Stock / Requirements Situation	View the stock/requirement list		
	Requirements List: Initial screen		
	Fields	Data to input	
	Material	\$\$-F%%	
	Plant	\$\$	
	Task	Navigation	Result
Continue		The second screen appears	

4.2 Procurement process

The procurement process is typically performed by the purchasing department. For your firm, it includes four transactions: create purchase order, post goods receipt, post invoice, and post payment. In other words, the procurement process manages the ordering, receiving, and payment for the raw and packaging materials (see figure 4.3).

The MRP planning process generates a document called a “purchase requisition”. This is an internal document that has been assigned a reference number and is used to identify raw material needs to the purchasing department.. To generate these purchase requisitions, the system used information contained in the info-record and the source list. Because your firm has selected a single vendor for all material, the source list was configured to be relevant to the MRP calculation. As a result, the approved vendor was automatically assigned to the purchase requisition when it was generated by the system.

Figure 4.4: The procurement process



Note that it is possible to order raw materials without running the MRP planning process, i.e. you can create a purchase requisition manually. To do this use transaction ME51N as before and enter the product code, the quantity and your plant. By doing so, you will bypass the MRP calculation and create a purchase requisition which is not related to an independent requirement. You can use this technique to stock up raw materials when the prices are lowest.

ME51N
Logistics / Materials Management / Purchase Requisition / Create
403

Creating a purchase requisition manually		
First screen	Create Purchase Requisition: Initial Screen	
	Task	
	Expand the item overview section by clicking on	
	Fields	Data to input
	Material	\$\$-R%% \$\$-P%%
	Quantity	Enter the quantity needed
	Plant	\$\$
	Fixed vendor	V01 V02

Then, click on save .

The purchase requisitions must be converted into purchase orders. A purchase order constitutes an official request to the supplier (vendor) for the purchase of a specific quantity of material. The transaction ME59N automatically creates consolidated purchase orders for each vendor. In other words, if more than one requisition was assigned to the same vendor, only one purchase order with multiple items will be created. To complete the transaction, you must enter your purchasing organization number to extract only the open requisitions relevant to your company.

ME59N Logistics / Materials Management / Purchase Order / Create / Automatically via Purchase Requisition 404	Generating automatically consolidated purchase order from purchase requisitions		
	Automatic creation of purchase order from requisitions		
	Fields	Data to input	
	Purchasing organization	\$\$	
	Plant	\$\$	
	Tasks	Navigation	Results
Execute the query	Press  .	A report is displayed confirming the conversion of the purchase requisition in the consolidated PO. The PO number should be highlighted in green.	

When goods are received, a goods receipt must be completed. The receiving clerk checks the quantity and quality of goods received and documents this in the system. This is done using the transaction code MIGO. You must enter the number of the purchase order used to purchase these goods to link the goods receipt with the purchase order that initiated the purchase. Verify that the quantity corresponds to the quantity ordered and check OK to validate that the material has been received in good condition as planned. When you enter a goods receipt, the SAP® system debits the raw material inventory account and credits the GR/IR account in addition to recording the increase in raw material stock levels.

MIGO
Logistics / Materials Management / Goods Receipt / Goods Movement
405

Post goods receipt		
Goods Receipt Purchase Order- YOUR NAME screen		
Field	Data to input	
Purchase order	Your purchase order	
Tasks	Navigation	Results
Continue		The purchase order information appears
Enter storage location for each items.		88
Complete the Good Receipts	click on "Item OK"	The goods quality and quantity are checked for each item.
Save		Note the number
Repeat the same operations for your other purchase order.		
Please note that to avoid selection problems with the lines of the PO, close the "Detail data" tab on the bottom left of the screen.		

The next transaction is posting the vendor's invoice (MIRO). In this step you are recording the invoice received from the vendor into the SAP® system. Again you must enter the number of purchase order to link this invoice to the purchase order and goods receipt. This transaction automatically creates an accounts payable in the system. When you post an invoice, the SAP® system credits an account payable to the vendor and debits the GR/IR account. Invoices must be paid upon receipt.

MIRO
Logistics / Materials Management / Invoice / Logistics Invoice Verification
406

Post vendor's invoice			
First screen	Enter Incoming Invoice: YOUR COMPANY CODE screen		
	Fields		
	Invoice Date	Today	
	Posting date	Today	
	Purchase Order/ Scheduling Agreement	Your purchase order	
			
	Task	Navigation	Result
	Continue	Click on "enter"	The purchase order informations appear
	Fields	Data to input	
	Amount	Amount beside  Balance	
	BaselineDT (in payment tab)	Today	
	Pmnt terms (in payment tab)	0001	
	Task	Navigation	Result
	Continue	Press "enter"	Ignore the notice saying that the terms of payment have been changed.
	Check if the amount entered balance	 Simulate	The balance (bal.) should be zero. IMPORTANT: copy the invoice amount to paste it in the next transaction.
Return to the main screen	click on "Back"	You are returned to the main screen	
Save		Note the number	
Repeat the same operations for each vendor.			

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Payment is made from the bank account, which clears the accounts payable. The transaction code for the payment of the vendor's invoice is F-53. You must pay the totality of the amount due. You must enter your company code (Field company code) and the vendor number (Field Account). Your cash account will be credited when you complete the transaction. Make sure that you have enough funds to complete the payment. If not, you will have a negative cash account and your banker will be notified.

F-53
Logistics / Materials Management / Accounts Payable / Outgoing Payment
407

Payment of the vendor's invoice			
First screen	Post Outgoing Payment with Printout: Header Data screen		
	Fields	Data to input	
	Company Code	\$\$	
	Document date	Today's date	
	Bank data: Account	113300	
	Bank data: Amount	From the invoice	
	Open item selection: Account	Vendor id	
	Task	Navigation	Result
Continue	Click on "Process open items"	The next screen appears	
Second screen	Post outgoing payment: Process open item		
	Task	Navigation	Result
	Save		The invoice is paid
Repeat the same operations for each vendor			

4.3 Production process

The production process is composed of two transactions. Each of these transactions records the evolution of the production process and the flow of goods within the production system (see figure 4.5).

The planning process leads to the creation of a document called the planned order. The document contains information about the quantity of the finished good that is to be produced to meet the forecast (via the independent requirement) and information contained in the BOM and the routing master data. This information does not need to be reentered.

Recall that the MRP run creates planned orders if a gap exists between the forecast (independent requirements) and existing stock levels and Production plans (other planned orders and production orders).

Another option is to directly create a planned production order in the system. This way, you would pass by the step of creating a forecast. To do so, use transaction MD11.

In the "Create planned order: Initial screen", enter the following information:

MD11
Logistics / Shop Floor Control / Planned Order / Create Planned Order
408

Fields	Data to input
<i>Planned order profile</i>	LA

On the "Create planned order: Stock order"

Fields	Data to input
<i>Material</i>	\$\$-F%%
<i>Order quantity</i>	Enter the quantity of the planned order
<i>Order finished</i>	Today's date

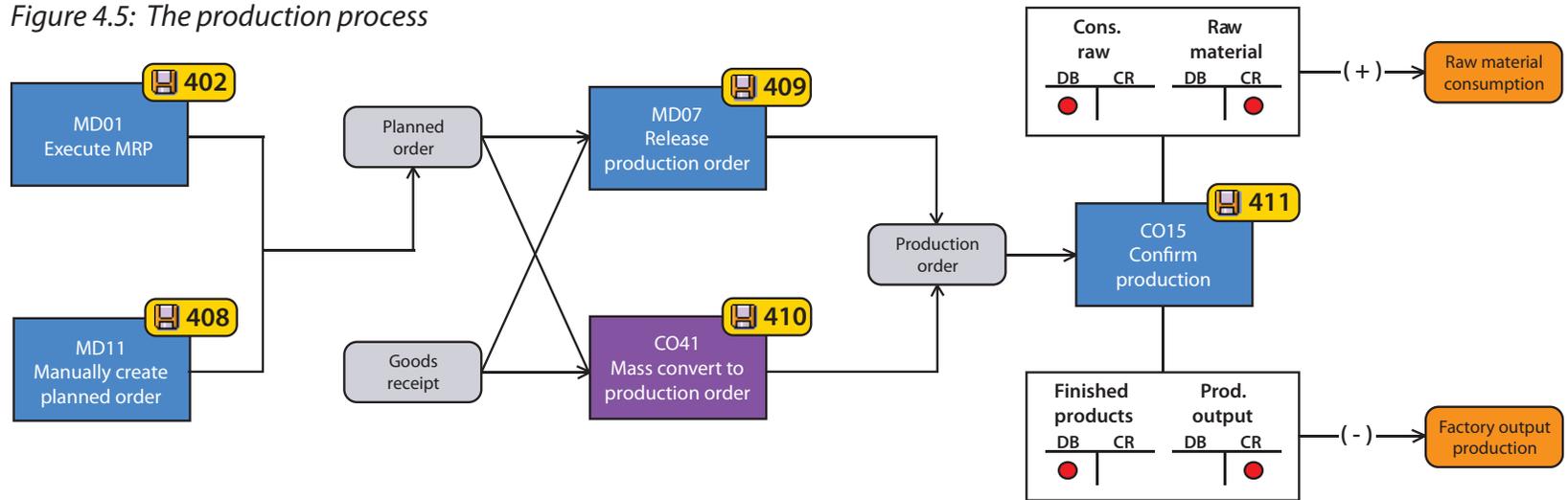
Click on  to save the planned order. You can now run the MRP and the system will calculate the raw material requirements to be able to carry out this new production planning and create the required purchase requisitions.

The first transaction of the production process consists of taking the planned order and converting it into a production order (transaction code MD07). A production order is a formal document issued to the workers on the shop floor to produce a requested quantity of a finished good.

A production order must be released before the shop floor personnel can begin production. To release a production order, one must check the availability of raw material required to go into production.

When the verification is successfully completed, the production order can be released. If the production order is not released, you will not be able to process it, i.e. shop floor document cannot be printed, raw materials cannot be issued and production cannot start.

Figure 4.5: The production process



MD04 (individual) or MD07 (collective)

Logistics / Shop Floor Control / Order / Create / Current Material Overview

409

Production order			
First screen	Stock/Requirement List: Initial Screen		
	Fields	Data to input	
	Material	\$\$-F%%	
	Plant	\$\$	
	Task	Navigation	Result
	Continue		A new screen appears
Second screen	Stock/Requirements List as of THE TIME THE SCREEN IS OPENED Hrs		
	Task	Navigation	Result
	Check that raw materials are available		All required raw materials should have a green light
Convert planned order in production order	Place the cursor on "PIOrd" and right-click. Select "PlndOrd. --> Prod.ord."	A new screen appears	
Third screen	Production order Create: Header screen		
	Fields	Data to input	
	Finish (date)	Today	
	Start (date)	Today	
	Task	Navigation	Result
	Check that all materials are available	Click on  Material	This message should be displayed at the bottom of the screen: "All checked materials in order are available"
	Release the production order		The production order is released
Save		Note the number	

There is an alternative to manually converting planned orders into production orders. The transaction Collective Conversion of Planned Order transaction (CO41) allows you to convert multiple planned orders into production orders. In addition to converting the planned orders to production orders, this transaction will automatically release the orders if the raw materials are in stock. After entering the transaction, input the following information and then click execute.

CO41
Logistics / Shop Floor Control / Order / Create / Collective conversion of planned orders
410

Fields	Data to input
Production Plant	\$\$
MRP Controller	101

If there are no planned orders available for conversion, you will get the following message: “Planned order could not be selected”. In this case, make sure that the forecasting and MRP transactions were performed correctly.

The next screen will provide a list of planned orders. You can convert one, many or all available planned orders into production orders. To do this, select the planned orders you wish to convert by clicking on the selection box on the left hand side of the list. You can use the “select all” icon at the bottom of the screen to select all planned orders.

Once you have selected the desired planned orders, click on the “convert” icon at the bottom of the screen. You will receive a confirmation that the selected planned orders were converted to production orders. If all of the raw materials required for these planned orders are not in stock, you will receive a message. Check the log file if this occurs to find the missing parts. This means you will not be able to release one or more of these new production orders, which means that the product will not be produced.

The next transaction creates a production order confirmation (transaction code CO15). After the production is carried out, you need to confirm the production of finished goods in the system. If the ERP system were connected to a manufacturing execution system, the information would be relayed automatically to the ERP system, but this is not the situation in our case. We need to manually confirm the completed production in the SAP® system. In practice this could be done by scanning the production batches at the end of the production line. In our case, we will confirm the entire production simultaneously by using the final confirmation option. You need to enter your production order number, press on “continue”, confirm that the production is done by clicking on “final confirmation”, and save.

The confirmation process affects both inventory levels and general ledger accounts. In confirming production, SAP® has been configured for this environment to increase the inventory level of finished goods and reduce the inventory levels of the raw materials based on the production quantity and BOM. In addition, SAP® credits the raw inventory account and debits the raw material consumption in both the financial and the cost accounting modules. In other words, it is the con-

firmation of the production that triggers the consumption of raw material. The system automatically moves the finished products to the storage location 02 (MB31).

Confirm production execution			
First screen	Create Production Order Confirmation: Initial screen		
	Fields	Data to input	
	Order	your production order number	
	Tasks	Navigation	Results
	Continue		The next screen appears
Second screen	Confirmation of Production Order create: Actual data		
	Task	Navigation	Result
	Confirm that the production is done	Click on "Final Confirmtn"	The production is confirmed
	Save		The confirmation is saved

IMPORTANT: When saving this transaction, you should get a message at the bottom left of the screen that confirms the operation involved in the goods movement postings. The message should tell you that all goods movements were successfully posted.

Occasionally, you may obtain a message that will indicate that some goods movement could not be posted due to incorrect or insufficient data. This is due to a shortage of raw materials in storage location 88. Raw material may accidentally be stored in an incorrect storage location (02 instead of 88). Also, in some cases, the error may be caused by a conflict with another transaction processed at the same time (e.g. changing the info records when confirming the production may cause the system to lock some tables and impede a valid goods movements).

In any of these cases, you need to run transaction COGI (Automatic goods receipt: Error Handling) to manually post the goods movement. In this transaction, you must enter your plant number and execute the report. Select the goods movement you wish to process manually by clicking on the check box and then press the 'change details' button. In the 'Goods movements with error' screen, modify the goods if needed (for example by changing the storage location if the materials were stored in the wrong place). If the error was created by a conflict between CO15 and ME1M, we may just ask the other user to close his session and then save the goods movement as is.

MD04 (individual) or MD07 (collective)

Logistics / Shop Floor Control / Order / Create / Display Stock / Requirements Situation

When this process is completed, you may go back to the stock/requirement list. You will see that the stock level has increased and that the production order has now disappeared.

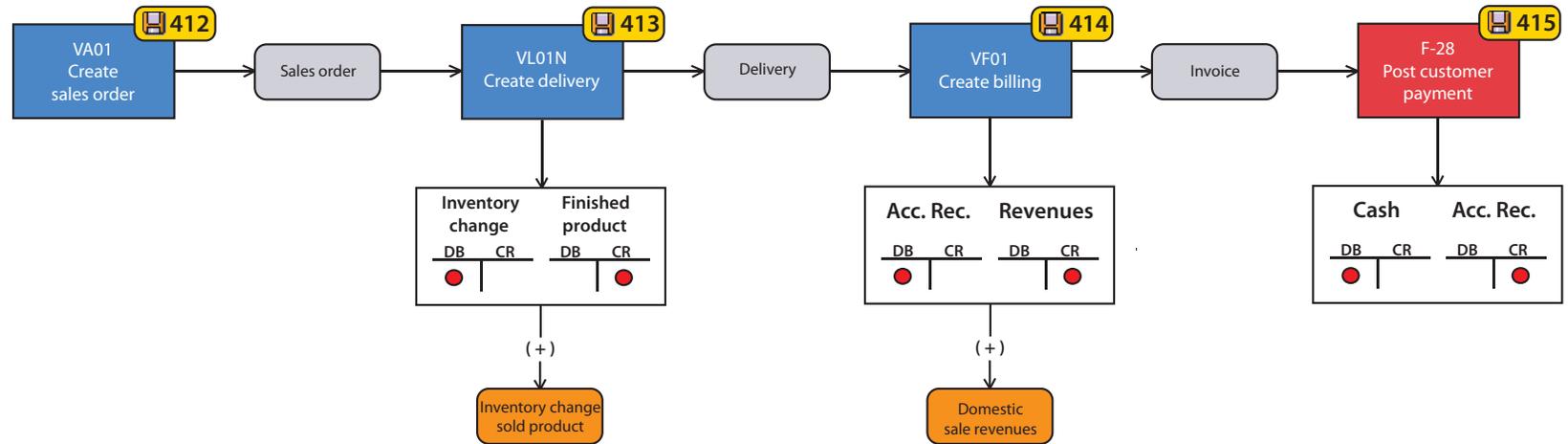
View stock of products			
First screen	Stock/Requirements List: Initial screen		
	Fields	Data to input	
	Material	\$\$-F%%	
	Plant	\$\$	
	Tasks	Navigation	Results
	Continue		The second screen appears
Second screen	Stock/Requirements List as of THE TIME THE SCREEN IS OPEN Hrs		
	Tasks	Navigation	Results
	Check the stock	Double-click on the available quantity (the blue number at the first line)	A stock statistics screen pops up
	Check the stock at the storage location level	Click on "Stock overview"	The screen "Stock overview:/Companycode/ Plant / Storage location/Batch" appears

4.4 Sales process

The sales process consists of four transactions.

The first transaction creates a sales order (Transaction code VA01). A sales order is a document that represents the formal request for goods or services from a customer. A list of information about the customer and the sale must be entered into the ERP system. A sales order carries all information relevant to the sales process: the product and the quantity requested, the sales conditions, the billing and shipping information of the customer and many other pieces of information required in the subsequent transactions of the sales process.

Figure 4.6: The sale process



The creation of the sales order has no impact on the financial accounts. Even though the sales order document is a legally binding contract, it there is no financial change recorded until confirmation of shipment of the product results in the recording of change in finished goods inventory.

VA01
Logistics / Sales and Distribution / Sales / Create Sales Order
412

		Create sales order						
First screen	Creates Sales Order: Initial Screen							
	Fields		Data to input		Fields		Data to input	
	Order Type		OR		Distribution Channel		10	
	Sales Organization		\$\$		Division		00	
	Task		Navigation		Result			
Continue				The second screen appears				

Second screen	Create Sales Order: overview screen			
	Fields	Data to input	Fields	Data to input
	Sold-to party	Your customer number	PO date	Today
	Ship-to party	Your customer number	Material	\$\$-F%%
	PO Number	Your name	Order quantity	Quantity ordered
	Task	Navigation	Result	
Continue	Press "enter"	The sale is not completed yet		
	To complete the sale	Edit menu > Incompletion Log Click on  and then on "Complete data"	You can now enter the missing information. NB: If a notice appears saying that the document is complete save right away.	
Third screen	Create standard order: Item data			
	Fields	Data to input	Fields	Data to input
	Plant	\$\$	Storage location	02
	Shipping point	\$\$	Profit Center	\$\$
	Task	Navigation	Result	
	Continue	Click on "Edit next data"	A notice saying that the document is completed appears	
Save		Note the number		

The second transaction creates the delivery document (Transaction code VL01N). The delivery document is created in reference to the sales order; this document authorizes the storage location to pick, pack and ship the order. You must indicate from which warehouse the goods must be picked. As the goods are issued, the finished inventory is credited and the decrease in inventory is debited from an account called "inventory change" that carries the cost of goods sold that will appear in the profit and loss statement.

Delivery to customer			
First screen	Create Outbound Delivery with Order Reference		
	Fields	Data to input	
	Shipping point	\$\$	
	Selection date	One week from now	
	Order	Your sales order number	
	Task	Navigation	Result
	Continue		The second screen appears
Second screen	Delivery Create: Item Overview screen		
	Fields	Data to input	
	Storage location	02	
	Delivery quantity	Depending on the order	
	Pick quantity	Depending on the order	
	Task	Navigation	Result
	Post the goods issue and save	Click on "Post good issue"	The inventory is now decreased.

After the goods are shipped, the customer is billed. This is done using the transaction code VF01. An invoice is created in reference to the delivery document. A customer is billed only for the goods delivered. Invoicing the customer will generate a financial posting: an accounts receivable is credited and sales revenues will be debited. The sales revenues are also posted in the appropriate profit center.

VF01

Logistics / Sales and Distribution / Billing / Create Billing Document

414

Invoicing the customer			
First screen	Creates Billing: Initial Screen		
	Field	Data to input	
	Document	Your delivery number	
	Tasks	Navigation	Results
	Create the Billing Document		The invoice is created
	Save		The account receivable is now credited and the sales revenues is debited.
Second screen			

The last transaction (F-28) posts the payment from the customer. This payment is done in reference to the open items in the receivable accounts. When entering the payment, the system expects a complete payment from the customer and will indicate if a balance is still outstanding after the payment. You will need to indicate in which account the payment is to be posted. This transaction will therefore credit the cash account and debit the accounts receivables. At any point in the process, it is possible to visualize the sales process flow from an order with transaction VA05. Select the sales order you wish to analyze and click on “display document flow”. Through this function, a sales order can be tracked and appropriate measures can be taken to insure the completion of the process.

F-28
Logistics / Sales and Distribution / Accounts Receivable / Incoming Payment
415

Post payment			
First screen	Post Incoming Payments: Header Data screen Customer		
	Fields	Data to input	
	Document Date	Today	
	Company code	\$\$	
	Currency	EUR	
	Account (Bank data)	113300	
	Amount	Amount	
	Account (Open item selection)	Your customer number	
	Task	Navigation	Result
	Continue		The second screen appears
Second screen	Process Incoming Payments:Process open items		
	Save		The account receivable is debited and the cash account credited.

4.5 Performing the full cash-to-cash cycle

In the simulated version of the game, not all the transactions presented in this section are actually used by participants. Indeed, many transactions presented here are automated by ERPsim in the game. In order to help you understand how all these transactions and the business processes are integrated through the ERP system, we strongly recommend that you go over the full cash-to-cash cycle at least once and perform all the above transactions manually.

A total of 12 operational transactions must be performed. As you proceed step by step, we recommend that you record the impacts of each transaction. Chapter 6 provides reports that help track how things evolve within your company. Try to track impacts of each step on (i) the financial postings of the Company (FB03 and F.01), (ii) on the managerial accounting (KE5Z), and (iii) on the stock and requirement lists of the relevant products (MD07). In order to do so, note for every step the record number of each document created and the time when it has been performed. In order to keep track of the evolution of the stock & requirement list, you can take, after every step, a print screen of the stock & requirement lists of one finished product (say the Blueberry Muesli (\$\$-F02)) and of one raw material (say the Blueberries (\$\$-R02)) and copy it in a PowerPoint file.

Follow the following steps and enter the proposed amount.

1. Create the forecast (MD61, p.4-3) – perform a forecast of 140 000 boxes for 3 products 01 to 03
2. Execute MRP (MD01, p.4-4)
3. Generate automatically consolidated purchase order (ME59N, p.4-7) – note the number of each PO created.
4. Post goods receipt (MIGO, p.4-8)
5. Post vendor’s invoice (MIRO, p.4-9) – note the amount due for each PO.
6. Pay the vendor’s invoice (F-53, p.4-10) – notice change in cash account
7. Convert all planned orders (CO41, p.4-14) –note the production order numbers
8. Confirm production execution (CO15, p.4-16)
9. Create sales order (VA01, p.4-17 and 4-18) – create the following 3 sales orders

Products	Number of boxes	Prices	Customers
\$\$-F01	110 000 boxes	3.87 €	80100 (Hypermarket)
\$\$-F02	110 000 boxes	5.18 €	80101 (Hypermarket)
\$\$-F03	100 000 boxes	5.43 €	80112 (Grocery store)

10. Initiate Delivery to customer (VL01N, p.4-19)
11. Sent Invoice to the customer (VF01, p.4-20)
12. Post customers’ payments (F.28, p.4-21)

By the end of the exercise, you should be able to document and (more importantly) understand all the impacts for each of the above 12 steps. Figures 4.3 to 4.6 highlight how each transaction affects the financial and accounting accounts. Review those figures and verify that this corresponds with what occurs in the system. Understanding the impact on each transaction on the stock and requirement lists is crucial to understanding how the enterprise system works. In Chapter 6 (Section 6.1.2), we explain how to interpret the reports from the stock and requirement lists. We strongly recommend that you review the impacts of all of the above steps and make sure that you understand the logic of the stock and requirement lists.

CHAPTER 5 – BUSINESS DECISIONS

In the simulation, you will need to make several tactical and operational business decision that will affect your performance in the game. This chapter provides everything you will need to process these decisions in SAP®.

5.1 New product development

At the beginning of the game, each of the six products has a preset recipe.

Should you wish to change the recipe of a product during the simulation, you need to change its bill of material. Be careful as the system will not allow you to change a BOM if you still have inventory of the product. You must use the custom transaction, ZCS02, to change the BOM. If you do not use this transaction, then the simulator will not recognize your product, and it will not sell. Also, transaction ZCS02 will make sure that your new product is within the prescribed guidelines for recipes (Table 5.1). In addition, it will change the description in the material master to match the new content and weight.

Here are the steps to modify a bill-of-material in SAP®.

ZCS02

Master Data / Bill of Material / ERPsim: Validated Change to BOM

707

- On “Change Material BOM: Initial Screen”, enter the following information. Remember that \$ is the letter of your plant.

Fields	Data to input					
<i>Product</i>	\$\$-F01	\$\$-F02	\$\$-F03	\$\$-F04	\$\$-F05	\$\$-F06
<i>Plant</i>	\$\$					

- In the “Change Material BOM: General Item Overview”, you can add or delete items in the BOM. To delete a BOM item, select the line (click the block on the left hand side) and right click to display the contextual menu. Select “Delete item”. Disregard the yellow warning by pressing Enter. Confirm that you wish to delete the item by selecting “Yes “. The item is now removed from the BOM.
- To add a BOM item, enter the new material on the first available line. For each new BOM item, you need to specify the material number of the component (field Component), its quantity (field Quantity), its unit of measure and the category of the item (field lct). The category of all BOM items is stock item (L).

Do not forget that when changing the bill of material, your recipe must match the MMA guidelines. Here is a reminder of those guidelines:

Table 5.1: Muesli Manufacturing Association Label Regulation

Labels	Ingredients					
	Wheat (\$\$-R05)	Oats (\$\$-R06)	Blueberries (\$\$-R02)	Strawberries (\$\$-R03)	Raisins (\$\$-R04)	Nuts (\$\$-R01)
Original (\$\$-F05)	Min 20%	Min 30%	No	No	No	No
Blueberries (\$\$-F02)	Min 20%	Min 20%	Min 20%	No	No	No
Strawberries (\$\$-F03)	Min 20%	Min 20%	No	Min 20%	No	No
Raisins (\$\$-F04)	Min 20%	Min 20%	No	No	Min 20%	No
Nuts (\$\$-F01)	Min 20%	Min 20%	No	No	No	Min 20%
Mixed fruits (\$\$-F06)	Min 20%	Min 20%	Min 30% (With at least some of all products.)			

- The unit of measure (field Un) of the ingredients is kilograms (Kg) and the unit of measure for packaging is piece (ST). So, if you need to change box size, make sure that your total quantity of raw material is valid and make sure you select the correct box and bag size (\$\$-P01, etc.).
- When finished, click on  to save your list of components. The ERPsim game uses a modified transaction that checks the validity of recipe in the game (this is why this transaction name starts with a 'Z'). If your recipe is valid, the system will confirm the new label and size of the product and it will automatically change the description of the product in the master data. This will help you to analyze the profitability of your product over time. If your recipe is invalid, the system will not allow you to exit the transaction until it is correct. It will return you to the Change BOM screen to make the necessary changes.

5.2 Production planning decision

The production planning decision refers to the creation of planned production orders.

There are two ways to create these planned orders.

The first option is to follow the instructions in section 4.1 by creating a forecast (i.e. independent requirements) and run the MRP calculation process against this planned demand. One output of this calculation would be the planned production orders. The MRP calculation process will also create requisitions for the raw materials needed to produce those production orders.

Another option is to directly create a planned order in the system. This way, you can bypass the step of creating a forecast, or add a “rush” order to an existing forecast. To do so, use transaction MD11.

- In the “Create planned order: Initial screen”, enter the following information:

Fields	Data to input
<i>Planned order profile</i>	LA

MD11
Logistics / Shop Floor Control / Planned Order / Create Planned Order
408

- On the “Create planned order: Stock order”

Fields	Data to input
<i>Material</i>	\$\$-F%%
<i>Order quantity</i>	Enter the quantity of the planned order
<i>Order finished</i>	Today's date

- Click on  to save the planned order. You can now run the MRP process and the system will calculate the raw material requirements and create the required purchase requisitions to produce the new planned orders.

Remember that planned order quantities can be changed until the planned order is converted into a production order. Should you need to change the quantity of a planned order, you can do so from the stock requirements list (MD04 or MD07). Select the product with the planned order you want to change. On the left hand side of the planned order, click on  and click on the  button. You can now modify the quantity of the planned order. Click on  to save the planned order with the new values.

5.3 Procurement decision

When the procurement process is automated by the system, the simulator automatically looks for purchase orders. It will take three to five days for your vendor to supply your ordered materials. The simulator will automatically post the goods receipts of the material after this delay and enter the invoice received. The invoice payment will also be made automatically by the simulator 15 days later.

The decision you have to make with regards to procurement is when to release the purchase order. Purchase orders are created by mass converting requisitions using transaction ME59N (see section 4.2). As for the size of the purchase order, that depends on your production planning. Should you wish to organize a constant flow of smaller purchase orders, you will need to have smaller planned orders of finished products and run the MRP process more frequently. Remember to consider the impact on your cash flow! Extending your bank loan to be able to pay your vendors will drop your credit rating. Also, take into account that your warehouse has a limited capacity - if you produce too much product at once you will need to pay rent for additional storage.

5.4 Production execution decision

An important decision is whether to use small or large batch production runs. If you go with large batches, you will reduce the number of setups and produce more finished product for a given time period. This will increase your productivity and lower your per-unit production costs, but you are more likely to stock out and have a less diverse range of product to offer to your customers. If you go with smaller batches, you will be better able to react to changing markets, but you will also lose productivity because having to setup more frequently.

Remember that the system will automatically execute the production orders with first in / first out priority. Beware of large production orders because they will consume your production capacity for quite some time. Once a production order is released, you may not change it or cancel it.

The transaction Collective Conversion of Planned Orders (CO41) will allow you to convert multiple planned orders into production orders. After entering the transaction code, input the following information in the first screen and then click  to execute.

CO41
Logistics / Shop Floor Control / Order / Create / Collective conversion of planned orders
410

Fields	Data to input
Production Plant	\$\$
MRP Controller	101

If there are no planned orders available for conversion, you will get the following message: “Planned order could not be selected”.

The next screen will provide a list of planned orders. You can convert one, many or all available planned orders into production orders. To do this, select the planned orders you wish to convert by clicking on the selection box on the left hand side of the list. You can use the “select all” icon () at the bottom of the screen to select all planned orders.

Once you have selected the desired planned orders, click on the “convert” icon () at the bottom of the screen. You will receive a confirmation that the selected planned orders were converted to production orders. If the planned order can not be converted a red “X” () will appear. Click on  to see why the conversion failed, most likely this will be because the required raw materials are not available.

5.5 Production improvement decision

A very strategic decision in this game is to decide on the level of investment in your production facility.

You can invest in a lean manufacturing program to reduce your set up time and also procure extra capacity by upgrading your production equipment. You may invest in production equipment and process at any point in the game and your investments are cumulative. Remember that the more you reduce your setup time, the more expensive it is to make further improvements. The exact formulas for production improvement are specified in Chapter 1.

To acquire additional capacity, use transaction FB50 to post the amount you wish to invest to the machinery and equipment account. Remember that this investment acquires an asset in exchange for cash which results in no net impact on retained earnings at the time of the transaction. The impact on retained earnings is from the depreciation expense for the asset, which occurs over time.

FB50
Accounting / G/L Acct
Pstg: Single Screen
Trans.

305

Fields		Acquiring Assembly Line
<i>Header</i>	<i>Document Date</i>	Today
	<i>Doc. Header Text</i>	Assembly line
<i>On the first line</i>	<i>G/L acct</i>	113300 (Weizen bank, cash)
	<i>D/C</i>	Credit
	<i>Amount in doc. curr</i>	It's up to you!

<i>On the second line</i>	<i>G/L acct</i>	11000 (Machinery and equipment)
	<i>D/C</i>	Debit
	<i>Amount in doc. curr</i>	It's up to you!

To reduce set up time, use transaction FB50 to post to the lean manufacturing account in the general ledger the additional amount that you wish to invest. Remember that this investment does not acquire an asset. The impact to profit is direct and immediate!

FB50
Accounting / G/L Acct Pstg: Single Screen Trans.
310

Fields		Lean manufacturing investments
<i>Header</i>	<i>Document Date</i>	Today's date
	<i>Doc. Header Text</i>	Lean manufacturing
<i>On the first line</i>	<i>G/L acct</i>	113300 (Weizen bank)
	<i>D/C</i>	Credit
	<i>Amount in doc. curr</i>	It's up to you!
<i>On the second line</i>	<i>G/L acct</i>	478 000 (Lean manufacturing expenses)
	<i>D/C</i>	Debit
	<i>Cost center</i>	\$\$
	<i>Amount in doc. curr</i>	It's up to you!

VK32
Master Data / Sale Price / Condition Maintenance: Change
711

5.6 Pricing decision

You can change prices at any time during the game, however your price lists are only sent to your customers once per day. So changing more often than once per day will have no impact as only the last price entered will be in effect the next day. Do not forget that small boxes cannot be sold in the hypermarket distribution channel (10) while large boxes cannot be sold in the independent grocers distribution channel (14), even though you can set prices in these distribution channels.

You can change prices by using the following instructions.

- On “Price List with Release Status”, enter the following information:

Fields	Data to input
<i>Sales organization</i>	\$\$
<i>Distribution channel</i>	10, 12 or 14
<i>Material number</i>	\$\$-F%%, or leave blank to change all at once

- Click on .
- On “Change Condition Records: Overview”, enter the following information:

Field	Data to input
<i>Amount</i>	<i>The new sale price of your material</i>

- Click on  to save.

5.7 Marketing decision

You may invest in marketing at any point in time in the game. Remember that the impact of marketing is immediate and that customers have no memory, so the effect of marketing does not linger if you stop investing. Refer to chapter 3 for further details on how to manage the marketing plan.

Table 5.2 provides the G/L accounts that you must post payments to corresponding to the area and product where the marketing investment is to be made.

Table 5.2: Marketing account table

Area / Product	\$\$-F01	\$\$-F02	\$\$-F03	\$\$-F04	\$\$-F05	\$\$-F06
<i>North</i>	477001	477004	477007	477010	477013	477016
<i>South</i>	477002	477005	477008	477011	477014	477017
<i>West</i>	477003	477006	477009	477012	477015	477018

When you enter transaction ZADS, you will see your current daily plan. You can click on  Clear to clear the values in the table. Enter the following information:

Fields	Data to input		
Material / Area	North	South	West
\$\$-F01	It's up to you!		
\$\$-F02			
\$\$-F03			
\$\$-F04			
\$\$-F05			
\$\$-F06			

- Click on  to save.

Remember, marketing investments have an immediate negative impact on profit, and (hopefully) a positive one through increased sales.

5.8 Financing decision

In this game, you will need to carefully manage your cash flow. You must be able to finance your operation while waiting to receive payment from your customers and making the necessary payments to your suppliers. While the bank will always cover any shortfall, your credit rating will be reduced, resulting in higher interest costs. Therefore, it is always better to plan ahead. Also, too much cash in the bank is a waste of assets. If you don't plan on investing cash into your business, then use it to repay your loan.

CHAPTER 6 – REPORTING AND ANALYTICAL TOOLS

So far we have examined how to perform the main business processes of your organization. You are now ready to plan production and run MRP, purchase raw materials and pay suppliers, produce boxes of muesli cereal, store them in your finished product warehouse, set finished product prices and invest in marketing. You have the knowledge to perform all of these functions during the simulation. But this is not enough.

The challenge for you and your team is to decide what to do and when to do it. You must decide which recipe to use, how much of and when to produce each product, when to order raw materials, how much to invest in marketing and what price to charge for each product in each distribution channel. Obviously, it is impossible for you to make all of these decisions in advance. In addition, your decisions are not made in isolation—they depend on the behavior of your competitors. To be successful, you must make those decisions based on current data and information.

The information provided in Chapter 1 about the Muesli industry is out of date. You must presume that the industry has changed. Consumers and competitors have changed since the latest Muesli industry report was written. Furthermore, since you are new to the industry, you enter the simulation with little information about the Muesli market. Your success will largely depend on your ability to learn as you go and on your ability to adapt your strategy to changing market conditions. One of the benefits of an enterprise system is that it provides real-time information to help you do both. An enterprise system allows you to track the evolution of your firm and to quickly coordinate your response to new information from the marketplace. The best teams will be those able to exploit the data and make sense of it and act accordingly. You must be able to “compete on analytics”.

Before considering the data provided by the system, let us first examine what use can be made of the data.

The first function of data within an enterprise is to support business processes. Take the example of the process of creating a purchase order. A purchase order requires data from a number of sources: The quantity of each material to be purchased and the date it is to be delivered (which comes from the purchase requisition), the price for the material (from the purchasing info record), etc. Once the purchase order is created, it is stored for use in the receiving process. In addition, the data in the purchase order can be used to answer specific operational questions such as: what purchase orders are to be delivered today? What products are included in a specific purchase order? When will it be delivered? What is the price we are being charged for a material? Modern companies rely on sustainable and comprehensive data to ensure the smooth operation of their processes.

But some companies collect and gather data beyond what is necessary for their transactional needs. The data collected by these companies enables them to better understand the economic environment in which they operate. Hence, the second function of data is to answer complex business and strategic questions: In which region does advertising yield the most? What products should be produced in priority? What will the demand be for our products during the next period? What are the characteristics of products that are most valued by consumers? How should we price our products? And so on.

These questions are critical to business success but are not easy to answer. Providing the appropriate answers requires additional data and further analysis. To be competitive, a company must do more than just be an effective from an operational point of view. It must also be able to forecast market trends and the needs of its customers, be flexible to changes in demand, and adapt its strategy and processes to the competitive environment. The biggest challenge is being able to anticipate future needs and foresee the consequences of various strategic decisions. To achieve this, companies must collect, process, analyze and interpret large amounts of data. This is the purpose of business intelligence.

Information systems have adapted to the different requirements for information (business processes support and strategic management) by using two different types of information system: OLTP (Online Transactional Processing) and OLAP (Online Analytical Processing). The term “Online Transaction Processing”, or OLTP, refers to information systems that facilitate the entry and extraction of data for transactional purposes. The term “Online Analytical Processing” or OLAP refers to multidimensional data analysis methods used in business intelligence.

The SAP® R3 system is an OLTP system. It supports business transactions. It is used to read, write and update transactional data; it allows all stakeholders of a business processes to access the same data in real time. The first section of this chapter explores the OLTP reporting capabilities of SAP®. The second section of this chapter proposes a way to perform more in depth analytics using an OLAP system.

6.1 OLTP reporting for SAP®

The SAP® R3 system provides a large number of reports and analytical tools. We cannot discuss all the possible reports one can execute with the software, so we will describe the few that we believe are important for the simulation game. Some of these reporting transactions are standard reports provided with SAP®, while others were created specifically for the ERP Simulation game. We encourage each team to explore the system on their own to find other reports that might prove useful and provide your team with a competitive advantage. To find standard reports in the SAP® system, navigate to the folders ‘Information Systems’ in each module. Note that the standard reports from SAP® do not take into account the simulator’s virtual time.

ZME2NInformation System /
Materials Management
/ ERPsim: Purchase
Order Tracking**601****6.1.1 Procurement management**

Managing procurement efficiently is critical to the success of your company. A report was specifically designed for the simulation game to track purchase orders (transaction ZME2N). In this report, you will find a list of your purchase orders. This report is very useful in determining the status of your purchase orders in the purchasing cycle. For each item in the purchase order, the report provides the material, quantity, the simulation quarter and day when the purchase order was created (PO Qtr, PO Day), the simulation quarter and day when the goods will be received (Exp MIGO Qtr, Exp MIGO Day) as well as the day and quarter when payment of the vendor invoice will be (or was) made (Vendor payment Qtr, Vendor payment Day).

6.1.2 Inventory management

One of the key elements of the game is to be able to react to customer demand, and to do that you must ensure that the inventory of your products is maintained at an appropriate level. Along with knowing the quantity of material in stock, it is just as important to know where the material is.

ZMB52Information System /
Materials Management
/ ERPsim: Inventory
report**602**

To view the stock level in the various warehouses, we have created an easy-to-use customized report. Transaction code ZMB52 shows the inventory level for each product in the two warehouses -02 for finished products, and 88 for raw materials. The transaction ZMB52 has a refresh button so that the data can be updated without having to rerun the transaction. In addition to showing inventory levels, it also displays the current simulated quarter and day.

MD07Information System /
Production Planning /
Current Material
Overview**603**

Transaction code MD07 is a standard SAP® report that will also show you inventory levels plus other information on material plans (purchase orders, production orders, etc.). To view an inventory overview, enter the following information in transaction MD07 :

Fields	Data to input
Plant	\$\$
MRP controller	101

This will provide you with a general overview of all the stock available for every product. This report allows the user to drill down and view the details of material plans. Select one or more of the materials on the list by clicking on the box on the left side of the line corresponding to the desired material, then click on the "select stock/requirements list" button. A third screen will appear.

The stock/requirements list contains all of the details pertaining to the plans for a specific material. It lists all the requirements and the availability (or planned availability) for the material. Understanding the stock/requirements list is useful for understanding how the MRP calculation process works. The MRP calculation can be interpreted as a decision support system that calculates the quantity of finished products that must be produced and the quantity of raw materials that must be purchased to satisfy forecast demand according to a set of prespecified rules. The MRP calculation process also creates the internal planning documents consistent with these calculations. The use of the MRP planning process facilitates the work of the planning team by guaranteeing consistent plans and by automatically creating all of the planning documents.

For finished products, each line in the stock/requirements list will correspond to either the current inventory (Stock), independent requirements (IndReq), the planned orders (PldOrd), production orders (PrdOrd), sales orders, and deliveries. A sales forecast takes the form of an independent requirement. It represents the quantity of a finished product that the organization wants to produce to satisfy sales objectives for a given period of time. To match those requirements, the MRP calculation process will create one (or more) planned orders to meet the independent requirements. In the MRP typical setting, the quantity planned for production is equal to the sum of all independent requirements minus what is already in stock and minus what is already planned for production (existing planned orders and production orders). Through the production process, planned orders are transformed into production orders and then into inventory (stock) of finished products. Finally, as products are sold and delivered, the inventory level (stock) AND the independent requirement decreases accordingly for the matching time period. In principle, the sum of the independent requirements should be equal to the sum of all other MRP elements in the table. If the requirements are larger, the MRP run will create new planned orders to fill the gap.

For raw materials, the different lines in the stock/requirements list correspond to the inventory level (stock), the dependent requirement (DepReq), the dependent order (OrdRes), the purchase requisitions (PurRqs) and the purchase orders (POitem). When the MRP planning process creates a planned order for a finished product, dependent requirements for all raw materials needed to produce the finished product are also created. The MRP planning process uses information from the bill of material to calculate the quantity of each raw material required. The dependent requirements are then used to calculate how much of each raw material must be purchased. This calculation takes into consideration existing stocks, reserved stocks, purchase requisitions and purchase orders. In the typical setting, the quantity of a given raw material in a requisition corresponds to the sum of quantities in the dependent requirements minus the quantities in stock, purchase requisitions and purchase orders. The stock/requirements list then tracks the conversion of requisitions into purchase orders and the receipt of goods into inventory (stock). Finally, when planned orders for finished goods are converted into production orders, the corresponding raw materials reservations are changed from dependent requirements (DepReq) into order reservations (OrdRes).

The stock/requirements list is a powerful tool to diagnose problems in the production and procurement processes. Understanding the stock requirement list and how it displays the current status of materials is essential to detecting problems and bottlenecks when they occur and finding the best way to correct them.

6.1.3 Production execution

ZCOOIS
Information System / Shop Floor Control / ERPsim: Production Schedule
604

When you release a production order, it is placed in the production order queue until it can be processed. To keep track of these production orders, use the production schedule report (transaction ZCOOIS). This custom report provides detailed schedule information for each production order: the order number, the material description, the quarter and day when the production will start (Start Qtr, Start Day), the quarter and day when the production will end (End Qtr, End Day), the duration of the setup in hours (Setup hour), when the production order was released (Rel Qtr, Rel Day), the target quantity of the production order (Total Qty) and the confirmed quantity so far (Conf Qty).

Note that if you have created a production order, but have not released it, it will not show up on this report. Production orders will not be processed until they are released, and they cannot be released until all raw materials are in stock. If a production order is listed on the stock/requirements list but does not show up in this report, you know that it has not been released.

6.1.4 Sales order and market report

Monitoring and analyzing sales orders to understand market demand for your products is a fundamental task in your business.

ZVC2
Information System / Sales and Distribution / ERPsim: Summary Sales Report
605

You can use the summary sales report (transaction ZVC2) to monitor the sales of your company. This report will display for each day and each product - the total number of orders (Orders), the sum of all boxes sold (Qty), and the total sales revenue (Value).

ZVA05
Information System / Sales and Distribution / ERPsim: Sales Order Report
606

To review sales orders received by your company, use the sales order report (transaction ZVA05). This report will display all of your sales orders and provide the following information: quarter and day when the order was received (Quarter, Day), where the product was sold (Distribution channel, Area), which product was sold (Material description), to whom (sold-to-party), the number of boxes in the order (Qty), the sales revenues from the order (Value), the price at which these products were sold (Price), and when payment for the order will be received (A/R Qtr, A\R Day).

If one of your products does not sell fast enough you might consider decreasing the sales price or reviewing your marketing for the product. If these are not successful, you might want to adjust the recipe or even phase the product out completely. Conversely, if it sells too fast and you expect to stock out before you can produce new units, then you may want to increase your selling price to slow demand and earn a higher margin on the inventory you have left.

Notice that the sales report can be refreshed quickly by clicking on . Further, the display can be customized according to your needs. You can create subtotals by clicking on the double summation sign in the top menu. You are invited to experiment to find the best way to display the data for your needs.

ZMARKET
Information System / Sales and Distribution / ERPsim: Price Market Report
607

Another interesting and useful transaction is the market report (ZMARKET). Your company subscribes to a service that provides data for the entire market. At the end of every five days, this report is updated to reflect the latest changes in industry sales and market prices. For each product and distribution channel, you have the total sales in both revenue and boxes (units) and the weighted average price for that 5 day period. You may refresh this report with ().

6.1.5 Financial statements

In SAP®, you can get current financial statements at any point in time during the simulation to get a snapshot of your financial position.

F.01
Information System / Accounting / ABAP Report: Financial Statements
608

Transaction F.01 is used to create your financial statement. Enter the following information:

Fields	Data to input
Company Code	\$\$
Financial Statement Version	SIM1
ALV Tree Control	Check the radio button

This standard report provides you with the balance sheet and the income statement of your company. You can get more details on each section of this report by clicking on the triangle on the left hand side of every item.

The net income line corresponds to the cumulative profit (or loss) of your firm since the beginning of the game. Note that from the second quarter on, the report will show the financial results at the end of the previous quarter under the heading

“tot.cmp.pr” so that the “Abs.diff.” column will show changes for the current quarter, giving you a good idea of your current performance.

6.1.6 Profit center analysis

KE5Z
Information System / Accounting / Profit Center: Actual Line Items
609

The objective of managerial accounting is to gather accounting information in a manner that supports decision making within the organization. The profit center analysis report provides the complete list of all cost and revenue attributed to a specific profit center.

In this simulation, we are using profit centers to segment the revenues and cost associated with each team. Whenever a production order consumes raw materials and generates a finished product, and whenever a sales order is issued, a cost/revenue element is recorded in the profit center in which it was incurred.

The profit center report can provide a line item list of all the revenues and cost incurred in a profit center. This report can be displayed using the transaction KE5Z.

In the initial screen of this transaction, input the following value:

Fields	Data to input
Record Type	0
Company Code	\$\$

Then click  to obtain the report.

A table containing all the line items recorded is displayed. Each line item corresponds to a specific cost or revenue element. If you click on a specific line item, the precise electronic document that corresponds to this item will be shown. With this capability, one can track down all the transactions that have an impact on profitability.

6.1.7 Raw material cost per PO

ZKSB1
Information System / Accounting / ERPsim: Raw Material Cost per PO
610

Because of the complexity associated with using the profit center line item report to analyze profitability, a custom report (transaction ZKSB1) was developed for the simulation game to provide unit production costs. This report tracks every production order and calculates the cost of all raw materials used to produce the finished product.

The report provides the total cost of the order, the quantity confirmed and the unit cost of each production order. Bear in mind that this report only gives the raw materials costs—it does not take into account the significant fixed costs incurred while running your business.

6.1.8 Product cost planning

Pricing is a major challenge in this simulation. Your finished product prices depend on the market, your product design, your advertising expenditures and the actions of your competitors. Whether the price you can get for your product will earn you a profit depends on what it costs you to bring that product to market.

We have developed a modified version of the SAP product cost planning tool to help you estimate the costs for your product (transaction ZCK11).

In this transaction, enter the following information :

Fields	Data to input
Productivity	(Enter your productivity assumption in %)

When the transaction is executed (📌), the tool will calculate the unit cost of all products. The report provides two estimates of the unit cost: one using the only the variable costs and one including both variable and fixed costs. The fixed costs are allocated based on an estimation of the number of units (boxes) that you company should be able to produced each quarter. This estimation of number of units produced is calculated by multiplying the productivity ratio by the daily production capacity (by default productivity ratio is set to 75%, but you may change this ratio based on your estimation). Remember that production time is lost because of setup changes and cleaning required when switching between different products, as well as raw material shortages and delivery delays. Your estimation of the productivity ratio should consider this lost capacity.

This report also displays your current pricing of this product in the various distribution channels to let you estimate the net margin.

Important : This product costing report does not consider the marketing, warehousing or production improvement expenses you may choose to make.

ZCK11

Information System /
Accounting / ERPsim:
Product Cost Planning

611

ZFF7B

Information System /
Accounting / ERPsim:
Liquidity Planning

612

6.1.9 Liquidity planning

Cash flow management is also very important in this simulation game. You need to monitor closely your liquidity to make sure you are not running out of money. If your cash account goes negative, you will be penalized and your credit rating will be dropped.

A customized version of the liquidity management report was developed for this simulation game (ZFF7B). This report displays an estimate of your cash flow for the next 6 weeks so you will be able to anticipate your future cash position. For each virtual week, the report provides the expected accounts receivable payments (if any), the expected accounts payable payments (if any), overhead cost and SG&A expenses, as well as the interest payment. The last column is the expected closing balance at the end of the virtual week.

Bear in mind that this report only takes into account events with cash implications. For example, if you have open requisitions that have not yet been converted into POs, they will not be taken into account in the cash flow calculation.

The exception column shows a green light if your closing balance is stable or increasing, a yellow light if your balance is decreasing, and a red light if your balance is negative. Also, this report does not consider warehousing costs or marketing expenditure, so remember to factor those costs into your cash flow planning.

6.2 Business Intelligence for the Muesli game

An OLAP-type system, whose purpose is to perform business intelligence, has a very different architecture than an OLTP system, whose purpose is to support operations. The need for more sophisticated analysis of the data requires that we aggregate the data, detect trends across several dimensions, run statistical analyses, create charts, etc. Business intelligence uses not only contemporary data, but also historical data, to detect trends. There is more to B.I. than just using internal data. True power of these systems comes from analysing internal data alongside data about competitors, industry and the economic environment.

To build a business intelligence infrastructure, we must collect, sort, and cleanse data from many sources: internal transactional data, socio-economic data, time series data (economic, stock market, weather etc.), published market analyses from external sources, etc. The data collected and archived forms a vast data warehouse that can be of great strategic value to the organization.

For OLAP analysis, key performance indicators or key figures are organized over different dimensions. To visualize how this is done, imagine a series of small blocks or cubes that are mounted on each other to form a large cube of several storeys high, several rows wide and deep. For the moment, imagine that this big cube has three dimensions (height, width, depth). Each small block, contains one or many values associated with one or many key figures. These values can be aggregated over the various dimensions using various operators (SUM, MIN, MAX, AVERAGE, LAST, etc.) or filter based on certain criteria. Because in general, these cubes may have more than three dimensions, they are called hypercubes. From this warehouse, you can create hypercubes.

Each analysis or business question may require one or more different hypercubes. A business intelligence system also provides the analytic tools to facilitate the creation of dashboards, cross tabulations, graphs and to perform advanced statistical analysis. Hence, a hypercube contains large amounts of aggregated data (often key performance indicators) pre-calculated and pre-classified according to the different dimensions of the hypercube.

In practice, data required for data mining and analysis is usually not updated on a realtime basis as it would be unnecessary and too costly from an economic and technical perspective to do so. Data extracts also slowdown the transactional systems. The business intelligence data warehouses and cubes are typically updated periodically in the middle of the night or the weekends.

In the context of the ERP Simulation Game, we are limited by the fast pace of the game. We cannot use the powerful and advanced business intelligence tools that are used in the industry. However, we can explore many of the techniques and concepts with much simpler technology: MS ACCESS and MS EXCEL from Microsoft. To do the analysis, users simply need to know how to create charts and graphs from pivot tables in MS EXCEL.

At the end of every quarter, data from the game can be made available to you by your instructor. The updated data is contained in an MS ACCESS database. The MS ACCESS database contains not only data from your own company but also data from all your competitors. Having access to such high quality and comprehensive data from all your competitors may be somewhat unrealistic, but the learning objective is to understand how to exploit quality data when it is available.

6.2.1 The ACCESS database

The MS ACCESS file provided by your instructor is divided into three elements: macros, tables, and queries. The macros allow the user to connect to the SAP database and import into MS ACCESS exact copies of data tables from the SAP system. Only your instructor has the authorization in the SAP system to use the macros.

The MS ACCESS database contains approximately 20 tables. Both the names of the tables and the field names are identical to the those in the SAP system. Most of the field names (ex. BURK, MANDT, WAERK, POSNR, WERKS, etc.) are incomprehensible (except maybe for someone with good knowledge of German and with a very good imagination). An English description of each database field is provided in the tables' metadata. Note that the tables with names starting with a Z are custom tables created for the purpose of the simulation game.

Finally, the MS ACCESS database contains many existing queries. A query is defined by a set of instructions that specifies how to reorganize the data contained in the database. Through a query, one can merge data from different tables or other queries, sort, filter and regroup records and create calculated fields. Participants who are familiar with MS ACCESS can look at the instructions used to create each query in the MS ACCESS file. We present here the queries that are created in the MS ACCESS file and that can be used for data analysis.

BalanceSheet: The query "BalanceSheet" extracts data from the financial tables and generates a report that contains a history of the balance sheet for every virtual day for every company. The key figures are the balance sheet accounts, including short term and long term assets, liabilities and profits. The dimensions are the virtual time (quarter and day) and the CompanyCode.

Ratios: The query "Ratios" generates a report that contains a history of the main financial ratios for every virtual day for every company. The ratios include: NetMargin (NetProfits/Sales), GrossMargin ((NetProfit+OtherCosts)/Sales); AssetTurnover (Sales/Assets); CurrentAssetTurnover (Sales/CurrentAssets), Leverage (LongTermAssets/Equity), ROA (NetProfit/Assets), ROE (NetProfit/Equity), Mktg/Sales (Marketing expenses/Sales), SalesDaysOutstanding (Receivables/Sales per day), RMInventoryDaysOutstanding (value of raw material inventory/ Consumption of raw material per day); CurrentRatio (CurrentAssets/CurrentLiability), PlantAssetTurnover (Sales/LongTermAssets).

ZVA05: The query ZVA05 replicates the same report as the one generated by the transaction ZVA05 in the simulation game. It contains three key figures: SalesPrice, QtySold and Amount for every sales order. Sales orders are classified in three dimensions: virtual time (Quarter, Day), customers (DC, Area, SoldtoParty), Products (Plant, ProductCode, ProductDesc).

SalesQuery: The SalesQuery generates a report that is very useful in analyzing the marketplace. . This report provides daily detailed sales information (prices for each distribution channel, marketing expenses per day, inventory on hand, number of sales orders, quantity sold and sales revenue) for every competitor.

StockManagement : The query StockManagement provides an overview of the material inventory over time. It contains the following key figures: daily sales and production (for finished products only), CostMovAvg (value at the moving average cost), CostStd (the standard cost for finished products only), BeginStock, EndStock, EndStockMaterialValue. The query generates a record for every virtual day and every product. Hence the records are classified in two dimensions: virtual time (Quarter, Day) and Products (Plant, MatType, ProductCode, ProductDesc)

ProdUse: The ProdUse query presents, for every production order confirmation, the quantity of finished product confirmed and the quantity of raw materials used and cost of the raw materials. The dimensions include the information on the production order (Plant, production order number, start quarter and start day, order confirmation number, finished product confirmed) and the raw material (Raw material description and units). The query is useful to track the evolution of material costs due to changes the bill of materials and raw materials costs.

ProdSchedule and ProdQuery: The ProdSchedule query tracks all production order confirmations. For every production order confirmation, it provides the plant, the virtual day of the production order release, start and confirmation, the quantity confirmed and the product description. The ProdQuery reports the same information but adds all days for which there was no production.

6.2.2 Using MS EXCEL to analyze data

We recommend that you use MS EXCEL to analyse the data in the queries contained in the MS ACCESS file.. The following steps show how to create and reuse an MS EXCEL file to analyse the data from the game. Note these instructions are specific to MS Excel 2007.

- Download the MS ACCESS file provided by your instructor and save it in a folder on your hard drive as *ERPsimData.accdb*.
- Create and open a new Excel file.
- In the Excel file, on the “Data” tab, click on the “From Access” button.

- Navigate in order to find and select the *ERPsimData.accdb* MS ACCESS file on your hard drive. Select the query you want to analyse (for example the “SalesQuery” query). This will create a link between your MS EXCEL file and the content of the query.
- Select PivotTable Report. This will create a pivot table within MS EXCEL.
- Select the fields you want to use in your report. One needs to specify the content of four fields: (i) Filter, (ii) Column labels, (iii) Row labels, and (iv) Values.
- Once the pivot table is created, you can create a graph by clicking on Graph in the Insert tab.
- You can repeat Steps 3 to 7 as many times as you want. You may want to create for each query in the MS ACCESS file one or more graphs or tables in MS EXCEL. This will create a large MS EXCEL file with many relevant tables and graphs. Save this MS EXCEL file and share it with the other members of your team
- Each time the instructor submits a new MS ACCESS file with new and updated data, download the file and save it under the same name in the same folder: *ERPsimData.accdb*. Open your MS EXCEL file and click on the refresh data button in the data tab. MS EXCEL will fetch the new data from the MS ACCESS file and will update all the graphs and tables accordingly. Hence, with the same MS EXCEL file, you and your team can follow the evolution of the game and compare your data with that of the other teams. The better the quality of the MS EXCEL file that you have created prior to the game, the easier it will be to analyse the data and obtain answers to your business questions.

Part 3: SAP Implementation at Muesli AG

**A Serious Game for Learning
Enterprise Resource Planning Concepts**

HEC MONTRÉAL
ERP SIMULATION GAME
Manufacturing Game

PART 3 – SAP IMPLEMENTING AT MUESLI AG

WARNING TO INSTRUCTORS: Participants will make mistakes when performing configuration and entering master data. You cannot expect to run a successful simulation on a SAP client once students have been allowed to make configuration and master data changes. Complete exercises from Part 3 after running all the simulations, or ask for a fresh SAP client to run new games.

In the first two parts of this book, you were introduced to ERP concepts by managing the full cash-to-cash cycle of a discrete manufacturing company using a live SAP system. One of the underlying objectives of this pedagogical experience is to develop a mental model of what an ERP system is, and how process and data integration impacts the way a company is managed.

The third section of this book provides you with an introduction to the implementation of SAP. Building on the mental model developed during the simulation game, the following chapters provide detailed instructions on how to configure SAP to support the business needs of Muesli AG. Because you now have a very good understanding of the system behaviour in this fictitious company, the required configuration in SAP is somewhat easier to understand. Chapter 7 covers how to create all the required master data for the simulation game. Chapter 8 explains how to configure the organizational elements in SAP. Chapter 9 covers the configuration of the financial accounting and controlling processes. Chapter 10 includes the production process. Chapter 11 covers the material management module along with the creation of the master data (finished products and raw materials, bill of materials, etc.) Chapter 12 explains the manufacturing execution module configuration. Chapter 13 covers the sales and distribution module. Chapter 14 extends the Muesli company into a make-to-order, and presents how to configure the project system (PS) module. Depending on the pedagogical strategy, it is possible to start with Chapters 8 to 14, and then finish with Chapter 7.

For most configuration steps, you can access the activity either by directly using the associated transaction code or the IMG Menu Path (you need to execute transaction SPRO first.) Note that a box with a grey heading represents the menu path in SPRO, while a box with a red heading still represents the menu path in the SAP Menu. As for the previous chapters, a number has been assigned to each activity to access the flash tutorial. These tutorials can be accessed by using the ERPsim Learning Portal.

		SAP Menu Path	IMG Menu Path
TRANSACTION CODE	→	SPRO	OX02
NAVIGATION PATH	→	Tools / Customizing / IMG / Execute Project / SAP Reference IMG	Enterprise Structure / Definition / Financial Accounting / Edit, Copy, Delete, Check Company Code
FLASH TUTORIAL	→	801	801

CHAPTER 7 – SETTING UP THE SIMULATION COMPANIES

In chapter 7, participants learn how to create all the master data required in the financial and operational business processes described in Chapters 3 and 4. Because the teaching objective of this chapter only to create master data, a great deal of configuration has already been done for you. Yet, some preparation has been intentionally left to the participants. The participants will first review how their company was modeled in the system using the different organizational elements available in SAP®. Then, each team will create the master data that would be necessary to run all transactions described in Chapters 3 and 4.

This chapter is organized in 2 sections based on the level of detail desired by your instructor. If your instructor uses Section 7.2, you will be introduced to master data creation by completing a limited set of the required master data (finished product, raw material and bill-of-material). If your instructor uses section 7.3, you will create all of the required master. Please note that these 2 sections are incompatible; it is not possible to do both Sections 7.2 and 7.3.

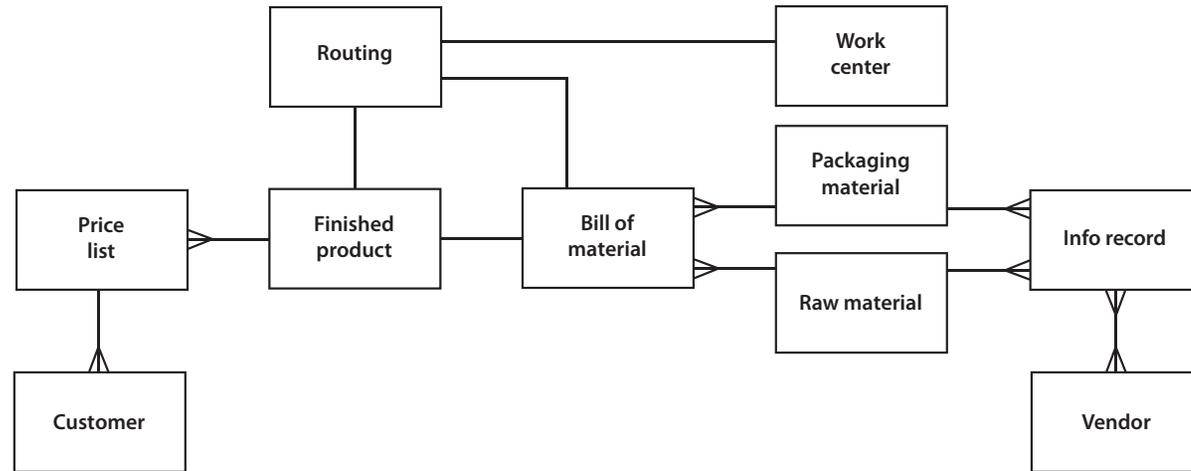
This chapter is optional. Yet, even if you do not create any master data, we highly recommend that you read this chapter to get an understanding of the basic ERP vocabulary. This knowledge will be useful to understand the terminology used in other chapters.

7.1 Master data

Master data is one of the cornerstones of an ERP system. This is data stored in the system's central database and used in a number of the organization's business processes. The master data is therefore available to all authorized users throughout the various application modules.

To develop a good understanding of their master data, each team will have to create the various types of master data that will be needed during the simulation game. Every participant of the simulation game should get a chance to create at least some of the master data. Thus, the creation of the master data should be shared among the different team partners. Be careful not to create the same data twice! In this simulation, each team needs to create the master data for finished products, raw materials, suppliers and customers as well as production and cost. Each team also has to create a price list and info records to link the master data for raw materials with their potential suppliers (vendors). The following figure presents the conceptual data model that interlinks all main master data used in the simulation game.

Figure 7.1: Data model of the main master data used in the simulation game



The following table presents the definition of the main master data used in the simulation game that links all of the master data.

Table 7.1: Definition of master data

Type of master data	Master data	Definition	Relationship with organizational elements	Relationship with other master data
Material master	Finished products	Type of material that is produced in-house. Since they cannot be ordered by purchasing, a material master record of this material type does not contain purchasing data.	A finished product is linked to a plant, a storage location, a sales organization and one or more distribution channels.	The bill of material indicates the composition (recipe) of a finished product.
	Raw materials	Raw materials are always procured externally and then processed into finished products. A material master record of this type contains purchasing data, but not sales data since they cannot be sold.	A raw material is linked to a plant and a storage location.	The raw materials are included in the bill of material.
	Packaging material	Packaging materials are used to transport goods and come with the goods free of charge. A special material type can be used for packaging materials or, as will be done here, they can be defined as raw materials.	A packaging material is linked to a plant and a storage location.	The packaging materials are included in the bill of material.

Type of master data	Master data	Definition	Relationship with organizational elements	Relationship with other master data
<i>Sales and distribution master data</i>	<i>Customers</i>	A business partner with whom a business relationship exists, involving the sale of goods or services.	Customers are assigned to one or more sales areas (sales organization, division and distribution channel)	Customers are assigned to a pricing procedure that includes the price list.
	<i>Price list</i>	Set of price conditions related to a sales area.	A price list is valid for a sales organization and a specific distribution channel.	Price lists are linked to a finished product.
<i>Production master data</i>	<i>Bill of material</i>	A complete, structured list of the components that make up an object. The list contains the description, the quantity, and unit of measure. The components are known as BOM items.	The bill of material is a link to a specific plant defined for a specific product.	The bill of material links together the finished product with the raw material (ingredients and packaging).
	<i>Work centers</i>	An organizational unit that defines where work operations are performed. Work centers can be machines, people, production lines or groups of craftsmen.	The work centers are located in a specific plant.	A work center must be specified for each operation defined by the routing.
	<i>Routings</i>	A routing defines a sequence of one or more operations performed at the work centers that are used in a manufacture of a finished product.	Routings are specific to a plant.	Routings are related to finished products and work centers.

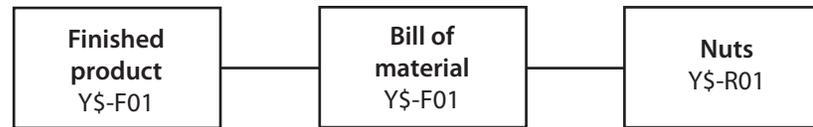
Type of master data	Master data	Definition	Relationship with organizational elements	Relationship with other master data
<i>Purchasing master data</i>	<i>Vendors</i>	A business partner from whom materials or services can be procured.	Vendors are defined for a company code and a purchasing organization.	Vendors are linked to raw materials they sell through the info-records.
	<i>Info-records</i>	The logical tie between a vendor and a raw material.	Info records are valid for a specific plant and purchasing organization.	Info records link the vendors with the raw materials they provide.
	<i>Source list</i>	The source list records the approved or blocked vendors for a given material, and can define the preferred vendor.	Source lists are specific to a plant and a purchasing organization.	Source lists tie together an approved/blocked vendor to a material. Info-records need to be created before a material can be put on a source list.
<i>Financial master data</i>	<i>Accounts</i>	A structure that records value transactions within an accounting unit. The account can refer to an object to which the value transactions are assigned.	Accounts are related to a chart of accounts and a company code.	Materials are linked to accounts to record the value of material stock.
<i>Cost controlling master data</i>	<i>Profits centers</i>	An organizational unit in accounting that reflects a management-oriented structure of the organization for the purpose of internal control.	Profit centers are linked to a controlling area.	A profit center may contain many cost centers.
	<i>Cost centers</i>	An organizational unit within a controlling area that represents a defined location of cost incurrence.	Cost centers are linked to a controlling area.	A cost center may be related to only one profit center.

7.2 Creating a sample of the master data

This section is optional, it presents a simple exercise where you will create three types of master data—a finished product, a raw material and a BOM that links them together. Note that this section is not compatible with section 7.3, you can skip to section 7.3 if you decide to do the complete master data.

Figure 7.2 shows the master data that you will need to create.

Figure 7.2: Data model of product Y\$\$-F01



7.2.1 Finished product

MMF1
Master Data / Finished Product / Create Finished Product
701

- On “Create Finished product (Initial Screen)”, enter the following information:

Fields	Data to input
<i>Material</i>	Y\$\$-F01
<i>Industry sector</i>	Retail

- Step 1:** Click on “Select View(s)” and highlight the following views of the muesli data. Once done, click on “Continue (Enter)”.
 - Basic Data 1 and 2
 - Sales:Sales Org.Data 1 and 2
 - Sales:General / Plant Data
 - MRP1, MRP2, MRP3, MRP4
 - Forecasting
 - Work Scheduling
 - General Plant Data / Storage 1 and 2
 - Accounting 1 and 2
 - Costing 1 and 2

- Step 2:** On the “Organization levels” screen, enter the following information:

Fields	Data to input
<i>Plant</i>	Y\$\$
<i>Storage location</i>	02
<i>Sales organization</i>	Y\$\$
<i>Distribution channel</i>	10

- Step 3:** The record contains a series of mandatory data in the various views of “Material Master”. Pressing “enter” starts an automatic check and you go on to the next tab. See next page for the data to enter.

Views	Fields	Y\$\$-F01
<i>Basic Data 1</i>	Description	Nut Muesli 1.0 kg.
	Base Unit of Measure	ST - items
	Material Group	Y\$\$
	Gross weight	1 kg
	Net weight	1 kg
<i>Basic Data 2</i>	You have no data to enter here. (Press "enter").	
<i>Sales: Sales Org. Data 1</i>	Tax Classification	0 - No tax
	Delivering plant	Y\$\$
<i>Sales: Sales Org. Data 2</i>	You have no data to enter here. (Press "enter").	
<i>Sales: General / Plant Data</i>	Availability check:	01 - Daily requirements
	Transport group	0001 - On pallets
	Loading group	0002 - Forklift
<i>MRP1</i>	MRP group	0010 - Zsim Make-to-stock
	MRP Type	PD - MRP
	MRP Controller	101
	Lot Size	EX - Lot-for-lot order quantity
	Maximum Lot Size	50 000
<i>MRP2</i>	In-house production	0 days - You can ignore it by pressing "enter"
	SchedMargin key	000
	Prod. stor. location	02 -Ignore warning
<i>MRP3</i>	Strategy group	10 - Make-to-stock production
<i>MRP4</i>	You have no data to enter here. (Press "enter").	
<i>Forecasting</i>	Forecast model	J
<i>Work Scheduling</i>	You have no data to enter here. (Press "enter").	
<i>General Plant Data / Storage 1 & 2</i>	You have no data to enter here. (Press "enter").	
<i>Accounting 1</i>	Valuation class	7920 - Finished product
	Price control	S - Standard price
	Standard price	2,48
<i>Accounting 2</i>	You have no data to enter here. (Press "enter").	
<i>Costing 1</i>	Profit center	Y\$\$
<i>Costing 2</i>	You have no data to enter here. (Press "enter"). Then, click "yes" to save the product.	

- Should you forget to input some data, you can go back in change mode (transaction MM02) and make corrections.

7.2.2 Raw material

MMR1
Master Data / Raw Material / Create Raw Material
703

On "Create Finished product (Initial Screen)", enter the following information:

Fields	Data to input
<i>Material</i>	Y\$\$-R01
<i>Industry sector</i>	Retail

- **Step 1:** Click on "Select View(s)" and highlight the following views of the muesli data. Once done, click on "Continue (Enter)".
 - Basic Data 1 and 2
 - General Plant Data / Storage 1 and 2
 - Purchasing
 - Accounting 1 and 2
 - MRP1, MRP2, MRP3, MRP4
 - Costing 1 and 2

- **Step 2:** On the "Organization levels" screen, enter the following information:

Fields	Data to input
<i>Plant</i>	Y\$\$
<i>Storage location</i>	88

- **Step 3:** The record contains a series of mandatory data in the various views of "Material Master". Pressing "enter" starts an automatic check and you go on to the next tab. See next page for the data to enter.

VIEWS	FIELDS	Y\$\$-R01
<i>Basic Data 1</i>	Description	Nuts
	Base Unit of measure	KG - Kilogram
	Material Group	Y\$\$
<i>Basic Data 2</i>	You have no data to enter here. (Press "enter".)	
<i>Purchasing</i>	Purchasing group:	100
	Autom. PO	X
<i>MRP1</i>	MRP group	0010
	MRP Type	PD - MRP
	MRP Controller	101
	Lot Size	EX - Lot-for-lot order quantity
<i>MRP2</i>	Prod. stor location	88
	Backflush	2 - Work center decides whether to backflush
	SchedMargin key	000
	Plnd Delivery time:	1 day
<i>MRP3</i>	Availability check	01 - Daily requirements
<i>MRP4</i>	You have no data to enter here. (Press "enter".)	
<i>General Plant Data / Stor. 1</i>	You have no data to enter here. (Press "enter".)	
<i>General Plant Data / Stor. 2</i>	You have no data to enter here. (Press "enter".)	
<i>Accounting 1</i>	Valuation class	3000 - Raw material 1
	Price control	V - Moving average price
	Moving price	1.82
<i>Accounting 2</i>	You have no data to enter here. (Press "enter".)	
<i>Costing 1</i>	Profit center	Y\$\$
<i>Costing 2</i>	You have no data to enter here. (Press "enter"). Then, click "yes" to save the product.	

- Should you forget to input some data, you can go back in change mode (transaction MM02) and make corrections.

7.2.3 Bill of material

CS01

Master Data / Bill
of Material / Create
Material BOM

706

Here are the steps to create a bill of material in SAP®. On “Create Material BOM: Initial Screen”, enter the following information. Remember that \$ is the letter of your plant.

Fields	Data to input
<i>Product</i>	Y\$\$-F01
<i>Plant</i>	Y\$\$
<i>BOM Usage</i>	1 (Production)

On the “Create Material BOM: General Item Overview” screen, enter the following information:

Fields	Y\$\$-F01	
<i>ICT</i>	L (Stock Item)	
Quantity	Y\$\$-R01	0.200

Click on  to save your list of components.

7.3 Creating the complete material masters

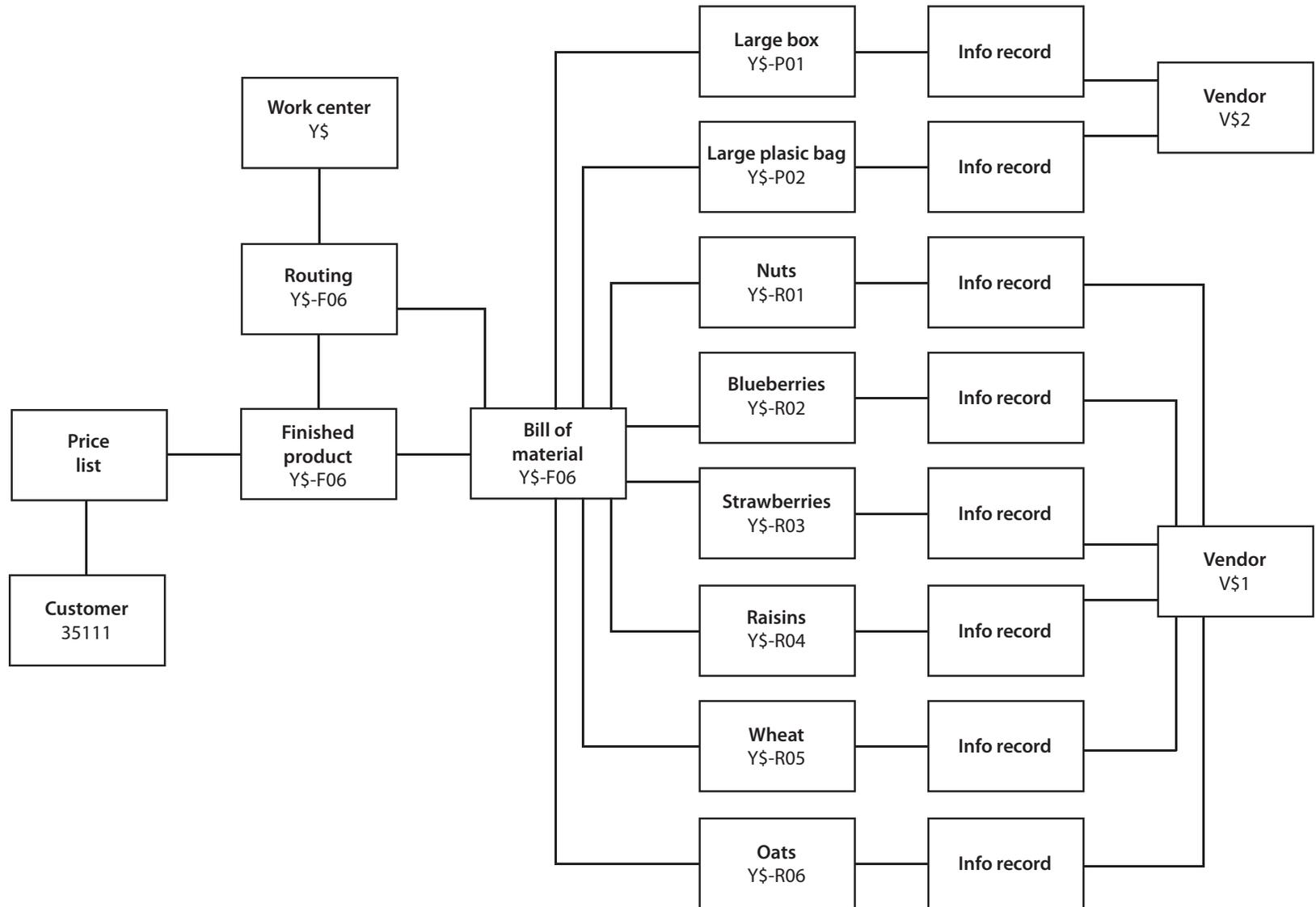
The following table presents a complete list of the data that needs to be created. Remember that \$ corresponds to the letter of your plant.

Table 7.4: List of master data to create for the simulation

Master data	Alphanumeric codes					
6 finished products	Y\$\$-F01	Y\$\$-F02	Y\$\$-F03	Y\$\$-F04	Y\$\$-F05	Y\$\$-F06
6 raw materials	Y\$\$-R01	Y\$\$-R02	Y\$\$-R03	Y\$\$-R04	Y\$\$-R05	Y\$\$-R06
4 packaging materials	Y\$\$-P01	Y\$\$-P02	Y\$\$-P03	Y\$\$-P04		
2 vendors	V\$1	V\$2				
6 bill of materials	Y\$\$-F01	Y\$\$-F02	Y\$\$-F03	Y\$\$-F04	Y\$\$-F05	Y\$\$-F06
1 work centers	Y\$\$					
6 routings	Y\$\$-F01	Y\$\$-F02	Y\$\$-F03	Y\$\$-F04	Y\$\$-F05	Y\$\$-F06
3 x 6 price lists (DC 10, 12 and 14)	Y\$\$-F01	Y\$\$-F02	Y\$\$-F03	Y\$\$-F04	Y\$\$-F05	Y\$\$-F06
6 info-records and 6 source lists for raw materials	V\$1 – Y\$\$-R01	V\$1 – Y\$\$-R02	V\$1 – Y\$\$-R03	V\$1 – Y\$\$-R04	V\$1 – Y\$\$-R05	V\$1 – Y\$\$-R06
4 info-records and 4 source lists for packaging	V\$2 – Y\$\$-P01	V\$2 – Y\$\$-P02	V\$2 – Y\$\$-P03	V\$2 – Y\$\$-P04		
1 profit center	Y\$\$					
1 cost center	Y\$\$					

The following figure illustrates the data model for one finished product and all its associated master data. The model includes the finished product Y\$\$-F01 and assumes that all raw materials are from the same vendor (V\$1) and the packaging materials are also from a single supplier (V\$2).

Figure 7.5: Data model of product Y\$\$-F06



The master record for a material (finished products, raw material, packaging) is the most important master data in the system. This record is used by most of the R/3® modules. The centralization of all the information for each product in a single record prevents redundancies between different departments. In a transaction, the system copies from the record only the information required for the current business document (for example, the product description, weight, storage location, etc.). All the user has to enter is the information specific to each transaction (i.e. the quantity ordered). In this simulation, the material master is used at nearly all stages of the business process. Two types of product records must be created: one for finished products and one for raw materials.

7.3.1 Finished products

Each firm has to define its finished products. All teams need to create six finished products: Y\$\$-F01, Y\$\$-F02, Y\$\$-F03, Y\$\$-F04, Y\$\$-F05 and Y\$\$-F06, where \$ corresponds to the letter of your company. Please note that a firm does not need to produce all six potential products, but the master data for all six products needs to be created to allow for the function.

The creation of the material master data for the finished products requires specifying a set of parameters which indicate to SAP® the business rules associated with this master data. Based on the simulation requirements, the main parameters that are used in all your finished products are:

- Boxes of muesli cereal are retail products (Field Industry sector).
- They are classified in the system as food material (Field Material group). Material group is a grouping of materials and services according to their characteristics.
- Boxes are counted in pieces (Field Base Unit Measure) and are sold on pallets (Field Transport Group) and transported by a forklift (Field Loading Group).
- To simplify the simulation, these products are not taxable (Field Tax Classification) and are initially valued as finished products (Field Valuation Class) at the standard price (Field Price control) of 3 euros (Field Standard Price). A more accurate price will be determined once the recipe is defined.
- The availability of this product must be checked daily (Field Availability Check).
- Because we will only sell material that is in stock, the in-house production is set to take 0 days (Field In-house production), and production float time is set to zero by our choice of schedule margin key. (Field Schedule Margin Key).

Create the finished products

Each firm has to define its finished products. Each team must create master data for 6 finished products for the simulation game even if they choose not to produce 6 products. Enter the following information for each finished product. Where \$ corresponds to the name of your company and “%%” corresponds to the product number (01 to 06).

- On “Create Finished product (Initial Screen)”, enter the following information:

Fields	Data to input
<i>Material</i>	Y\$\$-F%%
<i>Industry sector</i>	Retail

- Step 1:** Click on “Select View(s)” and highlight the following views of the muesli data. Once done, click on “Continue (Enter)”.
 - Basic Data 1 and 2
 - Sales:Sales Org.Data 1 and 2
 - Sales:General / Plant Data
 - MRP1, MRP2, MRP3, MRP4
 - Forecasting
 - Work Scheduling
 - General Plant Data / Storage 1 and 2
 - Accounting 1 and 2
 - Costing 1 and 2

- Step 2:** On the “Organization levels” screen, enter the following information:

Fields	Data to input
<i>Plant</i>	Y\$\$
<i>Storage location</i>	02
<i>Sales organization</i>	Y\$\$
<i>Distribution channel</i>	10

- Step 3:** The record contains a series of mandatory data in the various views of “Material Master”. Pressing “enter” starts an automatic check and you go on to the next tab. See next page for the data to enter.

Views	Fields	01	02	03	04	05	06
<i>Basic Data 1</i>	Description	Nut Muesli 1.0 kg.	Blueberry Muesli 1.0 kg.	Strawberry Muesli 1.0 kg.	Raisin Muesli 1.0 kg.	Original Muesli 1.0 kg.	Mixed Fruit Muesli 1.0 kg.
	Base Unit of Measure	ST - items					
	Material Group	Y\$\$					
	Gross weight	1 kg					
	Net weight	1 kg					
<i>Basic Data 2</i>	You have no data to enter here. (Press "enter".)						
<i>Sales: Sales Org. Data 1</i>	Tax Classification	0 - No tax					
	Delivering plant	Y\$\$					
<i>Sales: Sales Org. Data 2</i>	You have no data to enter here. (Press "enter".)						
<i>Sales: General / Plant</i>	Availability check:	01 - Daily requirements					
	Transport group	0001 - On pallets					
	Loading group	0002 - Forklift					
<i>MRP1</i>	MRP group	0010 - Zsim Make-to-stock					
	MRP Type	PD - MRP					
	MRP Controller	101					
	Lot Size	EX - Lot-for-lot order quantity					
	Maximum Lot Size	50 000					
<i>MRP2</i>	In-house production	0 days - You can ignore it by pressing "enter"					
	SchedMargin key	000					
	Prod. stor. location	02 - Ignore warning					
<i>MRP3</i>	Strategy group	10 - Make-to-stock production					
<i>MRP4</i>	You have no data to enter here. (Press "enter".)						
<i>Forecasting</i>	Forecast model	J - Automatic model selection					
<i>Work Scheduling</i>	You have no data to enter here. (Press "enter".)						
<i>Plant Data / Stor. 1</i>	You have no data to enter here. (Press "enter".)						
<i>Plant Data / Stor. 2</i>	You have no data to enter here. (Press "enter".)						
<i>Accounting 1</i>	Valuation class	7920 - Finished product					
	Price control	S - Standard price					
	Standard price	2.48	3.09	3.09	2.50	2.65	2.89
<i>Accounting 2</i>	You have no data to enter here. (Press "enter".)						
<i>Costing 1</i>	Profit center	Y\$\$					
<i>Costing 2</i>	You have no data to enter here. (Press "enter".) Then, click "yes" to save the product.						

- Should you forget to input some data, you can go back in change mode (transaction MM02) and make corrections.

Extend the finished products to more distribution channels

A message confirms that the finished product was created in the system. However, the product has only been assigned to the distribution channel 10 (Hypermarkets). Because you will want the product to be available in the two other distribution channels, we need to extend the material master to these other sales areas. By extending the master data, you will be able to reuse the information previously entered in other views of the material master.

There are three distribution channels: 10 (Hypermarkets), 12 (Grocery chains) and 14 (Independent grocers). Your materials were already linked with the distribution channel 10. You have to extend your finished product to distribution channels 12 and 14.

- On "Create Finished product (Initial Screen)", enter the following information:

Fields	Data to input
<i>Material</i>	Y\$\$-F%%
<i>Industry sector</i>	Retail

- Step 1:** Click on "Select View(s)" and highlight the following views of the muesli data. Once done, click on "Continue (Enter)".
 - Basic Data 1 and 2
 - Sales:Sales Org.Data 1 and 2
 - Sales:General / Plant Data
 - MRP1, MRP2, MRP3, MRP4
 - Forecasting
 - Work Scheduling
 - General Plant Data / Storage 1 and 2
 - Accounting 1 and 2
 - Costing 1 and 2
- Step 2:** On the "Organization levels" screen, enter the following information:

Fields	Data to input
<i>Plant</i>	Y\$\$
<i>Storage location</i>	02
<i>Sales organization</i>	Y\$\$
<i>Distribution channel</i>	10

- Step 3:** A message saying "The material already exists and will be extended " appears at the bottom of the screen.
- Click on  to save.
- Repeat the same operations to extend your material to distribution channel 14.

- Should you forget to input some data, you can go back in change mode (transaction MM02) and make corrections.

7.3.2 Creating raw materials

Each firm has to define all its raw materials. All teams need to create six raw materials: Y\$\$-R01, Y\$\$-R02, Y\$\$-R03, Y\$\$-R04, Y\$\$-R05 and Y\$\$-R06, where \$ corresponds to the letter of your plant.

The creation of the raw materials requires specifying a set of parameters which indicate to SAP® the business rules associated with this master data. Based on the simulation requirements, here are the main parameters that are used in all your finished products:

- Raw materials are retail products (Field Industry sector).
- They are classified in the system as food material (Field Material group).
- Raw materials are measured in kilograms (Field Base Unit Measure).
- The procurement of all raw materials is the responsibility of purchasing group 100 (Raw Materials). The purchasing group number provides the ability to generate reports for the group of buyers who are responsible for buying the raw materials.
- The purchase orders for raw materials need to be generated automatically when purchase requisitions are converted into purchase orders (Field Autom.PO).
- No direct planning is needed for the raw materials (Field MRP Group). The dependent requirements for the raw material will be generated by the MRP run (Field MRP Type) of their associated finished products.
- Dependent requirements of raw materials are planned using a lot-for-lot order quantity (Field Lot size), i.e. the system creates a single production lot for each independent requirement.
- The dependent requirements issued from the forecast of the independent requirements are assumed to be constant (Field Forecast model).
- The MRP controller is the role of the person in charge of planning the material.
- These products are valued as raw material (Field Valuation Class), using a moving average price (Field Moving average price).
- The availability of the products is checked using daily totals (Field Availability Check), and the planned delivery time is assumed to be 1 day (Field Plnd Delivery time). Production float times is set to zero by the schedule margin key used. (Field ShecdMargin Key).

The same raw material will be used for different finished products. Therefore, the creation of these 6 raw materials needs to be shared between the members of the team. You also have to create 4 material masters for the packaging material

Important: You have to follow the same process for all material masters that you need to create. For example, your plant will have to create component Y\$\$-R01, then Y\$\$-R02, and so on. Remember: "\$" corresponds to the letter of your plant. For example, if your plant is A, then Y\$\$ corresponds to YA.

MMR1
Master Data / Raw Material / Create Raw Material
703

- On "Create Finished product (Initial Screen)", enter the following information:

Fields	Data to input
<i>Material</i>	Y\$\$-R%%
<i>Industry sector</i>	Retail

- Step 1:** Click on "Select View(s)" and highlight the following views of the muesli data. Once done, click on "Continue (Enter)".
 - Basic Data 1 and 2
 - Purchasing
 - MRP1, MRP2, MRP3, MRP4
 - General Plant Data / Storage 1 and 2
 - Accounting 1 and 2
 - Costing 1 and 2

- Step 2:** On the "Organization levels" screen, enter the following information:

Fields	Data to input
<i>Plant</i>	Y\$\$
<i>Storage location</i>	88

- Step 3:** The record contains a series of mandatory data in the various views of "Material Master". Pressing "enter" starts an automatic check and you go on to the next tab. See next page for the data to enter.

VIEWS	FIELDS	Y\$\$-R01	Y\$\$-R02	Y\$\$-R03	Y\$\$-R04	Y\$\$-R05	Y\$\$-R06
<i>Basic Data 1</i>	Description	Nuts	Blueberries	Strawberries	Raisins	Wheat	Oats
	Base Unit of measure	KG - Kilogram					
	Material Group	Y\$\$					
<i>Basic Data 2</i>	You have no data to enter here. (Press "enter".)						
<i>Purchasing</i>	Purchasing group:	100					
	Autom. PO	X					
<i>MRP1</i>	MRP group	0010					
	MRP Type	PD - MRP					
	MRP Controller	101					
	Lot Size	EX - Lot-for-lot order quantity					
<i>MRP2</i>	Prod. stor location	88					
	Backflush	2 - Work center decides whether to backflush					
	SchedMargin key	000					
	Plnd Delivery time:	1 day					
<i>MRP3</i>	Availability check	01 - Daily requirements					
<i>MRP4</i>	You have no data to enter here. (Press "enter".)						
<i>General Plant Data / Stor. 1</i>	You have no data to enter here. (Press "enter".)						
<i>General Plant Data / Stor. 2</i>	You have no data to enter here. (Press "enter".)						
<i>Accounting 1</i>	Valuation class	3000 - Raw material 1					
	Price control	V - Moving average price					
	Moving price	1.82	4.00	4.02	1.07	0.99	0.92
<i>Accounting 2</i>	You have no data to enter here. (Press "enter".)						
<i>Costing 1</i>	Profit center	Y\$\$					
<i>Costing 2</i>	You have no data to enter here. (Press "enter"). Then, click "yes" to save the product.						

- If you forget some information, go back in change mode (transaction MM02) and correct it. Note that if you enter the moving price incorrectly, you can only change it using transaction MR21.

7.3.3 Creating packaging materials

After creating all of the ingredients, you'll have to create four other raw materials: small format box (0.5 kg), large format box (1 kg), a small format plastic bag and a large format plastic bag.

While you can create these materials as packaging materials, we recommend creating these materials as raw materials using the 'create raw material' transaction (MMR1).

The creation of the packaging material requires specifying a set of parameters which indicate to SAP® the business rules associated to this master data. Based on the simulation requirements, here are the main parameters that are used for your packaging materials:

- Packaging materials are retail products (Field Industry sector).
- They are classified in the system as food material (Field Material group).
- Packaging material are counted in pieces (Field Base Unit Measure).
- The procurement of all packaging materials is the responsibility of purchasing group 200 (Packaging).
- The purchasing group number provides the ability to generate report for the group of buyers, who are responsible just for the packaging materials.
- The purchase orders for packaging materials need to be generated automatically when purchase requisitions are converted into purchase orders (Field Autom.PO).
- No direct planning is needed for packaging materials (Field MRP Group).
- The dependent requirements for the packaging materials will be generated by the MRP run (Field MRP Type) of their associated finished product.
- Dependent requirements of packaging materials are planned using a lot-for-lot order quantity (Field Lot size), i.e. the system creates one production order for each independent requirement.
- The MRP controller is the role of the person in charge of planning the material.
- These products are valued as raw materials (Field Valuation Class), using a moving average price (Field Moving average price) that varies according to the size of the packaging material.
- The availability of this product is checked using daily totals (Field Availability Check), and the planned delivery time is assumed to be 1 day (Field Plnd Delivery time). Production float times are set to zero (Field ShecdMargin Key).

N.B. You have to follow the same process for all of four packaging material. For example, your plant will have to create component Y\$\$-P01, then Y\$\$-P02, and so on. Remember: "\$" corresponds to the letter of your plant.

- On "Create Finished product (Initial Screen)", enter the following information:

Fields	Data to input
<i>Material</i>	Y\$\$-P%%
<i>Industry sector</i>	Retail

- **Step 1:** Click on "Select View(s)" and highlight the following views of the muesli data. Once done, click on "Continue (Enter)".
 - Basic Data 1 and 2
 - Purchasing
 - MRP1, MRP2, MRP3, MRP4
 - General Plant Data / Storage 1 and 2
 - Accounting 1 and 2
 - Costing 1 and 2

- **Step 2:** On the "Organization levels" screen, enter the following information:

Fields	Data to input
<i>Plant</i>	Y\$\$
<i>Storage location</i>	88

- **Step 3:** The record contains a series of mandatory data in the various views of "Material Master". Pressing "enter" starts an automatic check and you go on to the next tab. See next page for the data to enter.

Views	Fields	Y\$\$-P01	Y\$\$-P02	Y\$\$-P03	Y\$\$-P04
<i>Basic Data 1</i>	Description	Large box 1kg	Large plastic bag 1kg	Small box 0.5kg	Small plastic bag 0.5kg
	Base Unit of measure	ST - items			
	Material Group	Y\$\$			
<i>Basic Data 2</i>	You have no data to enter here. (Press "enter".)				
<i>Purchasing</i>	Purchasing group:	200			
	Autom. PO	X			
<i>MRP1</i>	MRP group	0010			
	MRP Type	PD - MRP			
	MRP Controller	101			
	Lot Size	EX - Lot-for-lot order quantity			
<i>MRP2</i>	Prod. stor. location	88			
	Backflush	2 - Work center decides whether to backflush			
	SchedMargin key	000			
	Plnd Delivery time:	1 day			
<i>MRP3</i>	Availability check	01 - Daily requirements			
<i>MRP4</i>	You have no data to enter here. (Press "enter".)				
<i>General Plant Data / Stor. 1</i>	You have no data to enter here. (Press "enter".)				
<i>General Plant Data / Stor. 2</i>	You have no data to enter here. (Press "enter".)				
<i>Accounting 1</i>	Valuation class	3000 - Raw material 1			
	Price control	V - Moving average price			
	Moving price	0.28	0.12	0.21	0.09
<i>Accounting 2</i>	You have no data to enter here. (Press "enter".)				
<i>Costing 1</i>	Profit center	Y\$\$			
<i>Costing 2</i>	You have no data to enter here. (Press "enter".), Then, click "yes" to save the product				

- Should you forget to input some data, you can go back in change mode (transaction MM02). Note that if you enter the moving price incorrectly, you can only change it using transaction MR21.

7.4 Vendor master data

Vendors are the business partners from whom material or services can be procured. There are two vendors. Raw materials are bought from one specialized trader (FoodBroker Inc.) while packaging materials are acquired from a packaging manufacturer (Continental Printing Co).

Each time you do business with a vendor, the information contained in the material master is reused. In practice, you will have to introduce much more data than we do here. You will certainly have to input addresses and phone numbers, name of contacts, etc. We will omit this data as it has no impact on the simulation.

When creating vendor master records in the system, you will need to input several parameters. Here is the business logic underlying these parameters:

- The account group is a classifying feature that sets the required specifications for the business partner master record. You must choose the Vendor account group (Field Account Group). All vendors are based in Germany (Field Country).
- On the general ledger, the individual accounts payable are reconciled in the trade payable domestic account (field rec.account) and are managed with other domestic planning groups (field cash managing group).
- Purchase orders need to be created automatically from the purchase requisition (field automatic purchase order).
- The following operation has to be repeated for each vendor. On “Create Vendor: Initial Screen”, enter the following information where \$ corresponds to the name of your company.

Fields	Data to input	
Vendor	V\$1	V\$2
Company code	Y\$\$	
Purchasing org.	Y\$\$	
Account group	0001 (Vendor)	

- On the “Create Vendor: Address” screen, enter the following information:

Fields	Data to input	
Vendor	V\$1	V\$2
Title	Company	
Name	FoodBroker Inc.	Continental Printing Co.
Search term	Raw mat.	Pack.
Country	DE	DE

- Press “enter” to go on to the next screen.

Create Vendor screens: Press enter to navigate through the screens.	Fields	Vendor	
		V\$1	V\$2
Control	<i>Sales / pur.tax</i>	X	
Payment Transactions	<i>Press “enter” to skip the screen</i>		
Contact Person	<i>Press “enter” to skip the screen</i>		
Accounting Information Accounting	<i>Rec Account:</i>	160000 (Trade Payables – domestic)	
	<i>Cash mgmnt group</i>	A1 (Domestic)	
Payment Transaction Accounting	<i>Payment terms</i>	0001 (Payable immediately Due Net)	
Correspondence Accounting	<i>Press “enter” to skip the screen</i>		
Purchasing Data	<i>Order currency</i>	EUR (euro)	
	<i>Terms of payments</i>	0001	
	<i>Automatic purchase order</i>	X	
Partner Functions	<i>Press “enter” to skip the screen</i>		

- Do not forget to save the vendor data by clicking on the save icon .
- You must repeat this procedure for the other vendors.
- Should you need to modify the vendor record, execute the transaction XK02 and then make any corrections.

ZCUST

Master Data / Customer
/ Customer Listing
Report

7.5 Customers masters

A customer is a business partner with whom a business relationship exists involving the sale of goods or services. You do not want to enter customer data each time a customer places an order. To avoid this, the customer master data contains the information about your customers that is used in processing sales transactions.

All customers are retailers located in Germany and they pay in Euros. Retailers are located in one of the 16 German states.

Because of the large number of customers in the simulation, the customer master data has already been created for you. However, you can display them with transaction ZCUST. In this transaction you have, for each retailer, the customer number, the distribution channel, the postal code as well as the German state and city in which they are located. You can sort them by choosing the label on any column and clicking on  or  to sort them in ascending or descending order.

7.6 Production Master data

CS01

Master Data / Bill
of Material / Create
Material BOM

706

7.6.1 Bill of Material

To manufacture a finished product, you need to specify the raw materials that are required. This information is used each time you issue a production order and when you do your procurement planning. The quantities of raw materials required for the production of a product is specified in a BOM (Bill of Material). Each finished product must have a BOM. A BOM is a complete and structured list of the components that make up the finished product. The list contains the description, the quantity and the unit of measure of each component. The components of a BOM are known as BOM items.

In the context of the simulation game, the BOM represents the ingredients of your muesli cereal. Remember that you need to follow the label guidelines in developing your product (see Chapter 1). The BOMs must be associated with a specific plant. A given BOM cannot be used in two different plants. When a BOM is created, you must specify which plant will be used (Field plant). You must also specify in what context the BOM will be used. In your case, it will be used in the production context (Field BOM usage).

You will be asked to enter BOMs for your six products. The same recipes will be used for all teams during the first round (quarter) of the simulation. You will be allowed to change these recipes in future quarters. To create a BOM, you will have to the component materials in a table. Each row corresponds to a different component or BOM item. For each BOM item, you need to specify the material number of the component (Field component), its quantity (Field quantity), its unit of measure and the category of the item (Field lct). The category of all BOM items is stock item (L). The unit of measure (Field Un) is pulled from the material master and for ingredients it is kilograms (KG), the unit of measure for packaging is piece (PC).

Here are the steps to create a bill of material in SAP®. On “Create Material BOM: Initial Screen”, enter the following information. Remember that \$ is the letter of your plant.

Fields	Data to input					
Product	Y\$\$-F01	Y\$\$-F02	Y\$\$-F03	Y\$\$-F04	Y\$\$-F05	Y\$\$-F06
Plant	Y\$\$					
BOM Usage	1 (Production)					

- On the “Create Material BOM: General Item Overview” screen, enter the following information:

Fields	Y\$\$-F01	Y\$\$-F02	Y\$\$-F03	Y\$\$-F04	Y\$\$-F05	Y\$\$-F06	
ICT	L (Stock Item)						
Quantity	Y\$\$-R01	0.200				0.100	
	Y\$\$-R02		0.200			0.050	
	Y\$\$-R03			0.200		0.100	
	Y\$\$-R04				0.200	0.050	
	Y\$\$-R05	0.400	0.400	0.400	0.400	0.500	0.350
	Y\$\$-R06	0.400	0.400	0.400	0.400	0.500	0.350
	Y\$\$-P01	1	1	1	1	1	1
	Y\$\$-P02	1	1	1	1	1	1
	Y\$\$-P03						
	Y\$\$-P04						

ZCS02

Master Data / Bill of Material / ERPsim: Validated Change to BOM

707

- Click on  to save your list of components.
- Should you wish to change the recipe of a product during the simulation, you need to change its bill of material.

7.6.2 Creating the work centers

Finished products are produced using one or more work centers.

A work center refers to a production unit that defines where operations can be performed. Work centers can be machines, people, production lines or groups of craftsmen. Each work center is located in a specific plant. Each time you wish to produce a finished product you must assign the production operations work centers using a routing. Each participant needs to create a work center.

In the simulation game, each finished product is produced on a dedicated workcenter. You will create a work center for every finished product.

All your work centers are production lines (field work center cat.).

The work centers are configured to support all tasks (field usage) for normal production (standard value key).

In the context of the simulation, we will not take into account the capacity of the work centers; nevertheless, we need to input some fictitious parameters into the system.

- On "Create Work Center: Initial Screen", enter the following information:

CR01
Master Data / Work Center / Create Work Center
708

Screens	Fields	Data to input
Initial Screen	<i>Plant</i>	Y\$\$
	<i>Work Center</i>	Y\$\$
	<i>Work Center category group</i>	0007 (Production line)
Basic data	<i>Insert a description</i>	Work Center \$
	<i>Person responsible</i>	001
	<i>Usage</i>	009 (All task list types)
	<i>Standard value key</i>	SAP1 (Normal production)
	<i>Backflush</i>	X
Capacities	<i>Capacity Category</i>	002 (Labor)

Create work center capacity: Header ¹	<i>Capacity planner grp</i>	001
	<i>Base unit of meas.</i>	H
	<i>Capacity utilization</i>	100
	<i>No. of indiv. cap.</i>	1
	<i>Start</i>	00:00:00
	<i>Finish</i>	24:00:00 Then, click on "enter".
Scheduling	<i>Capacity Category</i>	002
Costing	<i>Cost Center</i>	Y\$\$

- Click on  to save your work center.

1: Click enter to access the 'Create work center capacity: Header' screen or the Capacity icon on the capacities screen.

CA01

Master Data / Routings
/ Create Routings

709

7.6.3 Creating routings

Each product needs a routing. Routings define the operations requirements to produce a product and the workcenters where the operations are performed.

When you wish to produce a finished product, you must specify how to produce it and on which work centers to produce it. The routing defines a sequence of one or more operations for the production of a material. A routing is specific to a finished product to be manufactured (field material).

To create a routing, you must enter data in a table. Each operation corresponds to a row in the table. The first row describes the first task or operation to be performed, the second row to the second task, etc. In the simulation game, we assume that there is only one operation required to manufacture a muesli cereal.

Each operation in the routing is attached to a specific work center (Field work center). Each time an operation in a routing is performed, a document will be created to confirm the execution of the task. In the routing master data you must specify the type of control that needs to be performed for each task. In the case of the simulation, it is an in-house production order that will be used (Field Control key).

Screens	Fields	Data to input					
Initial Screen	Material	Y\$\$-F01	Y\$\$-F02	Y\$\$-F03	Y\$\$-F04	Y\$\$-F05	Y\$\$-F06
	Plant	Y\$\$					
Header details	Usage	1 (Production)					
	Status	4 (Released (general))					
Operations ¹	Work center	Y\$\$					
	Control Key	ZSIM					

1: On the “Create Routing:Header Details” screen, click on “Operations”

- Click on “CompAlloc” at the top. This will confirm the “Bill of material” for your product. Click on  to save your routing.

7.7 Sales price

7.7.1 Set the sales price

VK31

Master Data / Sale Price / Condition
Maintenance: Create / Price List

710

In SAP®, prices are called conditions. A pricing procedure looks for condition records to set prices automatically based on the various conditions applicable when a product is sold. These condition records include the price list, discounts, surcharges, transportation costs and taxes. You must specify a sales price condition record for each finished product that you wish to sell to every sales area (a unique combination of sales organization, division and distribution channel) Each of these price conditions is contained in a price list.

You must specify prices (Field amount) in euros (Field unit) for each finished product (Field material) and channel (Field distribution channel). For the system to interpret the amount entered as a sales price, you must select the Condition type PR00 (Field Condition type).

- On the “Create Condition Records: Overview” screen, open the “price” folder and click on “price list”. Click on the  icon and then enter the following information:

Fields	Data to input					
Sales organization	Y\$\$					
Distribution channel	10 (Hyper markets)					
Price list	01					
Document currency	EUR					
Condition type	PR00					
Material	Y\$\$-F01	Y\$\$-F02	Y\$\$-F03	Y\$\$-F04	Y\$\$-F05	Y\$\$-F06
Amount	4.24	5.18	5.18	3.92	3.87	4.75
Unit	EUR					

Because you do not want to create new master data during the simulation and because you may not know in advance in which distribution channels you will want to sell your product, it is highly recommended that you enter a price for all three channels.

Therefore, repeat the same operations for each product for the distribution channel 12 (Grocery chains) and 14 (Independent grocers).

Fields	Data to input					
Sales organization	Y\$\$					
Distribution channel	12 (Grocery chains)					
Price list	01					
Document currency	EUR					
Condition type	PR00					
Material	Y\$\$-F01	Y\$\$-F02	Y\$\$-F03	Y\$\$-F04	Y\$\$-F05	Y\$\$-F06
Amount	4.49	5.43	5.43	4.17	4.12	5.00
Unit	EUR					

Fields	Data to input					
Sales organization	Y\$\$					
Distribution channel	14 (Independent grocers)					
Price list	01					
Document currency	EUR					
Condition type	PR00					
Material	Y\$\$-F01	Y\$\$-F02	Y\$\$-F03	Y\$\$-F04	Y\$\$-F05	Y\$\$-F06
Amount	4.74	5.68	5.68	4.42	4.37	5.25
Unit	EUR					

VK32

Master Data / Sale Price / Condition Maintenance: Change

711

7.7.2 Change the sales price

You will be able to change these prices during the simulation by using the following instructions.

- On "Price List with Release Status", enter the following information:

Fields	Data to input
<i>Sales organization</i>	Y\$\$
<i>Distribution channel</i>	10, 12 or 14
<i>Material number</i>	Y\$\$-F%%

- Click on 
- On "Change Condition Records: Overview", enter the following information:

Field	Data to input
<i>Amount</i>	<i>The new sale price of your material</i>

- Click on  to save.

7.8 Info Records

7.8.1 Define info records for raw material

An info record creates a link between the vendors and the raw materials. If a vendor sells a raw materials, then an info record can be created to stipulate the conditions of the purchase for the specific material from the specific vendor. Some of the conditions of purchase will have to change each time you order.

In each info record, you must set a planned delivery time of one day (Field plnd dely time), the purchasing unit in charge of the procurement (Field purchasing organization), and the standard quantity (Field Standard qty). The info records also contain the expected net price of this product (Field Net price). The expected price and the freight cost in the info record will correspond to the average cost from the vendor. Each company has one vendor for raw materials (Food Broker Inc.) that is defined in the system using vendor number V\$1, where \$ is the letter of your company. Similarly, packaging material are purchased from Continental Printing Co., with vendor number V\$2.

Info Records are the logical link between raw materials and vendors. There are 6 info records to be created for raw materials.

- On “Create Info Record: Initial Screen”, enter the following information:

ME11
Master Data / Info Record / Create Purchasing Info Record
712

Screens	Fields	Data to input					
Initial screen	<i>Vendor</i>	V\$1					
	<i>Material</i>	Y\$\$-R01	Y\$\$-R02	Y\$\$-R03	Y\$\$-R04	Y\$\$-R05	Y\$\$-R06
	<i>Purch. org.</i>	Y\$\$					
	<i>Plant</i>	Y\$\$					
Purchase org. data 1 ¹	<i>Plnd dely time</i>	1					
	<i>Purch group</i>	100					
	<i>Standard qty</i>	100					
	<i>Net price</i>	1.82	4.00	4.02	1.07	0.99	0.92

1: On the “Create Info Record: General Data” screen, click on “Purch. Org data 1”

- Click on  to save.

7.8.2 Define info records for packaging

We must also establish a link between the vendors and the packaging materials. If a vendor sells a packaging material, an info record must be created to specify the purchase conditions. Your team needs to create four info records. The packaging info record contain the same information as the material info records.

Remember that “\$” corresponds to the letter of your plant.

- On “Create Info Record: Initial Screen”, enter the following information:

Screens	Fields	Data to input			
Initial screen	Vendor	V\$2			
	Material	Y\$\$-P01	Y\$\$-P02	Y\$\$-P03	Y\$\$-P04
	Purch. org.	Y\$\$			
	Plant	Y\$\$			
Purchase org. data 1 ¹	Plnd dely time	1			
	Purch group	200			
	Standard qty	100			
	Net price	0.28	0.12	0.21	0.09

1: On the “Create Info Record:General Data” screen, click on “Purch. Org data 1”

- Click on  to save.

7.9 Source list

A source list is used in the administration of sources of supply. The source list records the approved (or blocked) vendors for the specified material. It is possible to define a fixed source of supply (Field Fix) for a certain period of time (Fields valid from and valid to) for a given purchase organization (Field Porg).

The source list is required to automatically convert purchase requisitions into consolidated purchase orders. In addition, by choosing a fixed vendor for the source list, it is possible to set the MRP process to automatically assign the source of supply when creating the purchase requisition (Field MRP).

On the “Maintain Source List: Initial Screen”, enter the following information:

Screens	Fields	Data to input									
	Material	Y\$\$-R01	Y\$\$-R02	Y\$\$-R03	Y\$\$-R04	Y\$\$-R05	Y\$\$-R06	Y\$\$-P01	Y\$\$-P02	Y\$\$-P03	Y\$\$-P04
	Plant	Y\$\$									

- Press “enter” to go on to the next screen.
- On the “Maintain Source List: Overview Screen”, enter the following information:

Fields	Data to input									
Material	Y\$\$-R01	Y\$\$-R02	Y\$\$-R03	Y\$\$-R04	Y\$\$-R05	Y\$\$-R06	Y\$\$-P01	Y\$\$-P02	Y\$\$-P03	Y\$\$-P04
Valid from	Today									
Valid to	One year from today									
Vendor	V\$1					V\$2				
Porg	Y\$\$									
Fix	X									
MRP	1 (Record relevant to MRP)									

- Click on  to save.

7.10 Controlling master data

The following paragraphs describe the creation of controlling master data. There is one profit and one cost center for each team.

KE53

Master Data / Profit Center / Display Profit Center

715

7.10.1 Displaying profit center

Note that the profit center has already been created for you (Y\$\$) To display the profit center, enter Controlling Area "Y\$\$" (if required) then press Enter.

Fields	Data
<i>Profit center</i>	Y\$\$
<i>Co area</i>	Y\$\$, Then, press "enter"
<i>Name</i>	Y\$\$
<i>Long text</i>	Y\$\$
<i>Person respons.</i>	Leave the default value in this field.
<i>Profit Ctr Group</i>	Y\$\$

7.10.2 Displaying cost centers

KS03

Master Data / Cost Center / Display Cost Center

716

Note that the cost center has already been created for you (Y\$\$) To display the cost center, enter Controlling Area "Y\$\$" (if required) then press Enter.

Tabs	Fields	Data
Basic Data	Cost center	Y\$\$
	Valid from	Today
	To	Enter 31.12.9999
	Controlling area	Y\$\$, Then press "enter" to continue
	Name	Y\$\$
	Description	Y\$\$
	Person respons.	Leave the default value in this field.
	Department	Corporate
	Cost center category	F
	Hierarchy area	Y\$\$
	Business area	0001
	Currency	EUR
Profit center	Y\$\$	

CHAPTER 8 - ORGANIZATIONAL ELEMENTS

The organizational elements represent the enterprise structure in the ERP system. They help portray the specific organizational structure of a business in the system. Each module of the ERP system has its own organizational elements. During the configuration phase of an ERP implementation, the company must be modeled into the system using the different accounting, logistics, and human resources organizational units.

The main purpose of organizational elements is to segment the transactional data that will be collected by the system. Some elements, such as the company code, are required for legal financial reporting, as they are necessary to track where revenues and costs are incurred. Other elements will be used for internal corporate reporting and data segmentation.

It should be noted that these elements are logical, i.e. they can represent both physical and virtual concepts. For example, there may be more than one storage location at a physical address to distinguish between inventories that require different valuation approaches. On the other hand, inventory in transit could be stored in a virtual storage location that would not have a physical address.

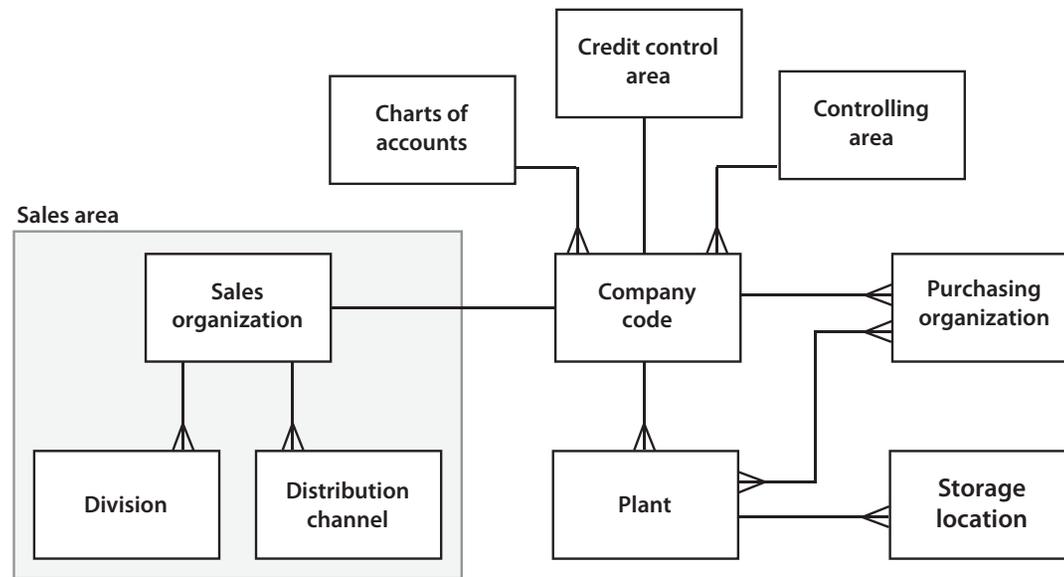
The following table presents the most important organizational elements available in SAP®.

Table 8.1: Definition of organizational elements

Module	Organizational elements	Definition	Relations to other organizational elements
<i>Finance</i>	<i>Company code</i>	The smallest organizational unit of Financial Accounting for which a complete self-contained set of accounts can be drawn up for purposes of external reporting.	At least one company code per country.
	<i>Chart of accounts</i>	A classification scheme consisting of a group of general ledger (G/L) accounts. A chart of accounts provides a framework for the recording of values to ensure an orderly rendering of accounting data.	A chart of accounts must be assigned to each company code. Many company codes can use the same operating chart of accounts.
<i>Controlling</i>	<i>Controlling area</i>	An organizational unit within a company, used to represent a closed system for cost accounting purposes.	A controlling area may include one or many company codes.
<i>Logistics</i>	<i>Plant</i>	The plant is an operating area or branch within a company. This is a place where materials are produced, or goods and services are provided.	A plant must be assigned to one company code but a company code can have more than one plant.
	<i>Storage location</i>	An organizational unit allowing differentiation between the various stocks of a material in a plant.	A storage location is assigned to a plant. A plant can have many storage locations.
	<i>Purchasing organization</i>	The purchasing organization is responsible for all purchasing activities.	A purchase organization can procure materials for a single plant, all plants in a company code or many plants with different company codes.
<i>Sales and distribution</i>	<i>Sales organization</i>	An organizational unit in Logistics that allows for the definition of unique customer, material and pricing data for sales.	A sales organization can be assigned to only one company code but a company code can have more than one sales organization.
	<i>Distribution channel</i>	Channel through which saleable materials or services reach customers (e.g. wholesale, retail).	Many distribution channels can be assigned to a sales organization.
	<i>Division</i>	An organizational unit based on responsibility for sales or profits from saleable materials or services.	A sales organization can have many divisions.
	<i>Sales areas</i>	A sales area groups together sales organizational elements to manage the details of the sale (pricing, terms of payment, etc.).	A sales area is a unique combination of a sales organization, a division and a distribution channel.

The following figure presents the data model of the main organizational elements used in the simulation game.

Figure 8.1: Conceptual model of the main organizational elements



The objective of this chapter is to configure the organizational structure of Muesli AG in SAP. The following describes the different business rules that underline your organizational structure that must be supported in SAP.

- The headquarter of Muesli AG is located in Germany and all financial transactions are processed in euros.
- Muesli AG uses an international chart of accounts and divides its calendar into four quarters.
- Muesli AG has one sales department to serve three market segments (Hypermarkets, Grocery stores and Independent grocers).
- Muesli AG has a purchasing department that manages three types of raw materials (a total of three purchasing groups that divides into Grains, Nuts and Packaging), one manufacturing plant and two distinct locations to store its finished products and raw materials.
- The plant has one shipping dock (shipping point) and all goods are moved in the warehouse using a forklift.

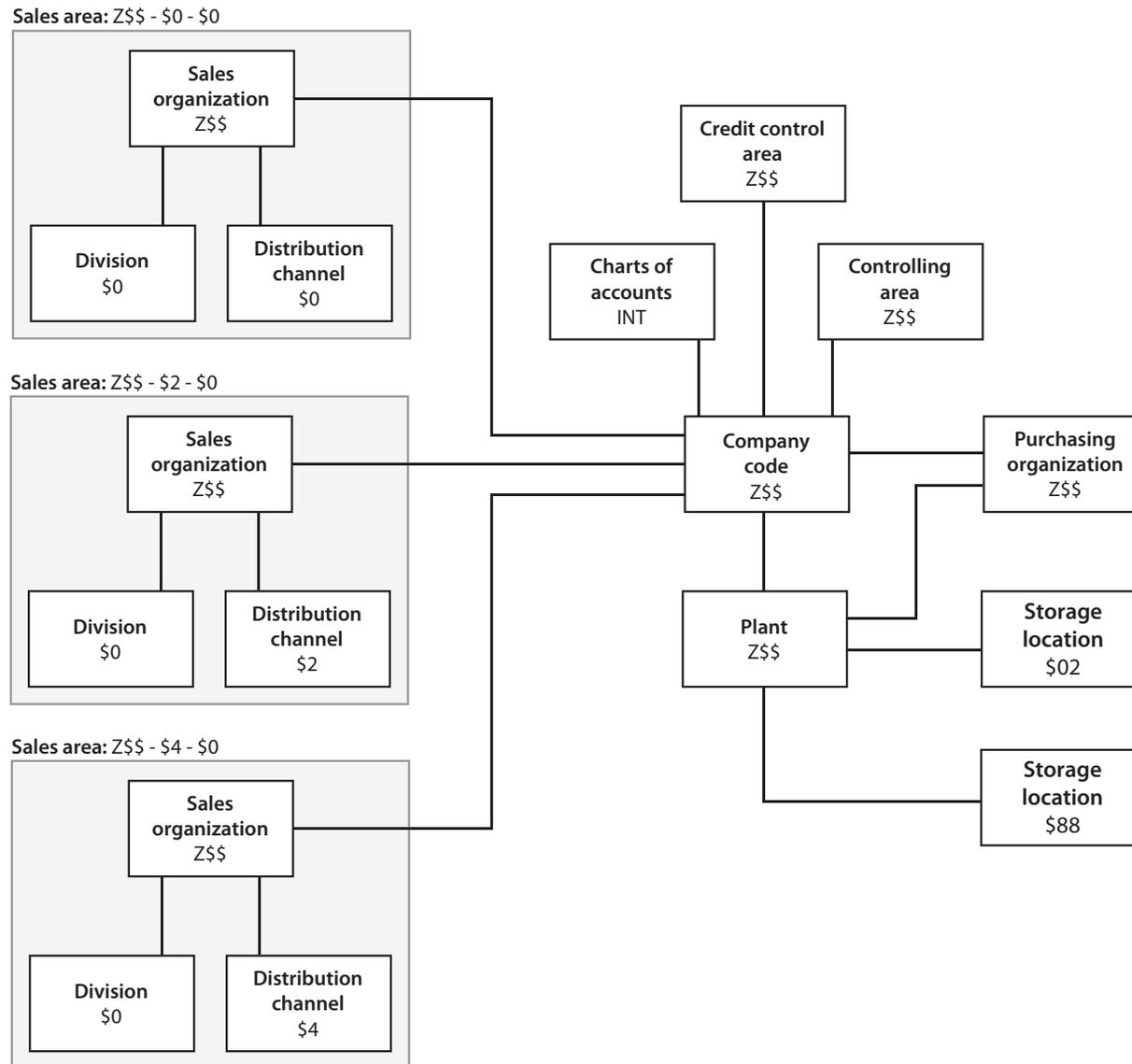
The following table presents the list of organizational elements of each simulation company as well as their respective alphanumeric code. Note that \$ corresponds to the letter of your company. For example, if your company is A, then your company code is AA. During the configuration (chapters 8 to 13), we will use a different naming convention to avoid any confusion with the actual simulation's configuration, as you can see in the following table.

Table 8.2: Alphanumeric codes of organizational elements

Organizational elements	Original keys (introductory and extended games)	Keys (configuration)
<i>Company code</i>	\$\$	Z\$\$
<i>Controlling area</i>	\$\$	Z\$\$
<i>Credit control area</i>	\$\$	Z\$\$
<i>Purchasing organization</i>	\$\$	Z\$\$
<i>Plant</i>	\$\$	Z\$\$
<i>Storage location for raw materials and packaging material</i>	88	\$88
<i>Storage location for finished products</i>	02	\$02
<i>Sales organization</i>	\$\$	Z\$\$
<i>Dist. channel 10 (Hypermarkets)</i>	10	\$0
<i>Dist. channel 12 (Grocery Chains)</i>	12	\$2
<i>Dist. channel 14 (Independent Grocers)</i>	14	\$4
<i>Division</i>	00	\$0
<i>Sales area for Hypermarkets</i>	\$\$ - 10 - 00	Z\$\$ - \$0 - \$0
<i>Sales area for Grocery Chains</i>	\$\$ - 12 - 00	Z\$\$ - \$2 - \$0
<i>Sales area for Independent Grocers</i>	\$\$ - 14 - 00	Z\$\$ - \$4 - \$0

The next figure presents the organizational structure that you will configure in SAP.

Figure 8.2: Organization structure of a typical muesli company



OX02

Enterprise Structure /
Definition / Financial
Accounting / Edit, Copy,
Delete, Check Company
Code

801

8.1 Create company code

In this step, you will create the highest organizational element in your organization, the company code. This organizational unit is used in the accounting module to structure the business organization from a financial accounting perspective. The company code that you will create is located in Germany and its primary currency must be set to EUR.

- Choose “*Edit company code data*”.
- Select “*New Entries*” and enter the following data:

Fields	Data to input
<i>Company Code</i>	Z\$\$
<i>Company name</i>	\$ Muesli AG
<i>Country</i>	DE
<i>Currency</i>	EUR

- Click on  and enter the following data:

Fields	Data to input
<i>Country</i>	DE

- Click on  to continue and on  to save your entries.

8.2 Define and assign credit control area

The credit control area is an organizational unit that specifies and checks a credit limit for customers. Even if there are no specific business role regarding the credit control area, this configuration must be executed.

8.2.1 Define the credit control area

OB45
Enterprise Structure / Definition / Financial Accounting / Define Credit Control Area
802

In this step, you will define your credit control area.

- Choose “*New Entries*”.
- Enter the following data:

Fields	Data to input
<i>Credit Control Area</i>	Z\$\$
<i>Currency</i>	EUR

- Click on  to save
- Go back. In the description field, enter **Credit Control Area Z\$\$**, then click on  to save.

8.2.2 Assign company code to credit control area

OB38
Enterprise Structure / Assignment / Financial Accounting / Assign Company Code to Credit Control Area
803

In this step, you assign company codes to a credit control area.

- On the *Change View “Assign company code -> credit control area”*: *Overview* screen, find the lines with CoCd (Company Code) set to Z\$\$.
- Check the following. Make sure to input Z\$\$ in the CCAr field.

Fields	Data to input	Description of the field
<i>Company name</i>	\$ Muesli AG	
<i>CCAr</i>	Z\$\$	The credit control area is an organizational entity which grants and monitors a credit limit for customers.

- Click on  to save.

OBV6

Financial Accounting (New) / Financial Accounting Global Settings (New) / Global Parameters for Company Code / Enter Global Parameters

804

8.3 Enter global parameters for company code

In this step, you must specify key accounting settings for the Muesli company. As previously stated, the Muesli AG uses the international chart of account and has four operating quarters per year. This includes, among other things, the chart of accounts and the fiscal year variant.

- If necessary, on the Change View “Company Code Global Data”: Overview screen, switch the screen to Change mode. Select the line with Company Code Z\$\$ and Choose “Details”.
- On the Change View “Company Code Global Data”: Details screen, enter the following.

Fields	Data to input	Description of the field
<i>Charts of Acct</i>	INT	
<i>Credit Control Area</i>	Z\$\$	The credit control area is an organizational entity which grants and monitors a credit limit for customers. A credit control area can include one or more company codes.
<i>Fiscal Year Variant</i>	K4 <i>Calendar year, 4 spec. periods</i>	The fiscal year variant is used to define the fiscal year.

- Click on  to save.

8.4 Define and assign controlling area

The controlling area is an organizational unit used to subdivide the business organization from a cost accounting standpoint. It is this structure that will capture revenues and costs and will allow product profitability analysis.

8.4.1 Create controlling area

In this step, you define the controlling area of Muesli AG.

- On the Change View: “Basic Data” Overview screen, click on “New Entries”.
- On the *New Entries: Details of Added Entries* screen, make the following entries (see next page):

OKKP

Controlling / General Controlling / Organization / Maintain Controlling Area / Maintain Controlling Area

805

Fields	Data to input	Description of the field
Controlling Area	Click on <input type="text" value="COArea = CCode"/> and enter Z\$\$	
Name	\$ Muesli AG	
CoCd -> CO Area	"Controlling area same as company code"	By using this setting, we make sure that the controlling area is only assigned to one company code.
Currency Type	10 - Company code currency	Currency type defined for a controlling area.
Currency	EUR	Currency key for amounts in the system.
Charts of Accounts	INT	Key that uniquely identifies a chart of accounts.
Fiscal Year Variant	K4 - Calendar year, 4 spec. periods	The variant is used to define the fiscal year.
CContr Std. Hierarchy	Z\$\$	Indicated hierarchy of cost center groups in which all cost centers in a controlling area are gathered together.
Document Type	SA - G/L account document	The document type classifies the accounting documents. It is stored in the document header.

- Click on  to save.
- If you receive this message (*Standard hierarchy Z\$\$ does not exist. Should system Z\$\$ be created as standard hierarchy?*), click on "Yes".

8.4.2 Assign company code to controlling area

In this step, you will assign the company code to the controlling area.

- On the Change View "Basic data": Overview screen, select the line with COAr (controlling area) set to Z\$\$.
- Double-click on "Assignment of company code(s)" (at your left in the "Controlling Area" menu).
- Press "New Entries" and enter Z\$\$ in the field "CoCd".
- Click on  to save.

OX19

Enterprise Structure /
Assignment /
Controlling / Assign
Company Code to
Controlling Area

806

OKKP
Controlling / General Controlling / Organization / Maintain Controlling Area / Maintain Controlling Area
807

8.4.3 Maintain the controlling area

In this step, you will specify more settings for the controlling area. This step can only be done once the controlling area is assigned to the company code (see previous activity).

- On the *Change View: "Basic Data" Overview* screen, double-click controlling area Z\$\$
- Double-click on the folder *"Activate Components/Control Indicators"*, click on *"New Entry"* and enter the following data:

Fields	Data to input	Description of the field
<i>Fiscal year</i>	(Current year - e.g. 2009)	
<i>Cost centers</i>	Component active	Indicator controlling, together with the CO interface, specific settings in Cost Center Accounting (CO-OM-CCA).
<i>Order management</i>	Component active	Together with the CO interface, this indicator controls specific settings for order management.
<i>Commit. management</i>	Component active	Controls whether commitments are updated for this controlling object.
<i>Profit Analysis</i>	Component not active	Indicator to activate CO Profitability Analysis.
<i>Acty - based Costing</i>	Component active for parallel and integrated calculation	Indicator controlling whether the Activity-Based Costing component (CO-OM-ABC) is active or not.
<i>Profit Center Acctg</i>	Set	Indicator that activate Profit Center Accounting.
<i>Sales Orders</i>	Set	Indicator controlling the use of sales orders in make-to-order production.
<i>Cost Objects</i>	Set	Determines whether account assignments to a cost object ID are permitted.
<i>W. Commitment Mgt</i>	Set	This indicator controls whether Commitments for sales orders are updated.
<i>All currencies</i>	Set	Indicator controlling if the values are updated in the controlling area currency, the transaction currency and in the object currency.
<i>Variances</i>	Set	Indicator to activate calculation with variances.

- Click on  to save.

8.4.4 Maintain controlling area settings

S_ALR_87004160

Controlling / Profit Center Accounting / Basic Settings / Controlling Area Settings / Maintain Controlling Area Settings

808

In this step, you will define the general control parameters for the current controlling area.

- Enter the following information:

Fields	Data to input	Description of the field
<i>Standard Hierarchy</i>	Z\$\$	The standard hierarchy is a tree structure which displays the organization of all the profit centers in one controlling area.
<i>Pct Local Currency Type</i>	20 - Controlling area currency	This key tells to the system which currency to use for the profit center. In this case, the system will use the same currency as the controlling area.

- Click on  to save.

8.5 Define and assign plant

The plant represent the physical location where your company operates and holds inventory. Muesli AG has only one manufacturing location, which is located in Germany and uses the standard german calendar.

8.5.1 Define plant

In this step, you will create the plant of Muesli AG.

- On the "Choose Activity" dialog box, choose "Define Plant".
- On the Change View "Plants": Overview screen, choose "New Entries" and make the following entries.

Fields	Data to input	Description of the field
<i>Plant</i>	Z\$\$	
<i>Name 1</i>	\$ Muesli Plant	
<i>Factory Calendar</i>	01 Germany (Standard)	The factory calendar is used to know which days are working days.

- Click on  to save. On the next screen, enter DE in the field "Country". Click on continue and click on  to save.

OX10

Enterprise Structure / Definition / Logistics - General / Define, Copy, Delete, Check Plant

809

8.5.2 Assign plant to company code

OX18

Enterprise Structure /
Assignment / Logistics
- General / Assign Plant
to Company Code

810

In this step, you assign each plant to a company code. A plant can only belong to one company code.

- On the Allocation of Plants -> Company Code: Overview screen, select "New Entries" and make the following assignments.

Fields	Data to input
<i>CoCd</i>	Z\$\$
<i>Plnt</i>	Z\$\$

- Press Copy (Enter).
- Click on  to save.

8.6 Create storage location

OX09

Enterprise Structure /
Definition / Materials
Management /
Maintain Storage
Location

811

In this step you create a storage location, which is the place where stock is physically kept within a plant. Muesli AG only has two storage locations at his manufacturing plant, which are the finished goods and the raw materials storage locations. Those types of products are stored in two distinct areas to ease the inventory management.

- If necessary : On the Determine Work Area: Entry, enter Z\$\$, and choose "Enter".
- On the Change View "Storage Locations": Overview screen, press "New Entries" and enter the following data:

Fields	Data to input	
<i>Storage location</i>	\$02	\$88
<i>Description</i>	Finished goods	Raw materials

- Click on  to save.

8.7 Define and assign sales organization

As previously mentioned, Muesli AG has only one sales department and all financial transactions with customers are conducted in euro.

8.7.1 Define sales organization

In this step, you define the sales organizations of Muesli AG.

OVX5
Enterprise Structure / Definition / Sales and Distribution / Define, Copy, Delete, Check Sales Organization
812

- Choose “Define Sales Organizations” from the activity windows.
- On the Change View “Sales organizations”: Overview screen, choose “New Entries”.
- Enter the following:

Fields	Data to input	Description of the field
<i>Sales Organization</i>	Z\$\$	An organizational unit responsible for the sale of certain products or services. The responsibility of a sales organization may include legal liability for products and customer claims.
<i>Description</i>	Sales Org. Z\$\$	
<i>Statistics currency</i>	EUR	The currency that the system automatically proposes for statistics that you generate for a particular sales organization.
<i>Sales Org. Calendar</i>	01 <i>Germany (Standard)</i>	Like the factory calendar, the sales organization calendar specify which days are workable.

- Click on  to save.
- You may receive that warning message: “WARNING: Changing the statistics currency causes data inconsistency”
- Press OK (enter) and enter the following, if asked:

Fields	Data to input
<i>Country</i>	DE

- Press Copy (enter).
- Click on  to save.

S_ALR_87007332

Enterprise Structure /
Assignment / Sales and
Distribution / Assign
Sales Organization to
Company Code

813

8.7.2 Assign sales organization to company code

In this step, you assign sales organizations to your company code. You can use this step to define the allocation of sales organizations to company codes. This establishes a link between the SD and FI modules. A sales organization belongs to just one company code.

- Find the line where SOrg. is Z\$\$ and enter **Z\$\$** in the *CoCd* column.
- Press Enter. The status column should now be empty for your company.
- Click on  to save.

8.8 Create and assign distribution channel

In this implementation, distribution channels are used to segment the various retailers into three categories : Hypermarkets, Grocery chains and Independent grocers. Muesli AG customers will eventually be tied to one of these distribution channels, which will allow for specific price list in each of those.

8.8.1 Create distribution channel

In this step, you define the distribution channels for the sales organization of Muesli AG.

- Choose “Define distribution channel”
- On the Change View “Distribution channels”: Overview screen, choose “*New Entries*” and enter the following data:

Fields	Data to input		
<i>Distribution Channel</i>	\$0	\$2	\$4
<i>Name</i>	Hypermarket Z\$\$	Grocery chains Z\$\$	Indep. grocers Z\$\$

- Click on  to save.

OVXI

Enterprise Structure /
Definition / Sales and
Distribution / Define,
Copy, Delete, Check
Distribution Channel

814

S_ALR_87007338

Enterprise Structure /
Assignment / Sales and
Distribution / Assign
Distribution Channel to
Sales Organization

815

8.8.2 Assign distribution channels to sales organization

In this step, you will assign the three distribution channel to the sales organization.

- Click on “New Entries” and enter the following:

Fields	Data to input		
<i>SOrg.</i>	Z\$\$	Z\$\$	Z\$\$
<i>DChI</i>	\$0	\$2	\$4

- Click on  to save.

8.9 Create and assign division

In SAP, divisions are used to group together materials, products, or services. The system uses the division to determine the sales areas and business areas to which a material, product, or service is assigned. Muesli AG only sells one type of products (Muesli Cereals) and do not require to divide his product range in more than one division. Yet, this is a mandatory step and at least one division must be created in the system.

8.9.1 Create division

In this step, you define the divisions for your company.

- On the Change View “Divisions”: Overview screen, choose “New Entries”.
- Enter the following:

Fields	Data to input
<i>Division</i>	\$0
<i>Name</i>	Prod. Div. Z\$\$

- Click on  to save.

OMSP

Logistics - General /
Material Master /
Settings for Key Fields /
Define Divisions

816

8.9.2 Assign division to sales organization

S_ALR_87007346

Enterprise Structure /
Assignment / Sales and
Distribution / Assign
Division to Sales
Organization

817

In this step, you will assign the division to your sales organization. Each division can belong to several sales organizations.

- On the “Divisions -> Sales Organization Overview” screen, select “New Entries”, and then enter the following information:

Fields	Data to input
<i>SOrg.</i>	Z\$\$
<i>Dv</i>	\$0

- Click on  to save.

8.10 Set up sales area

S_ALR_87007354

Enterprise Structure /
Assignment / Sales and
Distribution / Set up
Sales Area

818

In SAP, you must create sales area for any combination of sales organization, distribution channel and division, for which you wish to assign pricing conditions. Because we have one sales organization, one division, but three distribution channels, you must create three sales areas. These sales areas will be used later for the customer master data and the creation of a sales order.

- On the Overview: Sales Areas screen, click on “New Entries” and enter the following:

Fields	Data to input		
<i>SOrg.</i>	Z\$\$	Z\$\$	Z\$\$
<i>DChl</i>	\$0	\$2	\$4
<i>Dv</i>	\$0	\$0	\$0

- Click on  to save.

S_ALR_87007463

Enterprise Structure /
Assignment / Sales and
Distribution / Assign
Sales Organization -
Distribution Channel -
Plant

819

8.11 Assign sales organization - distribution channel to plant

In this step, you will assign your Muesli plant to a combination of sales organization and distribution channel. By doing so, only the stocks available at your plant will be available for sale.

- On the Plants -> Sales Organization/Distribution Channel": Overview screen, select "New Entries" and make the following assignments:

Fields	Data to input		
<i>SOrg.</i>	Z\$\$	Z\$\$	Z\$\$
<i>DChCust/Mt</i>	\$0	\$2	\$4
<i>Plnt</i>	Z\$\$	Z\$\$	Z\$\$

- Click on  to save.

8.12 Define and assign purchasing organization

Muesli AG has one purchasing department responsible for the procurement of the three categories of raw materials (purchasing groups). The following steps provide information on how to configure the purchasing organization required by the purchasing process in the materials management module.

8.12.1 Create purchasing organization

In this step, you create a purchasing organization in your company.

- On the Change View "Purchasing Organizations": Overview screen, choose "New Entries".
- Enter the following:

Fields	Data to input
<i>Purch. Organization</i>	Z\$\$
<i>Purch. Org. Descr.</i>	Purch. Org. Z\$\$

- Click on  to save.

OX08

Enterprise Structure /
Definition / Material
Management /
Maintain Purchasing
Organization

820

8.12.2 Assign purchasing organization to company code

OX01

Enterprise Structure / Assignment / Materials Management / Assign Purchasing Organization to Company Code

821

In this step, you assign purchasing organizations to company codes.

- Find the line where POrg. is Z\$\$.
- Enter **Z\$\$** in the column "CoCd" that correspond to the POrg.
- Click on  to save.

8.12.3 Assign purchasing organization to plant

OX17

Enterprise Structure / Assignment / Materials Management / Assign purchasing organization to plant

822

In this step, you will assign the purchasing organization to the plant for which it is responsible. Muesli AG

- On the *Plant -> Purchasing Organizations: Overview* screen, select "New Entries" and enter the following:

Fields	Data to input
<i>POrg</i>	Z\$\$
<i>Plnt</i>	Z\$\$

- Click on  to save.

8.13 Create purchasing groups

OME4

Materials Management / Purchasing / Create Purchasing Groups

823

In this step you create purchasing groups. The purchasing group will be used when the purchasing of raw materials will occur and also help to determine to which group those raw materials belong.

- On the Change View "Purchasing Groups": Overview screen, press "New Entries" and enter the following data:

Fields	Data to input	
<i>Purchasing group</i>	Z\$1	Z\$2
<i>Name</i>	Raw Materials	Packaging

- Click on  to save.

8.14 Define and assign shipping point

When processing a shipping transaction in the system, the system requires the business rules underlining the shipping operation. For example, it will need to know from which shipping dock the pallets will be shipped (loading time, packing time and the working calendar of the shipping department). At Muesli AG, there is only one shipping dock (shipping point) and only forklifts are used.

8.14.1 Define shipping point

In the step, you define the shipping points and adapt them to your organization.

- On the Choose Activity dialog box, choose *Define Shipping Point*.
- On the Change View "Shipping Points": Overview screen, choose "New Entries" and make the following entries.

Fields	Data to input	Description of the field
<i>Shipping Point</i>	Z\$\$	
<i>Description</i>	Shipping Point \$	
<i>Factory Calendar</i>	01 <i>Germany (Standard)</i>	Key that uniquely identifies the factory calendar that is valid for this plant.
<i>Determine load. time</i>	C <i>Default from shipping point</i>	Indicates whether the system automatically determines a loading time (how long it takes to load the goods) when you process deliveries through this shipping point.
<i>Det. Pick/Pack time</i>	C <i>Default from shipping point</i>	Indicates whether the system automatically determines a time estimate for picking and packing when you process deliveries through this shipping point.

- Click on  to save.
- If the address screen appears, just skip it since all information will be transfer with the association with the plant (you may need to enter country DE).
- Click on  to save.

OVXD

Enterprise Structure /
Definition / Logistics
Execution / Define,
copy, delete, check
shipping point

824

8.14.2 Assign shipping point to plant

OVXC
Enterprise Structure / Assignment / Logistics Execution / Assign shipping point to plant
825

In this step, you allocate as many shipping points as desired to the plants. Any one shipping point can belong to several plants.

- On the Shipping Points -> Plants: Overview screen, assign the plant Z\$\$ to the shipping point Z\$\$ (double-click on plant Z\$\$ and select shipping point Z\$).
Z\$).
- Click on  to save.

8.14.3 Assign shipping point to loading group

OVL2
Logistics Execution / Shipping / Basic Shipping Functions / Shipping Point and Goods Receiving point Determination / Assign Shipping Points
826

In this step you allocate the shipping points to the desired combinations of shipping condition and loading group for each plant.

- On the Change View "Shipping Point Determination": Overview screen, press "New Entries".
- Enter the following data:

Sc	LGrp	Plnt	PrShP
01	0002	Z\$\$	Z\$\$
02	0002	Z\$\$	Z\$\$

- Click on  to save.

CHAPTER 9 - CONFIGURING THE FINANCIAL BUSINESS PROCESSES

This chapter documents the configuration steps to support the financial business processes of Muesli AG. As described in chapter 3, the financial processes included both financial accounting and managerial accounting activities. This detailed configuration exactly corresponds to the one that supports Muesli AG in the simulation game. Because many financial transactions were automated in the simulation game, some of these accounting rules were not completely disclosed in previous chapters in order to facilitate the presentation of the simulation. Note that many of the following financial configurations are mandatory steps that need to be done in any SAP implementation.

The main accounting business rules supported by this configuration are the following:

- Financial posting limitations: Muesli AG requires posting limits for its employees with access to the financial module
- Document number ranges: Muesli AG uses default document numbering provided in SAP.
- Mandatory and optional fields in accounting documents: Muesli AG uses the defaults setting.
- Financial periods: Muesli AG uses the default template for open periods.

At the end of this chapter, you will be able to execute a testing scenario of all financial transactions used in the simulation game. You will (1) configure the financial modules, (2) create the financial and cost accounting master data required to test this configuration, (3) verify your configuration using the predeveloped queries and (4) run a test scenario where you will execute the financial accounting unit test. You will have successfully completed this chapter if you are able to process two types of general ledger (G/L) posting: a G/L posting without a cost center and a posting with a cost center.

9.1 Configuring the financial accounting processes

9.1.1 Define tolerance for employees

OBA4

Financial Accounting (New) / Financial Accounting Global Settings (New) / Document / Tolerance Groups / Define Tolerance Groups for Employees

901

Posting limits need to be configured in three different places in the system: in the financial accounting modules, in the procurement module and in the sales module. First, you predefine various amount limits for your employees which you determine, including the maximum document amount the employee is authorized to post or the maximum cash discount percentage that can be applied.

- On the *Change View "FI Tolerance Groups For Users": Overview* screen, choose the line item with *Company Code* set to 0001, click on "Copy As" and make the following entries:

Fields	Data to input
Group	MAKE NO ENTRY
Company code	Z\$\$

- Press "Enter", then click on  to save.

OMR6

Materials Management / Logistics invoice Verification / Invoice Block / Set Tolerance Limits

902

Then, you need to specify the tolerance limits for each tolerance key for the invoice verification. This tolerance corresponds to the discrepancy that the company is willing to accept between the value of the purchase order and the invoice received from the vendor. When processing an invoice, SAP checks each item for variances between the invoice and the purchase order or goods receipt. If this amount is greater than the tolerance, SAP will not allow the posting. The different types of variances are defined in tolerance keys.

- Select all tolerances from company code 0001 SAP A.G.
- Click on "Copy As..." (F6)
- Change the company code from 0001 to Z\$\$.
- Press "Enter".
- Repeat the steps until every tolerance settings are maintained.
- Click on  to save.

OBA3

Financial Accounting (New) / Accounts Receivable and Accounts Payable / Business Transactions / Incoming Payments / Manual Incoming Payments / Define Tolerances (Customers)

903

Finally, you will define a similar tolerance for the sales process. This tolerance corresponds to payment and residual items which can occur during payment settlement.

- Select all lines for company code 0001.
- Click on “Copy As...”.
- Replace for every instance the company to Z\$\$\$. Click on “Enter” to continue.
- Click on  to save.

9.1.2 Define number ranges for accounting documents

In this step, you will define the number range for the financial and controlling documents used at Muesli AG. These number ranges correspond to the sequential numbering of every type of accounting document. Muesli AG will use the default accounting ranges proposed by SAP.

FBN1

Financial Accounting (New) / Financial Accounting Global Setting (New) / Document / Document Number Ranges / Documents in Entry View / Define Document Number Ranges for Entry View

904

We first create the number ranges for the financial accounting documents.

- On the *Number Ranges for Accounting Documents* screen, enter company code 0001 and then click on “Copy”.
- Enter “Z\$\$\$” in the “To...” box.
- Press “Copy”.
- Disregard the message regarding the transport number range intervals.

KANK

Controlling / General Controlling / Organization / Maintain Number Ranges for Controlling Documents

905

Then, you need to create the document number ranges for the controlling documents.

- Enter “0001” in CO area.
- Click on “Copy”.
- Enter “Z\$\$\$” in the “To” field.
- Click on “Copy”.
- Disregard the warning message.

9.1.3 Define default value date

OB68

Financial Accounting (New) / Financial Accounting Global Setting (New) / Document / Default Values / Default Value Date

906

In this step, you will specify that the default date must be proposed by the system when a financial posting occurs.

- Check the “Proposed value date” field associated with your company code.
- Click on  to save.

9.1.4 Define mandatory and optional fields

This field status variant specifies which fields are optional, mandatory or suppressed. For example, the posting date is a mandatory field in any document posted in the general ledger; in other words, if the date is not entered, you will get a red warning that you cannot post this transaction. Optional fields will be displayed in the screen mask, but these fields can be left blank; text description of a financial transaction is an example of an optional field. Suppressed field will not be displayed in the transaction. Muesli AG is using the default value proposed by SAP for the fields status.

OBC4

Financial Accounting (New) / Financial Accounting Global Settings (New) / Ledgers / Fields / Define Field Status Variants

907

In this step, you will first define the field status variant for the accounting document and then you will assign this variant to your company code.

- On the Change View “Field status variants” : Overview screen, select the line where FStV value is “0001”, then click “Copy as...”.
- Enter the following data:

Fields	Data to input	Description of the field
<i>FStV</i>	\$000	A field status variant groups together several field status groups. You assign a field status variant to each company code. This field contains the primary key.
<i>Field status name</i>	Muesli FSV	

- Press “Enter”.
- When prompted, select “copy all”.
- Click on  to continue then on  to save.
- Select the line you created then double-click on “Field status groups”.

- Scroll to the line “G064” then double-click on it.
- Double-click on “General data”.
- Set “Opt. entry” for the line “Text”, then click on  to save.

OBC5

Financial Accounting (New) / Financial Accounting Global Settings (New) / Ledgers / Field / Assign Company Code to Field Status Variants

908

When your field status variant is created, you will assign it to your company code.

- Scroll to find your company code “Z\$\$”
- In the field “Fld stat.var.”, enter “\$000”.
- Click on  to save.

9.1.5 Define and Open Posting Periods

OBBO

Financial Accounting (New) / Financial Accounting Global Settings (New) / Ledgers / Fiscal Years and Posting Period / Posting Periods / Define Variants for Open Posting Periods

909

In this activity, you will define a variant for open posting periods. Posting periods are used to assign business transactions to a time stamp. You can only post financial documents in the current period, if that period is opened to receive postings.

Once this is created, you will have to assign this variant to your company code. Finally, you will need to open these periods for your company code.

Muesli AG uses the default variant for open posting periods. Your first task is to copy the template and create your own variant.

- Click on “New Entries” and enter the following data:

Fields	Data to input	Description of the field
<i>Variant</i>	Z\$\$	This variant describes the specifications for a posting period (for example, beginning and end). Each company code refers to exactly one variant. Therefore, as many company codes as you require can use the same variant.
<i>Name</i>	Z\$\$ Posting Period Variant	

- Click on  to save.

OBBP

Financial Accounting (New) / Financial Accounting Global Settings (New) / Ledgers / Fiscal Year and Posting Period / Posting Periods / Assign Variants to Company Code

910

You then need to assign this newly created variant to your company code.

- Scroll the list to find your company code (Z\$\$).
- In the field “Variant”, enter Z\$\$.
- Click on  to save.

OB52

Financial Accounting (New) / Financial Accounting Global Settings (New) / Ledgers / Fiscal year and Posting Period / Posting Periods / Open and Close Posting Periods

911

Finally, you will specify which periods are open for posting for your company code. You will open periods 1 to 13 in the following configuration, which will represent the twelve months of the year, plus a final period that is used for the end-of-year postings.

- Look for the variant Z\$\$. **If there is no line with this variant name**, click on “New Entries” and enter the following data:

Fields	Data to input	Description
<i>Var.</i>	Z\$\$	Each company code refer to only one variant.
<i>A</i>	+ : Valid for all account types	Account type
<i>From acct</i>	LEAVE EMPTY	
<i>To account</i>	LEAVE EMPTY	
<i>From per.1</i>	1	
<i>Year</i>	2009 (current year)	
<i>To period</i>	12	
<i>Year</i>	9999	
<i>From per.2</i>	13	
<i>Year</i>	2009 (current year)	
<i>To period</i>	13	
<i>Year</i>	9999	
<i>AuGr</i>	LEAVE EMPTY	

- Click on  to save.

9.2 Create the financial master data

To test the configuration of the financial processes, you need several master data : general ledger accounts, profit and cost centers and the bank. The next section details how to create these master data.

9.2.1 Check G/L Account centrally (balance sheet accounts)

In this step, you will create the master record of all the balance sheet accounts that will be used by Muesli AG. We will be copying the account of the template company code 0001 provided by SAP.

- Create the following accounts. Each time you create one, click on  to save. Notice that only account 113300 differs.

FS00
Financial Accounting (New) / General ledger Accounting (New) / Master Data / G/L Accounts / G/L Account Creation and Processing / Edit G/L Account (Individual Processing) / Edit G/L Account Centrally
912

Edit G/L Account Centrally window (Step 1)		Reference Account window (Step 2)	
Field	Value	Value	Field
Company Code	Z\$\$	0001	Company Code
Always enter the above company code		Always enter the above company code	
G/L Account	113300	110000	G/L Account
	113101	113101	
	792000	792000	
	300000	300000	
	140000	140000	
	1000	1000	
	2000	2000	
	2010	2010	
	11000	11000	
	11010	11010	
	191100	191100	
	160000	160000	
	70000	70000	

Click on  With Template and enter the corresponding account (on the same line)

9.2.2 Check G/L Account centrally (P&L accounts)

FS00
Financial Accounting (New) / General ledger Accounting (New) / Master Data / G/L Accounts / G/L Account Creation and Processing / Edit G/L Account (Individual Processing) / Edit G/L Account Centrally
912

In this step, you will create the master record of all the Profit and Loss accounts that will be used by Muesli Ag.

- Create the following accounts. Each time you create an account, click on  to save.

Edit G/L Account Centrally window (Step 1)		Reference Account window (Step 2)	
Field	Value	Value	Field
Company Code	Z\$\$	0001	Company Code
Always enter the above company code		Always enter the above company code	
G/L Account	211120	211120	G/L Account
	211130	211130	
	232500	232500	
	282500	282500	
	400000	400000	
	476900	476900	
	800000	800000	
	880000	880000	
	893010	893010	
895000	895000		

Click on  and enter the corresponding account (on the same line)

- FOR ACCOUNT **476900** ONLY, select tab "Control Data". Clear the edit box "Tax category" and check the box "Posting without tax allowed". Click on  to save.

9.2.3 Check G/L Account centrally (Tax accounts)

FS00

Financial Accounting (New) / General ledger Accounting (New) / Master Data / G/L Accounts / G/L Account Creation and Processing / Edit G/L Account (Individual Processing) / Edit G/L Account Centrally

912

In this step, you will create the master record of all the tax accounts that will be used by Muesli AG.

- Create the following accounts. Each time you create an account, click on  to save.

Edit G/L Account Centrally window (Step 1)		Click on  and enter the corresponding account	Reference Account window (Step 2)	
Field	Value		Value	Field
Company Code	Z\$\$		0001	Company Code
Always enter the above company code			Always enter the above company code	
G/L Account	154000		154000	G/L Account
	175000		175000	

9.2.4 Create cost elements

KA01

Accounting / Controlling / Cost Element Accounting / Master Data / Cost Element / Individual Processing

913

In this step, you will create the cost elements that are assigned to the P&L accounts. These cost elements are required for cost center accounting.

- On the “Create Cost Element: Initial Screen”, enter the following data:

Field	Data to input									
Cost Element	211120	211130	232500	282500	400000	476900	880000	895000	800000	
Valid From	Today									
Press “Enter” and enter the corresponding CElem category										
CElem category	1	1	1	1	1	1	1	1	11	

- Click on  to save.

FI12
Financial Accounting (New) / Bank Accounting / Bank Accounts / Define House Banks
914

9.2.5 Define House Bank

In this step, you will define the house bank that will be used for the automatic payment transactions to determine the bank details for payment.

The following rules need to be considered:

- The bank is located in Germany and transactions are done in EUR.
- The bank account is 113300, which is the same as your G/L cash account (113300 - WeisenBank Cash account).

To define the house bank, do the following:

- Select the Company Code Z\$\$ for which the House Bank is to be created.
- Press “Enter”.
- Click on “New Entries” and enter the following information:

Fields	Data to input	Description of the field
<i>House Bank</i>	1000	All bank data is determined using this key.
<i>Bank Country</i>	DE	Identifies the country in which the bank is located.
<i>Bank key</i>	67400300	In this field, you specify the bank key under which bank data from the respective country is stored.

- In the “House Bank Data” section, click on “Create”.
- Click on “Change” and make sure the following information are entered:

Fields	Data to input	Description of the field
<i>Bank name</i>	Weizenbank Frankfurt	The name under which the bank operates.
<i>Region</i>	06	In some countries, the region is part of the address. The meaning depends on the country.
<i>Street</i>	Meinheimer Str.23	Street and house number as part of the address.
<i>City</i>	Frankfurt	Name of the city as a part of the address.

- Press “Continue (Enter)”.
- Double-click on the “Bank Accounts” folder.
- Press “New Entries” and enter the following data:

Fields	Data to input	Description of the field
<i>Account ID</i>	1000	This ID together with the ID for the house bank uniquely defines a bank account.
<i>Description</i>	Weizenbank Frankfurt	
<i>Bank Account number</i>	113300	This field contains the number under which the account is managed at the bank.
<i>G/L</i>	113300	This field contains the number of the G/L account to which the transaction figures are updated.
<i>Discount Acct</i>	113300	Credit memos resulting from discounting bills of exchange at this house bank account are posted to this account.
<i>Currency</i>	EUR	Currency key for amounts in the system.

- Click on  to save.

9.2.6 Create profit center

KE51
Master Data / Profit Center / Create Profit Center
915

In this step, you will create a profit center for your company.

- If required, enter Controlling Area “Z\$\$”, then press “Enter”.
- Enter Profit Center Z\$\$-01 and press “Enter”.
- Enter the following information (see next page):

Tab	Fields	Data to input	Description of the field
Basic Data	Name	Z\$\$-01	
	Long Text	Z\$\$-01	
	Person Respons.	ZSIM	Name of the person in charge of the profit center.
	Profit Ctr Group	Z\$\$	Each profit center must be assigned to a node in the standard hierarchy for its controlling area. This ensures that the standard hierarchy contains all the profit centers in the controlling area.
Address	Tax Jur.	DE0000000	

- Click on  to save.
- A window will confirm the creation of the profit center. Press “enter” to continue, and then activate the profit center by clicking on activate (SHIFT+F1).

In the status bar, a message will confirm the creation and activation of the profit center.

9.2.7 Create cost center

In this step, you will create a cost center for your company.

- If required, enter Controlling Area “Z\$\$”, then press “Enter”.
- Make the following entries:

Fields	Data to input
Cost Center	Z\$\$-01
Valid From	Today
To	31.12.9999

- Press “Enter”, then enter the following data (see next page):

KS01

Master Data / Cost Center / Create Cost Center

916

Fields	Data to input	Description of the field
<i>Name</i>	Z\$\$-01	
<i>Description</i>	Z\$\$-01	
<i>Person Responsible</i>	ZSIM	Person responsible for the cost center.
<i>Department</i>	Corporate	The department is used for evaluation (determines to which department this cost center is assigned).
<i>Cost Center Category</i>	F - Production	This category key (F) means that the cost center can be assigned to production activities.
<i>Hierarchy area</i>	Z\$\$	This key represents the hierarchy that will be used to assign master data.
<i>Business Area</i>	0001	A cost center requires a business area allocation in dependency of the company code it is allocated to.
<i>Currency</i>	EUR	
<i>Profit Center</i>	Z\$\$-01	

- Click on  to save.

9.3 Testing the financial processes

These instructions will guide you through the scenario that you will use to test the financial processes. This scenario is similar to the description of the financial processes described in chapter 3. We recommend that you document your test scenario. At the end of this chapter, you will find a document you may use to document this process.

9.3.1 Post G/L document

In this unit test, you will do the initial capitalization by crediting the cash account (113300).

FB50

Accounting / G/L Acct
Pstg: Single Screen
Trans.

301

- Click on “Company Code”, enter Z\$\$ and click on “Continue (Enter)”.
- Input the following data:

Fields		Posting Initial capitalization
Header	Document Date	Today
	Doc. Header Text	Initial capitalization
On the first line	G/L acct	113300 (Weizen bank, cash)
	D/C	Debit
	Amount in doc. curr	500,000 euros
On the second line	G/L acct	70000 (Common stock)
	D/C	Credit
	Amount in doc. curr	500,000 euros

- Click on  to post.

9.3.2 Post G/L document with cost center

In this unit test, you will post an interest payment that requires to be linked to a cost center.

- Click on “Company Code”, enter Z\$\$ and click on “Continue (Enter)”.

FB50

Accounting / G/L Acct
Pstg: Single Screen
Trans.

307

- Input the following data:

Fields		Interest payment
<i>Header</i>	<i>Document Date</i>	Today's date
	<i>Doc. Header Text</i>	Interest payment
<i>On the first line</i>	<i>G/L acct</i>	113300 (Weizen bank)
	<i>D/C</i>	Credit
	<i>Amount in doc. curr</i>	100,000 euros
<i>On the second line</i>	<i>G/L acct</i>	476900 (Interest expenses)
	<i>D/C</i>	Debit
	<i>Amount in doc. curr</i>	100,000 euros
	<i>Cost center</i>	Z\$\$-01

- Press "Enter" and then click on "Simulate" to test the transaction. Click on "Back" to return to the transaction screen.
- Save by clicking on  and note the document number.

9.4 Documenting the unit tests

Step	Name	Result	Completed
9.4.1	Post G/L document		<input type="checkbox"/>
9.4.2	Post G/L document with cost center		<input type="checkbox"/>

CHAPTER 10 – CONFIGURING THE PLANNING PROCESS

This chapter documents the configuration steps to support the planning process of Muesli AG. As described in Chapter 4, this process is composed of two main activities: creating a forecast and executing the MRP calculation.

The following configuration is exactly the same as the one that supports the planning process that is used in the simulation game. For simplicity matter, not all the business rules have been explained in details in Chapter 4. The following list summarizes the business logic that you wish to configure in the production planning module.

- Muesli AG is a make-to-stock manufacturing company.
- Planning is run over independent requirements.
- Muesli AG uses a backflush strategy to manage the goods consumption.
- The MRP run produces purchase and production documents (purchase requisitions and planned orders). Planned orders will eventually be converted into production orders.
- Dependent orders are created at the raw material level.
- A summary report is created each time the MRP is run.
- The planned delivery time is taken from the contract with the vendor (info record).
- There is no buffer (floats) required before and after production.
- The MRP calculation uses the bill of materials.
- The planning horizon is 100 days.

At the end of this chapter, you will be able to test a planning process scenario. You will first configure the business process, create the dummy master data required to test the configuration, verify your configuration using our queries and finally run a test scenario where you will execute unit test for the forecasting transaction and the MRP run. You will have successfully completed this chapter if the MRP creates planned orders, dependent requirements and requisitions.

10.1 Configuring the planning process

10.1.1 Define plant parameters

S_ALR_87000416
Materials Management / Inventory Management and Physical Inventory / Plant Parameters
1001

In this step, you make the general plant settings for Inventory Management.

- On the Change View “General plant settings in inventory Management”: Overview screen, choose “New Entries” and make the following entries:

Fields	Data to input	Description of the field
<i>Plant</i>	Z\$\$	
<i>Del. compl. default</i>	X	Controls the automatic setting of the “delivery completed” indicator. If this indicator is set, the system suggests the “delivery completed” indicator as a default value when a goods receipt is posted with reference to a purchase order (provided that the quantity delivered falls within the under/overdelivery tolerances).
<i>BOM Application</i>	PP01 <i>Production - General</i>	This key represents a process for automatic determination of alternatives in the different organizational areas within a company.
<i>Trans./Event Type</i>	WV	Identifier for a certain transaction or event. (Example: WV for “Phys. Inv. Docs for Goods Movements”.)

- Click on  to save.

10.1.2 Define MRP groups

OPPR
Production / Material Requirements Planning / MRP Groups / Carry Out Overall Maintenance of MRP Groups
1002

In this step, you determine the MRP groups and you maintain the control parameters from a material planning point of view. The MRP group is an organizational object that can be used to allocate special control parameters for planning to a group of materials. You can maintain MRP groups if planning control per plant is not precise enough for your requirements and you want to allocate certain material groups different control parameters from the plant parameters. For this purpose, MRP groups are defined with these specific control parameters and are assigned to the material in the material master record (MRP 1 screen).

- On the “MRP Group” screen, enter plant Z\$\$ and click on “Create”.
- When prompted, enter the following information:

Fields	Data to input	Decription of the field
<i>MRP Group</i>	0010	Organizational object that can be used to allocate special control parameters for planning to a group of materials.
<i>MRP group description</i>	Make to stock production Z\$\$	

- Click on **Create** until you get back to the *MRP Group* screen.
- Click on **Maintain** twice.
- Click on **Strategy group** and enter the following information:

Fields	Data to input	Decription of the field
<i>Planning strategy group</i>	10 <i>Make-to-stock production</i>	The strategy group groups all the planning strategies that can be used for a particular material. The planning strategy represents the procedure used for planning a material and is (technically speaking) controlled by the MRP types.

- Click on  to save. Click on  until you get to the *Maintain MRP Group* screen.
- Click on **Direct procurement** and enter the following information:

Fields	Data to input	Decription of the field
<i>Direct procurement/ production</i>	3 <i>Trigger direct procurement in requirements planning</i>	This indicator controls whether direct procurement is initiated by the planning run or by the production order.

- Click on  to save. Click on  until you get to the *Maintain MRP Group* screen.
- Click on **Scheduling/Document Type** and enter the following information:

Fields	Data to input	Decription of the field
<i>Scheduling: Info Record/Agreement</i>	X	Determines whether the planned delivery time in the purchasing info record is used for scheduling in the planning run.

- Click on  to save.

10.1.3 Define plant parameters for MRP

OPPQ
Production / Material Requirements Planning / Plant Parameters / Carry Out Overall Maintenance of Plant Parameters
1003

In this step, you can specify all plant parameters for material requirement planning.

- On the *Plant Parameters for Material Requirements Planning* screen, choose *Create*, select plant Z\$\$, and press create twice.
- On the *Plant Parameters for Material Requirements Planning* screen press *Maintain twice*.

First, we create and assign a MRP controller to the plant. The MRP controller is the person responsible for a group of materials in MRP in a plant or company. Material that takes part in MRP must be assigned to a MRP controller.

- On the *Maintain Plant Parameter* screen choose **MRP controllers** (Master data tab).
- On the *Maintain MRP controller* screen choose *MRP controller*.
- On the *Change view "MRP Controllers": Overview* screen choose *New entries*.
- On the "New Entries: Details of Added Entries" screen, make the following entries:

Fields	Data to input	Description of the field
<i>Plant</i>	Z\$\$	
<i>MRP Controller</i>	101	This is the number that represents the MRP controller or a group of MRP controllers responsible for the material planning.
<i>Description</i>	Muesli Controller	

- Click on  to save.
- Click on  until you go back to the *Maintain Plant Parameter* screen.

Then, we have to create and assign a scheduling margin key to the plant. The system uses this key to determine the "floats" required for scheduling an order. In our case, floats are set to zero working days. A float is a time reserved which allows you to start an order or operation at a later date without incurring a delay in scheduling.

- On the *Maintain Plant Parameter* screen choose **Floats** (Master data tab).
- On the *Change view "Floats for Scheduling": Overview* screen choose "New entries":

Fields	Data to input	Description of the field
<i>Plant</i>	Z\$\$	
<i>Marg.</i>	000	This will determine the float that will be used for scheduling an order. We will set it to zero working days.

- Click on  to save.
- Click on  to go back to the *Maintain Plant Parameter* screen.

Then, you need to define the sequence of numbers to use when the system creates the business documents while running the MRP.

- On the *Maintain Plant Parameter* screen choose **Number ranges** (Environment tab).

We start with planned orders. Planned orders are requests created in the planning run for a plant to trigger the procurement or the production of a plant material for a certain quantity for a specific date.

- Choose **Planned orders** and make the following entries:

Fields	Data to input	Description of the field
<i>Plant</i>	Z\$\$	
<i>NRge pl. orders</i>	01	Default number range for regular planned orders.
<i>Simulative planned orders</i>	01	Default number range for simulative planned orders is used to maintain individual intervals for the planned orders created in long-term planning

- Click on  to save.
- Click on  to go back to the *Assign Number Ranges* screen.

We then continue with reservation, a request to the warehouse or stores to keep a material ready for issue at a future date for a certain purpose. The purpose of a reservation is to ensure that a material is available when required. A material can be reserved for a cost center, a plant, or an order.

- On the *Assign Number Ranges* screen choose **Reservations/Dependent Requirements** and make the following entries:

Fields	Data to input	Description of the field
<i>Plant</i>	Z\$\$	
<i>NR: StkTrns Res.</i>	01	Default number range for reservation

- Click on  to save.
- Click on  to go back to the *Assign Number Ranges* screen.

We continue with purchase requisition. Purchase requisitions are a request or instruction to purchasing to procure a quantity of a material or service so that it is available at a certain point in time.

- On the *Assign Number Ranges* screen choose **Purchase Requisitions** and make the following entries:

Fields	Data to input	Description of the field
<i>Plant</i>	Z\$\$	
<i>NR - PReq</i>	01	Default number range for purchase requisition

- Click on  to save.
- Click on  to go back to the *Assign Number Ranges* screen.

We then continue with MRP lists. This list is a document providing an overview of the results of the material requirements planning (MRP) run.

- On the *Assign Number Ranges* screen choose **MRP lists** and make the following entries:

Fields	Data to input	Description of the field
<i>Plant</i>	Z\$\$	
<i>No. Range -MRP</i>	01	Default number range for MRP list

- Click on  to save.
- Click on  to go back to the *Assign Number Ranges* screen.

We continue with dependent requirements. In the MRP procedure, dependent requirements are automatically created for the components that are necessary for the production of a planned order. The simulative dependent requirements are created in long-term planning.

- On the *Assign Number Ranges* screen choose **Simulative Dep Req** and make the following entries:

Fields	Data to input	Description of the field
<i>Plant</i>	Z\$\$	
<i>NR. SimDepRs</i>	01	Default number range for sim. dep reqmts

- Click on  to save.
- Click on  twice to go back to the *Maintain Plant Parameter* screen.

We now need to configure the conversion rule for production order.

- On the *Maintain Plant Parameter* screen choose **Conversions**
- On the *Conversion* screen choose **Planned order -> Production order** and make the following entries:

Fields	Data to input	Description of the field
<i>Plant</i>	Z\$\$	
<i>Production order</i>	PP01	Key for the default production order type (Standard production order)

- Click on  to save.
- Click on  to until you get back to the *Maintain Plant Parameter* screen.

We now configure the rule defining the checking procedure to be used for the availability check (or in Inventory Management, the missing parts check) in individual applications.

- On the *Maintain Plant Parameter* screen choose **Dep.Reqmt Availability** and make the following entries:

Fields	Data to input	Description of the field
<i>Plant</i>	Z\$\$	
<i>Avail. Check Rule</i>	PP	Production planning checking rule.

- Click on  to save.
- Click on  to go back to the *Maintain Plant Parameter* screen.

Then, we need to maintain the parameters for the stock level indicators. The run time statistics parameters instructs the system to create a list of the planned materials after the planning run, we also need to specify that we want to show the statistics for each material.

- On the *Maintain Plant Parameter* screen choose **Reporting** (Environment tab).
- On the *Reporting* screen choose **Receipt days' supply** and make the following entries:

Fields	Data to input	Description of the field
<i>Plant</i>	Z\$\$	
<i>Production ord./process order</i>	X	Determines that production orders and process orders are included in the calculation of the receipt days' supply.
<i>Assigned planned orders</i>	X	Determines that assigned planned orders are included in the receipt days' supply. Assigned planned orders are planned orders that have been assigned to a production version.
<i>Firmed purch.req.</i>	X	Determines that firmed purchase requisitions are included in the calculation of the receipt days' supply
<i>Receipt reservations</i>	X	Determines that the receipt reservation is included in the calculation of the receipt days' supply.

- Click on  to save.
- Click on  to go back three times to the *Maintain Plant Parameter* screen.

We need to tell the system which BOM is to be used and with which priority for BOM selection. Later, we will use the same BOM type when we create the bill of material for the finished product.

- On the *Maintain Plant Parameter* screen, choose **BOM/routing selection** (Planning run tab) and make the following entries:

Fields	Data to input	Description of the field
<i>Plant</i>	Z\$\$	
<i>BOM Sel ID</i>	01 <i>Production</i>	Indicator determines which BOM is to be used. In this case, we want to use the production BOM.

- Click on  to save.
- Click on  to go back to the *Maintain Plant Parameter* screen.

We need to also define the business rules for external procurement.

- On the *Maintain Plant Parameter* screen, choose **External Procurement** and make the following entries:

Fields	Data to input	Description of the field
<i>Plant</i>	Z\$\$	
<i>Purch. Process. Time</i>	0	Time that the purchasing department requires to convert a purchase requisition into a purchase order.
<i>Scheduling info record/ agreeem.</i>	X	Determines whether the planned delivery time specified in the purchasing info record is used for scheduling in the planning run
<i>Schedule lines</i>	3 <i>Schedule line</i>	This indicator mentions that schedule lines will be created in the planning horizon. Schedule line is the division of an item in a sales document according to date and quantity.
<i>Unknown Acct Assignment</i>	U <i>Unknown</i>	Indicator that determines the account assignment for materials which are not valued.

- Click on  to save.
- Click on  to go back to the *Maintain Plant Parameter* screen.

We now define the planning horizon. The planning horizon is the period that is set for the “net change planning in the planning horizon.” For this type of net change planning, only materials that change relevant to MRP in the period are planned in the planning run. The length of the planning horizon must include the following: 1) Period in which customer orders enter, 2) Delivery times, 3) Complete material processing time.

- On the *Maintain Plant Parameter* screen, choose **Planning horizon** and make the following entries:

Fields	Data to input	Description of the field
<i>Plant</i>	Z\$\$	
<i>Planning horizon</i>	100	Part of the planning area, where a planning file entry is made for the net change planning in the planning horizon. The planning horizon is calculated in workdays.

- Click on  to save.

10.1.4 Activate MRP

In this step, you set the indicator that allows the execution of requirements planning in the plant as total planning and also allows the execution of single-item, multi-level planning. If you do not set this indicator, you can only plan materials using single-item, single-level planning at this plant.

- Choose *Material requirement planning* from that screen.
- Activate the MRP for your company code.
- Click on  to save.

OMDU

Production / Material Requirements Planning / Planning File Entries / Activate MRP and Set up Planning File

1004

10.1.5 Maintain company code for materials management

OMSY
Logistics - General / Material Master / Basic Settings / Maintain Company Codes for Materials Management
1005

In this step, you will assign a period to your company code for the materials management.

- On the Change View “Materials Management View on Company Codes”: Overview screen, enter the following for company code Z\$\$.

Fields	Data to input	Description of the field
<i>CoCd</i>	Z\$\$	Company Code
<i>Company name</i>	\$ Muesli AG	
<i>Year</i>	Present year	
<i>Pe</i>	Present month (e.g. 5 for May)	Current period (posting period)

- Click on  to save

10.1.6 Define attributes of material types

OMS2
Logistics - General / Material Master / Basic Settings / Material Types / Define Attributes of Material Types
1006

The Material Type groups together materials with the same basic attributes, for example, service materials or raw materials. Whenever you create a material master record, you must assign it to a material type. This requires you to first define the attributes of each material type.

- Double-click *Fert Finished Product* and stay on *Material type* folder.
- Make sure these settings are selected:

Fields	Data to input
<i>Quantity updating</i>	In all valuation areas
<i>Value updating</i>	In all valuation areas

- Click on  to save and click on  to go back.
- Double-click *ROH Raw Materials* and stay on *Material type* folder.
- Make sure these setting are selected:

Fields	Data to input
Quantity updating	In all valuation areas
Value updating	In all valuation areas

- Click on  to save.

10.1.7 Define material group

OMSF
Logistics - General / Material Master / Setting for Key Fields / Define Material Groups
1007

In this step, you will define the material group to which you will assign your materials.

- On the *Change view "Material Group" : Overview*, click *New Entries*.
- Enter information as the following:

Fields	Data to input
Matl group	Z\$\$
Matl grp description	\$ Muesli AG
Grp.	Z\$\$

- Click on  to save.

10.2 Master data

To test the configuration of the procurement process, you need to create three different types of master data : finished product, raw material and a bill-of-material. Only one master data of each is required to perform the test.

10.2.1 Finished product

MMF1
Master Data / Finished Product / Create Finished Product
702

- On “Create Finished product (Initial Screen)”, enter the following information:

Fields	Data to input
<i>Material</i>	Z\$\$FP
<i>Industry sector</i>	Retail

- Step 1:** Click on “Select View(s)” and highlight the following views of the muesli data. Once done, click on “Continue (Enter)”.
 - Basic Data 1 and 2
 - Sales:Sales Org.Data 1 and 2
 - Sales:General / Plant Data
 - MRP1, MRP2, MRP3, MRP4
 - Forecasting
 - Work Scheduling
 - General Plant Data / Storage 1 and 2
 - Accounting 1 and 2
 - Costing 1 and 2

- Step 2:** On the “Organization levels” screen, enter the following information:

<i>Plant</i>	Z\$\$
<i>Storage location</i>	\$02
<i>Sales Org.</i>	Z\$\$
<i>Distribution channel</i>	\$0

- Step 3:** The record contains a series of mandatory data in the various views of “Material Master”. Pressing “enter” starts an automatic check and you go on to the next tab. See next page for the data to enter.

Views	Fields	Value	Fields	Value
Basic Data 1	Description	Muesli Test FP	Gross Weight	1 KG
	Base Unit of Measure	ST	Net Weight	1 KG
	Material Group	Z\$\$		
Basic Data 2	You have no data to enter here. Press "Enter" to skip.			
Sales: sales org. 1	Delivery plant	Z\$\$	Tax Classification	0 - No tax
Sales: sales org. 2	You have no data to enter here. Press "Enter" to skip.			
Sales: general/plant	Availability check	01 - Daily requirements	Loading group	0002 - Forklift
	Transport group	0001 - On pallets		
MRP1	MRP group	0010 - Make-to-stock production	Lot size	EX - Lot-for-lot order quantity
	MRP Type	PD - MRP	Maximum Lot Size	50 000
	MRP Controller	101		
MRP2	Backflush	2 - Work center decides...	In-house production	0 days - You can ignore it by pressing "enter")
	Prod. stor. location	\$02	SchedMargin key	000
MRP3	Strategy group	10 - Make-to-stock production		
MRP4	You have no data to enter here. Press "Enter" to skip.			
Forecasting	Forecast model	J - Automatic model selection		
Work scheduling	You have no data to enter here. Press "Enter" to skip.			
Plant data / stor. 1	You have no data to enter here. Press "Enter" to skip.			
Plant data / stor. 2	You have no data to enter here. Press "Enter" to skip.			
Accounting 1	Valuation class	7920 - Finished product	Standard price	2.48
	Price control	S - Standard price		
Accounting 2	You have no data to enter here. Press "Enter" to skip.			
Costing 1	Profit center	Z\$\$-01		
Costing 2	You have no data to enter here. Press "Enter" to skip. Then, click "yes" to save the product.			

10.2.2 Raw material

MMR1
Master Data / Raw Material / Create Raw Material
703

- On “Create Raw Material (Initial Screen)”, enter the following information:

Fields	Data to input
<i>Material</i>	Z\$\$RM
<i>Industry sector</i>	Retail

- Step 1:** Click on “Select View(s)” and highlight the following views of the muesli data. Once done, click on “Continue (Enter)”.
 - Basic Data 1 and 2
 - Purchasing
 - MRP1, MRP2, MRP3, MRP4
 - General Plant Data / Storage 1 and 2
 - Accounting 1 and 2
 - Costing 1 and 2

- Step 2:** In the “Organization levels”, enter the following information:

<i>Plant</i>	Z\$\$
<i>Storage location</i>	\$88

- Step 3:** The record contains a series of mandatory data in the various views of “Material Master”. Pressing “enter” starts an automatic check and you go on to the next tab. See next page for the data to enter.

Views	Fields	Value	Fields	Value
Basic Data 1	Description	Muesli Test RM	Material Group	Z\$\$
	Base Unit of Measure	KG - Kilogram		
Basic Data 2	You have no data to enter here. Press "Enter" to skip.			
Purchasing	Purchasing Group	Z\$1	Autom. PO	X
MRP1	MRP group	0010	MRP Controller	101
	MRP Type	PD - MRP	Lot size	EX - Lot-for-lot order quantity
MRP2	Prod. stor. location	\$88	Planned Deliv. Time	1 day
	SchedMargin key	000		
MRP3	Availability check	01 - Daily requirements		
MRP4	You have no data to enter here. Press "Enter" to skip.			
Plant data / stor. 1	You have no data to enter here. Press "Enter" to skip.			
Plant data / stor. 2	You have no data to enter here. Press "Enter" to skip.			
Accounting 1	Valuation class	3000 - Raw material 1	Moving price	0.99
	Price control	V - Moving average price		
Accounting 2	You have no data to enter here. Press "Enter" to skip.			
Costing 1	Profit center	Z\$\$-01		
Costing 2	You have no data to enter here. Press "Enter" to skip. Then, click "yes" to save the product.			

10.2.3 Bill-of-material

In this step, you will create a simple bill-of-material that includes only a single raw material.

CS01

Master Data / Bill of Material / Create Material BOM

706

- On "Create Material BOM: Initial Screen", enter the following information:

Fields	Data to input	Description
<i>Product</i>	Z\$\$FP	
<i>Plant</i>	Z\$\$	
<i>BOM Usage</i>	1 (Production)	This key defines the area (such as engineering/design or production) where a BOM can be used.

- Press "Enter".
- On the "Create Material BOM: General Item Overview" screen, enter the following information:

Fields	Data to input	Description
<i>ICT</i>	L (Stock Item)	Categorization of the items in a BOM according to set criteria, such as whether they refer to an object (for example, material master or document info record) or whether they are kept in stock.
Component	Z\$\$RM	
Quantity	1	

- Click on  to save your list of components.

10.3 Testing the planning process

These instructions will guide you through the scenario that you will use to test the planning process. This scenario is similar to the description of the purchasing process described in Chapter 4. We recommend that you document your test scenario. At the end of this chapter, you will find a document you may use to document this process.

10.3.1 Create the forecast

First, we need create a forecast for the finished product Z\$\$FP. This transaction will generate the independent requirements which is used as an input to the MRP (material requirement planning) calculation.

MD61 Logistics / Production Planning / Material Forecast / Create Planned Independent Requirements 401	Creating the forecast		
	First screen	Create Planned Independent Requirements: Initial Screen	
Fields		Data to input	
<i>Material</i>		Z\$\$FP	
<i>Plant</i>		Z\$\$	
Task		Navigation	Result
Continue			A second screen appears.
Second screen	Plnd ind. reqmts Create: Planning Table		
	Field	Data to input	
	Planned Independent Requirements	100,000 (in the next month)	
	Tasks	Navigation	Results
Save the independent requirements.	Press "save"	The independent requirements for this material are now saved.	

Check the execution of this transaction in stock requirement lists using the transaction code MD04.

MD04 (individual) or MD07 (collective)
Logistics / Shop Floor Control / Order / Create / Display Stock/ Requirements Situation

View the stock/requirement list			
First screen	Requirements List: Inital screen		
	Fields	Data to input	
	<i>Material</i>	Z\$\$FP	
	<i>Plant</i>	Z\$\$	
	Task	Navigation	Result
	Continue		The second screen appears.

Confirm that the test was successful in your test document.

10.3.2 Execute MRP

To execute the MRP process (MD01), you need to enter your plant number. The system will then automatically extract the independent requirements previously generated for your plant, pull the information from the BOM of the finished products mentioned in the document, calculate the quantities you already have in stock, and create purchase requisitions.

MD01
Logistics / Production Planning / MRP / MRP Run
402

		Execute MRP	
First screen	MRP Run Screen		
	Fields	Data to input	
	<i>Plant</i>	Z\$\$	
	<i>Processing Key</i>	NETCH	
	<i>Create purchase req.</i>	1	
	<i>Schedule lines</i>	3	
	<i>Create MRP list</i>	1	
	<i>Planning mode</i>	1	
	<i>Scheduling</i>	1	
	<i>Planning date</i>	Today	
	<i>Display material list</i>	x	
	Tasks	Navigation	Results
	Continue		A notice pops up at the bottom of the page.
	Ignore the notice	press "enter"	The notice disappears.
Start the planning run		The planning run is carried out.	

You can view the stock requirement lists using the transaction code MD04, which will show you the results of the MRP planning process.

MD04 (individual) or MD07 (collective)
 Logistics / Shop Floor Control / Order / Create / Display Stock / Requirements Situation

		View the stock/requirement list		
First screen	Requirements List: Inital screen			
	Fields	Data to input		
	<i>Material</i>	Z\$\$FP		
	<i>Plant</i>	Z\$\$		
	Task	Navigation	Result	
	Continue		The second screen appears.	

Confirm that the test was successful in your test document. Note the document number of the planned order for the finished product and requisition for the raw material.

10.4 Documenting the unit tests

Step	Name	Result	Completed
10.4.1	Create the forecast		<input type="checkbox"/>
10.4.2	Execute MRP		<input type="checkbox"/>

CHAPTER 11 – CONFIGURING THE PROCUREMENT PROCESS

This chapter provides the information on how to configure and test the procurement process of Muesli AG. The following configuration supports the procurement process as describe in Chapter 4, i.e. create purchase order, post goods receipt, post invoice, and post payment. In other words, the procurement process manages the ordering, receiving, and payment for the raw and packaging materials.

Because this is an integrated system, many configurations required for the procurement process have been executed in the previous chapter when setting up the planning module. For example, document number ranges have already been defined for the requisition and purchase order documents.

Yet, additional configuration steps have to be done to support the procurement process. The following details the business rules that needs to be supported:

- The value of raw materials needs to be accounted for in the financial statement at the time of the goods receipt.
- For simplification purposes, Muesli AG does not pay nor charge taxes! Still, configuration in the system to support this fictitious business rule must be done.

In the following section, you will first configure the business process, create the dummy master data required to test the configuration, verify your configuration using our queries and finally run a test scenario where you will execute unit tests for the conversion of purchase orders, creation of goods receipt, invoice receipt and payment to the vendor. You will have successfully completed this chapter if you are able to create a purchase order, a goods receipt, an invoice receipt and an outgoing payment to the vendor.

11.1 Configuring the procurement process

11.1.1 Define valuation and account assignment

OMWD
Materials Management / Valuation and Account Assignment / Account Determination / Account Determination Without Wizard / Group Together Valuation Areas
1101

In this step, you assign valuation areas (company code) to a valuation grouping code.

- Make the following entries:

Fields	Data to input	Description of the field
<i>Company Code</i>	Z\$\$	
<i>Val. Grpg Code</i>	0001	Together with other factors, the valuation grouping code determines the G/L accounts to which a goods movement is posted (automatic account determination).

- Click on  to save.

11.1.2 Maintain default values for tax codes

OMR2
Materials Management / Logistics Invoice Verification / Incoming Invoice / Maintain Default Values for Tax Codes
1102

In this step, you define for each company code which tax code(s) for the incoming invoices. As previously stated, Muesli AG does not pay or charge taxes. You will need to choose the XI (Input Tax) parameter which has been already preset to 0% for you. A German jurisdiction tax code must also be selected.

- Choose the “New Entries” button.
- Make the following entries (Select Company Code Z\$ and hit the details button to make all entries):

Fields	Data to input	Description of the field
<i>CoCd</i>	Z\$\$	
<i>Company Name</i>	\$ Muesli AG	
<i>Tax Code (Defaults, domestic)</i>	XI (Input Tax)	The tax code represents a tax category which must be taken into consideration when making a tax return to the tax authorities.
<i>Tax Code (Default value unplanned)</i>	XI (Input Tax)	
<i>Jurisdiction code</i>	DE0000000	Specifies the tax jurisdiction for determining tax rates.

- Click on  to save.
- Click on  to go back.

11.1.3 Maintain tax treatment in invoice reduction

S_ALR_87100620
Materials Management / Logistics Invoice Verification / Incoming Invoice / Tax Treatment in Invoice Reduction
1103

In this step, you will configure how taxes are to be posted for invoice reduction. This step is also required for the goods issue postings.

- Choose the “New Entries” button and make the following entries:

Fields	Data to input	Description of the field
CoCode	Z\$\$	
Name	\$ Muesli AG	
Tax for invoice reduction	Tax reduction in complaint document	By using <i>Tax reduction in complaint document</i> , the taxes in the original document are passed on as they are in the vendor invoice.

- Click on  to save.

11.2 Master data

To test the configuration of the procurement process, you need to create 3 different types of master data : vendor master record, purchasing info-record and a source list. Only one master data of each is required to perform the test.

11.2.1 Vendor master record

The vendor master record that needs to be created must use parameters that fit the business logic of the configured procurement process. The vendor must be in Germany and assigned to the appropriate financial accountings settings. The following instruction will guide you on how to create this vendor master record.

XX01

Master Data / Vendor /
Create Vendor

705

- On “Create Vendor: Initial Screen”, enter the following information.

Fields	Data to input	Description of the field
Vendor	Z\$\$VENDOR	
Company code	Z\$\$	
Purchasing org.	Z\$\$	
Account group	0001 - Vendor	The account group is a classifying feature within vendor master records.

- Press “Enter” to go to the next screen.
- On the “Create Vendor: Address” screen, enter the following information:

Fields	Data to input
<i>Title</i>	Company
<i>Name</i>	FoodBroker Inc.
<i>Search term</i>	Raw mat.
<i>Country</i>	DE

- Press “enter” to go on to the next screen and enter the following data (see next page):

Create Vendor screens: Press enter to navigate through the screens	Fields	Values
Control	<i>Sales/pur. tax</i>	X
Payment transactions	<i>You have no data to enter here. Press "Enter" to skip.</i>	
Contact persons	<i>You have no data to enter here. Press "Enter" to skip.</i>	
Accounting information Accounting	<i>Recon. Account</i>	160000 - Trade Payables - domestic
	<i>Cash mgmnt group</i>	A1 - Domestic
Payment transaction Accounting	<i>Payment terms</i>	0001 - Payable immediately Due net
Correspondence Accounting	<i>You have no data to enter here. Press "Enter" to skip.</i>	
Purchasing data	<i>Order currency</i>	EUR
	<i>Terms of paymnt</i>	0001 - Payable immediately Due net
	<i>Automatic purchase order</i>	X
Partner functions	<i>You have no data to enter here. Press "Enter" to skip.</i>	

- Click on  to save.

11.2.2 Purchasing info-record

The purchasing info-record corresponds to the contract between a vendor and a material this business partner provides your company. In the info-record that you need to create to test your business process, some mandatory fields need to be entered. In addition to the price, we will need to specify the standard quantity and the purchasing group responsible for procuring this material. The following instructions explain how to create this purchasing info-record.

ME11

Master Data / Info Record / Create Purchasing Info Record

712

- On "Create Info Record: Initial Screen", enter the following information:

Screen	Fields	Data to input
Initial screen	<i>Vendor</i>	Z\$\$VENDOR
	<i>Material</i>	Z\$\$RM
	<i>Purchasing Org.</i>	Z\$\$
	<i>Plant</i>	Z\$\$

- Press "Enter" to go to the next screen.
- Click on "Purch. Org. Data 1" and enter the following data:

Screen	Fields	Data to input
Purchase org. data 1	<i>Pl. Deliv. Time</i>	1
	<i>Purch group</i>	Z\$1
	<i>Standard qty</i>	100
	<i>Net price</i>	0.99

- Click on  to save.

11.2.3 Source list

Finally, you need to create a source list. The source list automatically assigns a vendor to specific material. This source list is required if you wish to automate the vendor assignment on a PO. If the source list is not required, an additional step in the business process would be required to assign a vendor before converting the requisition into a purchase order. In the case of Muesli AG, it is required that the vendor assignment be done when the requisition is created by the MRP (i.e. source list relevant to MRP). The following instructions details how to create this source list.

ME01

Master Data / Source List / Maintain Source List

714

- On the “Maintain Source List: Initial Screen”, enter the following information:

Fields	Data to input
<i>Material</i>	Z\$\$RM
<i>Plant</i>	Z\$\$

- Press “Enter” to go on to the next screen.
- On the “Maintain Source List: Overview Screen”, enter the following information:

Fields	Data to input
<i>Valid From</i>	Today
<i>Valid To</i>	One year from today
<i>Vendor</i>	Z\$\$VENDOR
<i>POrg</i>	Z\$\$
<i>Fix</i>	x
<i>MRP</i>	1 - Record relevant to MRP

- Click on  to save.

11.3 Testing the procurement process

These instructions will guide you through the scenario that you will use to test the procurement process. This scenario is similar to the description of the purchasing process described in Chapter 4. We recommend that you document your test scenario. At the end of this chapter, you will find a document that you may use to document this process.

11.3.1 Generate automatically consolidated purchase order from purchase requisitions

If you completed successfully the unit tests in chapter 10, use the following transaction to convert your requisition into a purchase order.

ME59N		Generating automatically consolidated purchase order from purchase requisitions		
Logistics / Materials Management / Purchase Order / Create / Automatically via Purchase Requisition	Automatic creation of purchase order from requisitions			
	Fields		Data to input	
	Purchasing organization	Z\$\$		
	Plant	Z\$\$		
	Tasks		Navigation	Results
	Execute the query	Press  .	A report is displayed confirming the conversion of the purchase requisition in consolidated PO. The PO number should be highlighted in green.	

Note the PO number in your test document.

11.3.2 Create a purchase order without a purchase requisition (optional)

If the unit test from chapter 10 was not successful or if you get the “No suitable purchase requisitions found” message, use this transaction to create a purchase order.

ME21N

Logistics / Materials Management / Purchase Order / Create / Vendor/Supplying Plant Known

404

- Enter the following data:

Creating a purchase order without a purchase requisition	
First screen	Create Purchase Order: Initial Screen
Fields	Data to input
Vendor	Z\$\$VENDOR
Material	Z\$\$RM
Qty requested	100000
Plant	Z\$\$

- Click on *Org. Data* tab and enter the following:

Fields	Data to input
Purch. Org.	Z\$\$
Purch. Group	Z\$1
Company Code	Z\$\$

- Then, click on  to save.
- You will be prompted that a system message was issued (this message appears to let you notice if the delivery date can be met). Click on  to save.
- Note your PO number in the test document.

11.3.3 Post goods receipt

The next transaction will allow to post the goods receipt from the vendor. You must enter the number of the purchase order. Verify that the quantity corresponds to the quantity ordered and check OK to validate that the material has been received as planned. When you enter a goods receipt, the SAP® system debits the raw material inventory account and credits the GR/IR account.

MIGO
Logistics / Materials Management / Goods Receipt / Goods Movement
405

Post goods receipt			
First screen	Goods Receipt Purchase Order- YOUR NAME screen		
	Field	Data to input	
	Purchase order	Enter your PO number from the previous step	
	Tasks	Navigation	Results
	Continue		The purchase order informations appear.
	Enter storage location for each items (click on "Where" tab)		\$88
	Complete the Good Receipts	click on "Item OK"	The goods quality and quantity are checked for each item.
	Save		Note the number.
	Repeat the same operations for your other purchase order.		
	Please note that to avoid selection problems with the lines of the PO, close the "Detail data" tab on the bottom left of the screen.		

Note the document number in the test document.

11.3.4 Post vendor's invoice

The next transaction is posting the vendor's invoice (MIRO). Again you must enter the number of purchase order. This transaction automatically creates an accounts payable transaction in the system. When you post an invoice, the SAP® system credits an account payable to the vendor and debits the GR/IR account.

MIRO
Logistics / Materials Management / Invoice / Logistics Invoice Verification
406

		Post vendor's invoice			
First screen	Enter Incoming Invoice: YOUR COMPANY CODE screen				
	Fields		Data to input		
	Invoice Date	Today			
	Posting date	Today			
	Purchase Order/ Scheduling Agreement	Your purchase order number			
	<div style="border: 1px solid gray; padding: 2px;"> Purchase Order/Scheduling Agreement <input type="text"/> <input type="text"/> ¹ </div>				
	Task		Navigation	Result	
	Continue		Click on "enter"	The purchase order informations appear	
	Fields		Data to input		
	Amount	Amount beside Balance			
	Tax jurisdiction	DE0000000			
	BaselineDT (in payment tab)	Today			
	Pmnt terms (in payment tab)	0001			
	Task		Navigation	Result	
	Continue		Press "enter"	Ignore the notice saying that the terms of payment have been changed.	
Check if the amount entered balance		Simulate	The balance (bal.) should be 0,00. IMPORTANT: copy the invoice amount to paste it in the next transaction.		
Return to the main screen		click on "Back"	Your are returned to the main screen.		
Save			Note the document number and the amount.		

11.3.5 Payment of the vendor's invoice

Payment is made from the bank account, which clears the accounts payable. The transaction code for the payment of the vendor's invoice is F-53. You must pay the totality of the amount payable. You must enter your company code (Field company code) and the vendor number (Field Account). Your cash account will be credited when you complete the transaction.

F-53
Logistics / Materials Management / Accounts Payable / Outgoing Payment
407

Payment of the vendor's invoice			
First screen	Post outgoing Payment with Printout: Header Data screen		
	Fields	Data to input	
	Company Code	Z\$\$	
	Document date	Today's date	
	Bank data: Account	113300	
	Bank data: Amount	From the invoice in the previous step	
	Open item selection: Account	Z\$\$VENDOR	
	Task	Navigation	Result
Continue	Click on "Process open items"	The next screen appears.	
Second screen	Post outgoing payment: Process open item		
	Task	Navigation	Result
	Save		The invoice is paid.
Repeat the same operations for each vendor			

Note the document number in the testing document

11.4 Documenting the unit tests

Step	Name	Result	Completed
11.4.1	Generate automatically consolidated purchase order from purchase requisitions		<input type="checkbox"/>
11.4.2	Create a purchase order without a purchase requisition (optional)		<input type="checkbox"/>
11.4.3	Post goods receipt		<input type="checkbox"/>
11.4.4	Post vendor's invoice		<input type="checkbox"/>
11.4.5	Payment of the vendor's invoice		<input type="checkbox"/>

CHAPTER 12 : CONFIGURING THE PRODUCTION EXECUTION PROCESS

In this chapter, we cover the configuration and test of the production execution process at Muesli AG. The configuration detailed below corresponds to the production process describe in Chapter 4, i.e. converting planned orders in production order and the confirmation of production order.

As mentioned in the previous chapter, some configuration was already executed when setting up the production planning and procurement processes. Still, some important configuration steps need to be done to support the following business rules :

- The verification of the raw material availability must be done at the creation of the production order, i.e. when the planned order is converted in a production order.
- Production order must not be released if raw materials are missing.
- Production capacity is out of scope, so it must not be checked before production order is released.
- Production orders are automatically released on creation.
- The cost of goods manufactured will be valued at the moving average price.
- The system should default the production yield to be confirmed when confirming a production order.

In the following section, you will first configure the production execution process, create the master data required to test the configuration (work centers, routings) and test the conversion of the planned order to production order and the production confirmation. You will have successfully completed this chapter if all goods movements are successful after executing transaction CO15.

12.1 Production execution configuration

12.1.1 Define checking control

OPJK
Production / Shop Floor Control / Operations / Availability Check / Define Checking Control
1201

In this activity, you define the check control parameters. The checking rule together with the checking group specifies the scope of the check. This activity is done twice, with only one difference: the *Availability check* parameter. Muesli AG wants to execute the availability check at two occasions: once during the order creation and once during the order release. No release can be executed if one or more parts are missing. At those moments, SAP checks if the production resources and tools (PRT) are available and that there is enough capacity.

- On the Change View "Order control": Overview screen, choose "New Entries" and make the following entries:

Section	Fields	Data to input	Description of the field
Header	<i>Plant</i>	Z\$\$	
	<i>Order type</i>	PP01 - Standard production order	Key that differentiates orders according to their purpose. In this case, we want to configure the standard production order.
	<i>Availability check</i>	1 - During order creation	Key which identifies a business transaction, such as "Create order" or "Release order".
Material availability	<i>Checking rule</i>	PP	Along with the checking group, the checking rule specifies the final procedure for checking.
	<i>Collect. Conversion</i>	3 - No release if parts are missing	Controls whether a planned order can be converted to a production order if one or more material components are not available.
PRT availability	<i>No check</i>	X	Indicator you use to specify (for each plant and order type) that no PRT availability check is carried out during the business transaction you entered.
Capacity availability	<i>No check</i>	X	Indicator used to show that the capacity availability is to be checked.

- Click on  to save.

- Click on  to go back.
- Choose “*New Entries*” once more and make the following entries:

Section	Fields	Data to input	Description of the field
Header	<i>Plant</i>	Z\$\$	
	<i>Order type</i>	PP01 - <i>Standard production order</i>	Key that differentiates orders according to their purpose. In this case, we want to configure the standard production order.
	<i>Availability check</i>	2 - <i>During order release</i>	Key which identifies a business transaction, such as “Create order” or “Release order”.
Material availability	<i>Checking rule</i>	PP	Along with the checking group, the checking rule specifies the final procedure for checking.
	<i>Release material</i>	3 - <i>No release if parts are missing</i>	Controls whether a planned order can be converted to a production order if one or more material components are not available.
PRT availability	<i>No check</i>	X	Indicator you use to specify (for each plant and order type) that no PRT availability check is carried out during the business transaction you entered.
Capacity availability	No check	X	Indicator used to show that the capacity availability is to be checked.

- Click on  to save.

12.1.2 Define production scheduling

OPK9
Production / Shop Floor Control / Master Data / Define Production Scheduling Profile
1202

In this step, you will define production scheduling parameters, including the auto release of production order. First, you need to create the production scheduling profile for your plant. In the production process, Muesli AG wants that new production orders be automatically released; in other words, when planned orders are converted into production orders, saving the document will also release it for production.

- On the change view “Production Scheduling Profile”: Overview screen, click the “New Entries” button.
- Enter the following values:

Fields	Data to input	Description of the field
<i>Plant</i>	Z\$\$	
<i>Prod. sched profile</i>	10	This number is the identifier of your production scheduling profile.
<i>Text</i>	Muesli production scheduling profile	
<i>Release (in the section automatic actions on creation)</i>	X	You use this indicator to specify that an order is to be released when it is created.

- Click on  to save.

OPJ9
Production / Shop Floor Control / Master Data / Define Production Scheduler
1203

Then, you need to assign this production scheduling profile to a production scheduler of Muesli AG. The process requires the presence of a production scheduler that is assigned to the production profile that was created in the previous step.

- On the Change View “Production Scheduler”: Overview screen, choose “New Entries” and make the following entries:

Fields	Data to input	Description of the field
<i>Plant</i>	Z\$\$	
<i>Prod. sched</i>	001	Scheduler responsible for a material in production activity control.
<i>Description</i>	Muesli scheduler	
<i>ProdProfile</i>	10	You assign here the production profile that was created.

- Click on  to save.

OPU3

Production / Shop Floor Control / Operations / Scheduling / Define Scheduling Parameters for Production Orders

1204

Finally, you will define the scheduling parameters for production orders. In other words, you will define for your plant, order type and production scheduler, the parameters for scheduling production orders. Muesli AG uses a backward scheduling process.

- On the change view “Specify scheduling parameters”: Overview screen, mark the line of plant 0001 and order type PP01, and click on “Copy As...”.
- On the change view “Specify scheduling parameters”: Detail screen, enter the values of the following fields:

Fields	Data to input	Description of the field
<i>Plant</i>	Z\$\$	
<i>Order type</i>	PP01	Key that identifies the usage of the orders.
<i>ProdScheduler</i>	001	Scheduler responsible for a material in production activity control.
<i>Scheduling type</i>	Backwards	Key which specifies the scheduling type for detailed scheduling.
<i>Automatic scheduling</i>	X	Specifies that orders or networks are automatically scheduled when they are saved.

- Press “Enter”, then click on  to save.

12.1.3 Define order type-dependent parameters

OPL8

Production / Shop Floor Control / Master Data / Order / Define order type-dependent parameters

1205

In this step, you will define the parameters that are valid for each order type and plant. Order type needs to be configured to be tied to the right type of bill of material and routing, and to trigger the appropriate goods movements when production is confirmed. Many of these parameters are mandatory fields for production execution to occur properly.

- On the change view “Order Type-dependent parameters”: Overview screen, highlight the line of order type PP01 and plant 0001 Werk.
- Click on “Copy As...”.
- On the change view “Order Type-dependent parameters”: Detail screen, enter the values of the following fields for plant

Z\$\$ (do not forget to change the value of the field *Plant* to Z\$\$):

Tab	Fields	Data to input
Planning	<i>Production Version</i>	1 - Manual selection of production version
	<i>Application</i>	P - Routings for production
	<i>Selection ID</i>	01
	<i>Routing Selection</i>	3 - Routing/ref. op. set optimal (automatic selection)
	<i>Sequence Exchange</i>	2 - Manual selection
	<i>Altern. sequence</i>	Unchecked
	<i>Routing Type</i>	N - Routing
	<i>Entry Tool</i>	X
	<i>Operation Increment</i>	0010
	<i>BOM Application</i>	PP01 - Production - General
	<i>Search Procedure</i>	CO0001 - Standard CO search procedure
	<i>Check Batch</i>	X
	<i>Substitute MRP Ctrller</i>	101 You might need to leave it empty and come back later to change it
	<i>Substitute Scheduler</i>	001
	<i>Reservation/Purch.Req.</i>	3 - Immediately
Implementa- tion	<i>For Order Header</i>	X
	<i>Update</i>	X
	<i>GR for Purchase Order</i>	X
	<i>GR for Production Order</i>	X
	<i>Planner Goods Issue</i>	X
	<i>Unplanned Goods Issue</i>	X

Cost Accounting	<i>Cstg variant planned</i>	PPP1 - Production Order: Planned
	<i>Cstg variant actual</i>	PPP2 - Production Order: Actual
	<i>Results Analysis Key</i>	000001 - WIP Calculation at Actual Costs

- Press “Enter”, then click on  to save.
- If you have an error message about the MRP Controller, leave it empty, save and change the settings back to **101** and save again.

12.1.4 Define valuation of goods received

OPK9
Production / Shop Floor Control / Integration / Define Valuation of Goods Received
1206

When production is executed, raw materials are consumed and expensed on the profit and loss statement. In this step, you will define the value at which the raw materials will be valued by the system at the time of consumption (moving average).

- On the Change view “Valuation of variant for ordering cost”: Overview, highlight valuation area 0001 SAP AG and click on “Copy As...”.
- Change Valuation Area (Val. Area) to Z\$\$.
- Press enter then click on  to save.

12.1.5 Define confirmation parameters

OPK4
Production / Shop Floor Control / Operations / Confirmation / Define Confirmation Parameters
1207

In this step, you will define the confirmation parameters for each plant and order type. Once the confirmation of an order occurs, we want the system to propose the quantities, services and dates that are required in the documents. With this configuration, the system will automatically default quantities and dates in the production order to be confirmed.

- On the change view “Parameter for Order Confirmation”: Overview screen, mark the line of plant 0001 and order type PP01, and click on “Copy As...”.
- On the change view “Parameter for Order Confirmation”: Detail screen, enter the values of the following fields (see next page):

Fields	Data to input
<i>Plant</i>	Z\$\$
<i>Order type</i>	PP01

- The following table shows the detailed information about this setting. Make sure the following fields are checked in the “Indiv. Entry of Operation w. Init. Screen” tab:

Fields	Data to input	Description of the field
<i>Quantities / Propose</i>	X	Specifies that the quantity which according to planning has yet to be confirmed, is proposed for confirmation by the system.
<i>Services / Propose</i>	X	Specifies that the activity which according to planning has yet to be confirmed, is proposed for confirmation by the system.
<i>Dates / Propose Dates</i>	X	Specifies that for the confirmation of operations, the system is to propose the start and finish dates of the individual operation segments, as calculated by lead time scheduling.

- Press “Enter”.
- Click on  to save.

12.2 Master data

To test the configuration of the production process, you need to create 3 different types of master data. First, you need to create the person responsible for the work center, then to define the work center and finally create the routing. Only one master data of each is required to perform the test.

12.2.1 Define person responsible for work center

S_ALR_87004628

Logistics / Production /
Master Data / Work
Centers / Environment /
Current Settings

1208

With this key, you will identify a person or group of people responsible for maintaining the master data in certain work centers.

- Select plant 0001 (with person responsible 001) and click on “Copy As...”.
- Enter the following information:

Fields	Data to input
<i>Plant</i>	Z\$\$
<i>Pers. respons.</i>	001

- Press “Enter”, then click on  to save.

12.2.2 Create the work center

CR01

Master Data / Work
Center / Create Work
Center

708

The work center correspond to the ressource that performs the manufacturing operation . In the case of Muesli AG, the work center corresponds to an assembly line. For the context of this test, set the capacity utilization of this work center to 100%, 24 hours per day. The work center needs to be tied to the cost center; use the cost center created in Chapter 9.

- On “Create Work Center: Initial Screen”, enter the following information:

Screen	Fields	Data to input
Initial screen	<i>Plant</i>	Z\$\$
	<i>Work Center</i>	Z\$\$WC01
	<i>Work Center Cat.</i>	0007 - Production line

- Press “Enter”, then enter the following data:

Tab	Fields	Data to input
Basic data	Description	Work center 1
	Person responsible	001
	Usage	009 - All task list types
	Backflush	X
	Standard value key	SAP1 - Normal production
Capacities	Capacity Category	002 - Labor

- Press “Enter”. On the “Create Work Center Capacity: Header” screen, enter the following:

Screen	Fields	Data to input
Create work center capacity: Header	Capacity planner grp.	001 - SAP example
	Base unit of meas.	H - Hour
	Capacity utilization	100
	No. of indiv. cap.	1
	Start	00:00:00
	Finish	24:00:00

- Press “Enter” to go back. Then, enter the following information:

Tab	Fields	Data to input
Scheduling	Capacity Category	002 - Person
Costing	Cost Center	Z\$\$-01

- Click on  to save.

12.2.3 Create a routing

CA01

Master Data / Routings
/ Create Routings

2709

Finally, you need to create a routing that will detail the operation required to manufacture your finished product (previously created in chapter 10) with your work center. For the purpose of this test, only one operation is documented in the routing.

- Enter the following:

Screens	Fields	Data to input
Initial Screen	Material	Z\$\$FP
	Plant	Z\$\$, then press "Enter".
Header details	Usage	1 - Production
	Status	4 - Released (general)

- Click on "Operations" and enter the following data:

Screens	Fields	Data to input
Operations ¹	Work center	Z\$\$WC01
	Control Key	ZSIM
	Description	Make cereal boxes

- Click on "CompAlloc" at the top. This will confirm the "Bill of material" for your product.
- Click on  to save..

12.3 Testing the production execution process

These instructions will guide you through the scenario that you will use to test the production execution process. This scenario is similar to the description of the production process described in chapter 4. We recommend that you document your test scenario. At the end of this chapter, you will find a document that you may use to document this process.

12.3.1 Convert and release production order

The first step is to convert a planned order into and production order and to release it. Follow the following instruction to execute this task.

MD04 (individual) or MD07 (collective)
Logistics / Shop Floor Control / Order / Create / Current Material Overview
408

		Production order		
First screen	Stock/Requirement List: Initial Screen			
	Fields	Data to input		
	Material	Z\$\$FP		
	Plant	Z\$\$		
	Task	Navigation	Result	
Continue		A new screen appears.		
Second screen	Stock/Requirements List as of THE TIME THE SCREEN IS OPENED Hrs			
	Task	Navigation	Result	
	Check that raw materials are available		All required raw materials should have a green light.	
Convert planned order in production order	Place the cursor on "PIOrd" and right-click. Select "PlndOrd. --> Prod.ord."	A new screen appears.		

Third screen	Production order Create: Header screen		
	Fields	Data to input	
	Finish (date)	Today	
	Start (date)	Today	
	Task	Navigation	Result
	Check that all materials are available	Click on  Material	This message should be displayed at the bottom of the screen: "All checked materials in order are available".
	Release the production order	 should be grayed since we configured the automatic release on creation.	The production order is released.
	Save		Note the number.

Note the production order number in the test document at the end of this chapter.

12.3.2 Confirm production order

The second and last step of this process is to confirm production. Use the following instruction to confirm the production win SAP.

CO15
Logistics / Shop Floor Control / Confirmation / Enter for Order
409

Confirm production execution			
First screen	Create Production Order Confirmation: Initial screen		
	Fields	Data to input	
	Order	your production order number	
	Tasks	Navigation	Results
Continue		The next screen appears.	
Second screen	Confirmation of Production Order create: Actual data		
	Task	Navigation	Result
	Confirm that the production is done	Click on "Final Confirm."	The production is confirmed.
Save		The confirmation is saved.	

When saving this transaction, you should get a message at the bottom left of the screen that confirms the operation involved in the goods movement postings. The message should tell you that all goods movements were successfully posted. Confirm the completion of this process in your test document.

12.4 Documenting the unit tests

Step	Name	Result	Completed
12.4.1	Convert and release production order		<input type="checkbox"/>
12.4.2	Confirm production order		<input type="checkbox"/>

CHAPTER 13 – CONFIGURING THE SALES PROCESS

The following chapter provides detailed information on the configuration of the sales process for Muesli AG. This configuration supports the four step sales process : sales order, shipping, billing and payment.

Since this is the last module to configure, many settings relevant for the sales process have already been activated. Therefore, the configuration to support this process is quite limited. The following elements detail the business rules that need to be configured for this process:

- Sales revenues are to be posted in the G/L account 800000.
- A pricing procedure needs to be set to take into account the different sales prices in the three distribution channels. However, a price list including only distribution channel \$0 will be created for our tests.

In the following section, you will first configure the business process, create the dummy master data required to test the configuration, verify your configuration using our queries and, finally, run a test scenario where you will execute unit test to create a sales order, deliver a finished product, create a billing document and receive payment. You will have successfully completed this chapter if your open items are cleared by the customer payment at the end of the process; the sales order will then be flagged as completed.

13.1 Sales process configuration

13.1.1 Assign G/L accounts

VKOA

Sales and Distribution /
Basic Functions /
Account Assignment
and Costing / Revenue
Account Determination
/ Assign G/L Accounts

1301

In this menu option, you allocate G/L accounts for revenue account determination. In this assignment, you will specify the sales organization of Muesli AG (Z\$\$). You will also assign the sales revenue account that will be used for the sales and distribution activities.

- Double-click on “Table 5 - Acct Key”.
- Click on “New Entry” and enter the following data:

Fields	Data to input	Description of the field
<i>App</i>	V - Sales/Distribution	Subdivides the usage of a condition (for example, pricing) for use in different application areas (for example, sales & distribution or purchasing).
<i>CndTy</i>	KOFI - Acct determination	The key that uniquely identifies an account determination type.
<i>ChAc</i>	INT	Key that uniquely identifies a chart of accounts.
<i>SOrg</i>	Z\$\$	An organizational unit responsible for the sale of certain products or services. The responsibility of a sales organization may include legal liability for products and customer claims.
<i>ActKy</i>	ERL - Revenue	Key that identifies different types of G/L account.
<i>G/L Acct</i>	800000 - Sales revenue domestic	The G/L account number identifies the G/L account in a chart of accounts.

- Click on  to save.

13.1.2 Pricing Procedures: Determination in Sales Docs.

OVKK
Sales and Distribution / Basic Functions / Pricing / Pricing Control / Define and Assign Pricing Procedures / Define Pricing Procedure Determination
1302

In this step, you will define the pricing procedure determination for the sales documents, based on the distribution channel, the division and the sales organization.

- On the *Change View "Pricing Procedures: Determination in Sales Docs."*: *Overview* screen, choose *"New Entries"*.
- On the *New Entries: Overview of Added Entries* screen, enter the values in the corresponding input fields as shown below.

Fields	Data to input			Description of the field
<i>SOrg</i>	Z\$\$			An organizational unit responsible for the sale of certain products or services. The responsibility of a sales organization may include legal liability for products and customer claims.
<i>DChl</i>	Hypermarkets \$0	Grocery Chain \$2	Ind. Grocers \$4	The way in which products or services reach the customer. Typical examples of distribution channels are wholesale, retail, or direct sales.
<i>Dv</i>	\$0			A way of grouping materials, products, or services. The system uses divisions to determine the sales areas and the business areas for a material, product, or service.
<i>DoPr</i>	A - <i>Standard</i>			The key that specifies the pricing procedure for this type of sales document.
<i>CuPP</i>	1 - <i>Standard</i>			Determines which pricing procedure the system should apply when you create a sales document for the customer.
<i>PriPr</i>	RVAA01 - <i>Standard</i>			Determines which condition types can be used in a document and in which sequence they appear.

- Click on  to save.

13.2 Master data

To test the configuration of the sales process, you need to create two different types of master data: price list and customer master record.

13.2.1 Set the sales price

VK31

Master Data / Sale Price / Condition
Maintenance: Create / Price List

710

In this step, you will define the sales price for your finished product. This price will be used in the sales document when a sale occurs. For the purpose of this test, you will be creating only one price list for the distribution channel \$0.

- On the “Create Condition Records: Overview” screen, select “Prices / Price List”, then click on the  icon and enter the following information:

Section	Fields	Data to input	Fields	Data to input
Header	<i>Sales Organization</i>	Z\$\$	<i>Price List</i>	01
	<i>Distribution Channel</i>	\$0	<i>Document Currency</i>	EUR
Details	<i>Condition type</i>	PR00		
	<i>Material</i>	Z\$\$FP		
	<i>Amount</i>	4.24		
	<i>Unit</i>	EUR		
	<i>Valid from</i>	Today		
	<i>Valid to</i>	One year from today		
	<i>Tax Code</i>	X0		
<i>Payt Terms</i>	0001 - Pay immediately w/o deduction			

- Click on  to save.

13.2.2 Customer master data

XD01

Master Data / Business Partner / Customer / Create / Complete

711

To be able to test the sales process, you will have to create a customer in the system. The following instructions explain how to create an hypermarket customer (sold-to-party) located in Berlin.

- On "Customer Create: Initial Screen", enter the following information:

Section	Fields	Data to input
Initial screen	<i>Account group</i>	Sold-to party
	<i>Customer</i>	899?? Replace ?? with the corresponding number for your team: • A = 01 ; B = 02 ; ... ; Z = 26
	<i>Company code</i>	Z\$\$
Sales area	<i>Sales Organization</i>	Z\$\$
	<i>Distribution channel</i>	\$0
	<i>Division</i>	\$0

- Press "Enter".
- On the "Create Customer: General Data" screen, enter the following information in the address tab:

Fields	Data to input	Description of the field
<i>Title</i>	Company	
<i>Name</i>	Customer	
<i>Search term</i>	Hypermarket	
<i>City</i>	Berlin	
<i>Country</i>	DE	
<i>Transportation zone</i>	000000001	Represent the transportation zone assigned to the customer's region.

- Click on "Company Code Data" at the top of the screen.

- On the “Account management” tab, enter the following :

Fields	Data to input	Description of the field
<i>Rec Account</i>	140000	The reconciliation account in G/L accounting is the account which is updated parallel to the subledger account for normal postings (for example, invoice or payment).
<i>Cash mgmnt group</i>	E6 - Major customers	In cash management, customers and vendors are allocated to planning groups by means of an entry made in the master record.
<i>Interest indic.</i>	02 - Standard bal.int.cal	Enter an interest calculation indicator here if the account is to be included in automatic interest calculation.
<i>Interest cycle</i>	01 - 1 month	An entry in this field determines the intervals (in months) at which interest is to be calculated automatically for this account (account balance interest calculation).

- On the “Payment transactions” tab, enter 0001 in “Terms of payment”.
- Click on “Sales Area Data” at the top of the screen and enter the following in the “Sales” tab :

Fields	Data to input	Description of the field
<i>Sales district</i>	000001 - Northen region	A geographical sales district or region.
<i>Customer group</i>	01 - Industry	Identifies a particular group of customers (for example, wholesale or retail) for the purpose of pricing or generating statistics.
<i>Currency</i>	EUR	
<i>Price group</i>	01 - Bulk buyer	A grouping of customers who share the same pricing requirements.
<i>Price list</i>	01 - Wholesale	Identifies a price list or other condition type (for example, a surcharge or discount).
<i>Cust Stats Grp</i>	1 - 'A' Material	Specifies a statistics group for this customer and helps determine which data the system updates in the logistics information system.

- Enter the following in the “Shipping” tab :

Fields	Data to input	Description of the field
<i>Delivery priority</i>	02 - Normal item	The delivery priority assigned to an item.
<i>Shipping conditions</i>	01 - Pick up	General shipping strategy for the delivery of goods from the vendor to the customer.

- Enter the following in the “Billing document” tab :

Fields	Data to input	Description of the field
<i>Incoterms</i>	CIF - Cost, insurance & freight Also enter “Incoterm” in the edit field next to it	Incoterms specify certain internationally recognised procedures that the shipper and the receiving party must follow for the shipping transaction to be successfully completed.
<i>Terms of payment</i>	0001 - Payable immediately <i>Due net</i>	Key for defining payment terms composed of cash discount percentages and payment periods.
<i>Acct assgmt group</i>	01 - Domestic Revenues	The account assignment group to which the system automatically posts the sales document.
<i>Tax classification</i>	1 - Liable for Taxes	Specifies the tax liability of the customer, based on the tax structure of the customer’s country.

- Click on  to save your customer.

13.3 Testing the sales process

These instructions will guide you through the scenario that you will use to test the sales process. This scenario is similar to the description of the sales process described in Chapter 4. We recommend that you document your test scenario. At the end of this chapter, you will find a document that you may use to document this process.

13.3.1 Create sales order

You will now test your configuration by creating a sales order. In this transaction, you will create a sales order for customer **899??** (Replace ?? with the corresponding number for your team: A = 01 ; B = 02 ; ... ; Z = 26) in distribution channel \$0. Make sure that the sales quantity is not above the quantity produced in the previous chapter.

VA01
Logistics / Sales and Distribution / Sales / Create Sales Order
410

Create sales order				
First screen	Creates Sales Order: Initial Screen			
	Fields	Data to input	Fields	Data to input
	<i>Order Type</i>	OR	<i>Distribution Channel</i>	\$0
	<i>Sales Organization</i>	Z\$\$	<i>Division</i>	\$0
	Task	Navigation	Result	
Continue		The second screen appears		
Second screen	Create Sales Order: overview screen			
	Fields	Data to input	Fields	Data to input
	<i>Sold-to party</i>	899??	<i>PO date</i>	Today
	<i>Ship-to party</i>	899??	<i>Material</i>	Z\$\$FP
	<i>PO Number</i>	Your name	<i>Order quantity</i>	Quantity ordered
	Task	Navigation	Result	
Continue	Press "enter"	The sale is not completed yet.		
	To complete the sale	Edit menu > Incompletion Log Click on  and then on "Complete data"	You can now enter the missing information. NB: If a notice appears saying that the document is complete save right away.	

Third screen	Create standard order: Item data			
	Fields		Data to input	
	<i>Plant</i>	Z\$\$	<i>Storage location</i>	\$02
	<i>Shipping point</i>	Z\$\$	<i>Profit Center</i>	Z\$\$-01
	Task		Navigation	
	Continue		Click on "Edit next data"	
Save				
		Result		
		A notice saying that the document is completed appears.		
		Note the number and the total value of the sales order.		

Note the number in the test document

13.3.2 Delivery to customer

In this step, you will create the delivery document for the sales order that you created in the previous step.

VL01N
Logistics / Sales and Distribution / Shipping and Transportation / Create Outbound Delivery
411

Delivery to customer			
First screen	Create Outbound Delivery with Order Reference		
	Fields		Data to input
	<i>Shipping point</i>	Z\$\$	
	<i>Selection date</i>	One week from now	
	<i>Order</i>	Your sales order number	
	Task		Navigation
Continue			
		Result	
		The second screen appears.	

Second screen	Delivery Create: Item Overview screen		
	Select the "Picking" tab		
	Fields	Data to input	
	<i>Storage location</i>	\$02	
	<i>Delivery quantity</i>	Depending on the order	
	<i>Pick quantity</i>	Depending on the order	
	Task	Navigation	Result
	Post the goods issue and save	Click on "Post good issue"	The inventory is now decreased. Note your delivery number.

Note the delivery number in your test document.

13.3.3 Invoicing the customer

In this step, you will create the invoice for delivery document created previously.

VF01
Logistics / Sales and Distribution / Billing / Create Billing Document
412

Invoicing the customer			
First screen	Creates Sales Order: Initial Screen		
	Field	Data to input	
	<i>Document</i>	Your delivery number	
	Tasks	Navigation	Results
	Create the Billing Document		The invoice is created.
	Save		The account receivable is now credited and the sales revenues is debited.

Note the document in the test document.

13.3.4 Post payment

In this step, you will simulate the reception of the payment from the customer.

F-28
Logistics / Sales and Distribution / Accounts Receivable / Incoming Payment
413

Post payment		
First screen	Post Incoming Payments: Header Data screen Customer	
	Fields	Data to input
	<i>Document Date</i>	Today
	<i>Company code</i>	Z\$\$
	<i>Currency</i>	EUR
	<i>Account (Bank data)</i>	113300
	<i>Amount</i>	Total amount of your sale order
	<i>Account (Open item selection)</i>	899?? (Replace ?? with the corresponding number for your team: A = 01 ; B = 02 ; ... ; Z = 26)
	Task	Navigation
Continue		The second screen appears.
Second screen	Process Incoming Payments:Process open items	
	Save	

13.4 Documenting the unit tests

Step	Name	Result	Completed
13.4.1	Create sales order		<input type="checkbox"/>
13.4.2	Delivery to customer		<input type="checkbox"/>
13.4.3	Invoicing the customer		<input type="checkbox"/>
13.4.4	Post payment		<input type="checkbox"/>

CHAPTER 14 – CONFIGURING THE PROJECT SYSTEM MODULE

Up to now, Muesli AG has been focusing on a make to stock manufacturing strategy. In this new chapter, we extend the manufacturing capability of Muesli AG with the possibility of producing customized cereal boxes on behalf of retailers who would like to have their own brand of Muesli cereal. To do so, Muesli AG must now be able to estimate product costing based on specific requirements and answer quotes from the customer. If the quote is accepted, Muesli AG must be able to use this customer's bill of material for material requirements, order the necessary raw materials and execute production. The Project System module can help Muesli AG to support this new business process. This chapter provides the information on how to configure and test the Project System at Muesli AG.

14.1 Configuring project system

14.1.1 Maintain planner group

In this step, we specify the person or the group of person responsible for the network.

- Choose the "New Entries" button.
- Make the following entries:

Fields	Data to input	Description of the field
<i>Plnt</i>	\$\$	
<i>PlGrp</i>	1	
<i>Planner group description</i>	Planner group \$\$	

- Click on  to save.

14.1.2 Create network profile

In this step, you will define the default value for the network profile. For example, values will be set in the rules for the activities of the project. The default values in the profile will be copied in the header, activities and activities elements of the project. Users will be able to overwrite when defining the activities.

- Choose the "New Entries" button.

SPRO

IMG / Project system / Structures / Template / Standard network / Maintain planner groups

1901

OPUU

IMG / Project system / Structure / Operative structure / Network / Settings for network / Maintain network profiles

1902

- Make the following entries:

Fields	Data to input
<i>Network profile</i>	\$\$
<i>Description</i>	Network profile for \$\$

- In the “Network” tab, make the following entries:

Fields	Data to input	Description of the field
<i>Plant</i>	\$\$	
<i>Network type</i>	PS	
<i>Planner group</i>	1	
<i>MRP cont. group</i>	101	
<i>Rel. view</i>	3	
<i>Level of detail</i>	2	
<i>Op./act. incrmnt</i>	0010	
<i>Overview var.</i>	000000000001	
<i>Procurement</i>	PS	
<i>Field key</i>	0000001	
<i>Res./Purc. req</i>	3	
<i>Cap. reqmts</i>	X	
<i>Align.Fin. date</i>	X	

- In the “Graphic” tab, make the following entries:

Fields	Data to input	Description of the field
<i>Graphic prfl</i>	PS	
<i>Description</i>	NETWORK	
<i>Rel. display</i>	1	
<i>Display options</i>	1	
<i>Prf planning board</i>	SAPPS_NW0001	
<i>Overall profile ID</i>	SAPPS_G007	

Fields	Data to input	Description of the field
Color-Subnetwk.	GREEN	
Color for docs.	GREEN	
Color milestone	GREEN	
Color for mat.	GREEN	
Color for elem.	GREEN	

- In the “Activities” tab, make the following entries:

Fields	Data to input	Description of the field
<i>Internally processed activity</i>		
Control key	PS01	
Mat. cost elem.	400000	
Unit for work	HR	
Norm.duratn un.	HR	
Calculation key	2	
<i>General Costs Activity</i>		
Control key	PS03	
<i>Service</i>		
Control key	PS04	
<i>Externally processed activity</i>		
Control key	PS02	
Currency	EUR	
Purchasing Org.	\$\$	

Click on  to save.

14.1.3 Create a DIP Profile

In this step, you create dynamic item processor profiles for billing, quotation creation and results determination. So that you can bill the items of a sales document or a service order or create a quotation, you must assign a profile to the item of the sales document or the service order.

ODP1

IMG / Project System /
Revenues and Earnings
/ Integration with SD
Documents / Creating
Quotation and Project
Billing / Maintain
Profiles for Quotation
and Billing

1903

- Choose the “New Entries” button.
- Enter the following information:

Fields	Data to input	Description of the field
<i>DIP Profile</i>	PS0000\$	
<i>Description</i>	PS Profile company \$\$	

- Select the line that you have just created and click on “Usage”.
- Click on “New entries” and enter the following information:

Fields	Data to input	Description of the field
<i>Usage</i>	Quotation creation and sales pricing	
<i>Sal</i>	OR	

- Select the line that you have just created, click on “Characteristics” and enter the following information:

Fields	Data to input	Description of the field
<i>Cost element</i>	check CharactRelevant and Mat. determination	
<i>Material</i>	check CharactRelevant	
<i>Order Number</i>	check Structuring	

- Click on “Sources” and enter the following information:

Fields	Data to input	Description of the field
<i>Source</i>	Planned costs - Total records	
<i>Percentage</i>	100	

- Click on “Material determination” and click “New entries”.
- Enter the following information:

Fields	Data to input
<i>Material / service</i>	\$\$-F01
<i>Transfer Quantity / cost</i>	Transfer costs and quantity

- Select the line that you have just created and click on “Criteria”.
- Enter the following information:

Fields	Data to input
<i>Value (cost element)</i>	800000

- Return to the “Usage” folder and click “New entries”.
- Enter the following information:

Fields	Data to input	Description of the field
<i>Usage</i>	Biling and result analysis	
<i>Sal</i>	DR	

- Select the line that you have just created, click on “Characteristics” and enter the following information:

Fields	Data to input	Description of the field
<i>Item number</i>	check CharactRelevant and Mat. determination	
<i>Material</i>	check CharactRelevant	
<i>Order</i>	check CharactRelevant and Mat. determination	
<i>Unit of measure</i>	deselect NoSummarization	

- Click on “Sources” and enter the following information:

Fields	Data to input	Description of the field
<i>Source</i>	Actual costs - line item	
<i>Percentage</i>	100	

- Click on “Material determination”, click on “New entries” and enter the following informaton:

Fields	Data to input
<i>Material / service</i>	\$\$-F01

- Click on  to save.

14.1.4 Create project profile

In this step, you create the project profile. The project profile is a template that you will copy from when creating a new project in the system. The profile contains a set of default values that the user can choose to change in their project. These default values will accelerate the creation of the project. For example, to use graphical representation in the project, you must set the appropriate graphic profile. The parameters we use in this profile are the basic settings recommended by SAP.

- Choose the “New Entries” button.
- Go in the “Control” tab and enter the following information:

Fields	Data to input	Description of the field
<i>Proj.Prof.</i>	\$\$	
<i>Description</i>	Project profile \$\$	
<i>Proj.type</i>	01	
<i>Field key</i>	0000001	
<i>Version prof.</i>	0000001	
<i>Simulation prof</i>	0000001	
<i>Display options</i>	1	
<i>Level of detail</i>	10	
<i>PartnDet.Proc.</i>	1	
<i>All acct asst elem</i>	X	
<i>Prof. summ. MastDa</i>	X	
<i>Autom. validation</i>	X	
<i>Autom. substitution</i>	X	
<i>Valuated stock</i>	X	
<i>PD sts. profile</i>	PS000001	
<i>WBS sts. prof.</i>	PS000002	
<i>Master data prf. grp</i>	PS	

Fields	Data to input	Description of the field
<i>Graph. prfl mstr data</i>	HIERARCHY_S	
<i>Sales Organization</i>	\$\$	
<i>Distribution Channel</i>	12	
<i>Division</i>	00	
<i>DIP Profile</i>	PS00000\$	

- Go in the “Organization” tab and enter the following information:

Fields	Data to input	Description of the field
<i>Controlling Area</i>	\$\$	
<i>Company code</i>	\$\$	
<i>Business area</i>	0001	
<i>Plant</i>	\$\$	
<i>Project currency</i>	EUR	

- Go in the “Plg board/dates” tab and enter the following information:

Fields	Data to input	Description of the field
<i>Factory calend.</i>	01	
<i>Time unit</i>	HR	
<i>Plan.meth/basic</i>	3	
<i>Plan.meth/fcst</i>	3	
<i>Calc. with act.</i>	2	
<i>Network profile</i>	\$\$	
<i>Network asst</i>	2	
<i>Plan.board prf</i>	SAPPS_TP0001	

Fields	Data to input	Description of the field
<i>Tot.tab.profile</i>	SAPPS_G000	
<i>Tot.graphic.prf</i>	SAPPS_G000	
<i>IndCapTabOvProf</i>	SAPPS_GE01	
<i>IndCapGrpOvProf</i>	SAPPS_GE02	
<i>List profile</i>	SAPPS_G020	
<i>Profile group</i>	PS	
<i>Profile</i>	HIERARCHY_S	
<i>Time sched.prof</i>	000000000001	

- Go in the “Controlling” tab and enter the following information:

Fields	Data to input	Description of the field
<i>Object Class</i>	PRODT	
<i>Planning profile</i>	000002	
<i>Budget profile</i>	000001	
<i>Costing Sheet</i>	A00000	
<i>Interest Profile</i>	0000001	
<i>Result Analysis Key</i>	000001	
<i>Settlement profile</i>	60	
<i>Budget profile group</i>	PS	
<i>Graph.profile budget</i>	HIERARCHY_S	

- Click on  to save.

14.1.5 Specify parameters for network type

In this step, we will specify a set of rules for the project associated with various plants or network. The network type distinguishes networks by their usage.

OPUV

IMG / Project system / Structure / Operative structure / Network / Settings for networks / Specify parameters for network type

1905

- Choose the “New Entries” button.
- Make the following entries:

Fields	Data to input	Description of the field
<i>Plant</i>	\$\$	
<i>Network type</i>	PS	
<i>Strategy</i>	01	
<i>Default Rule</i>	PS1	
<i>CstgVariantPlan</i>	PS02	
<i>CstgVariantActl</i>	PS03	
<i>Plan Cost Calc.</i>	Determine plan costs	
<i>Wrkflw PO chg.</i>	X	
<i>ActvtyAcctAsgn.</i>	X	

- Click on  to save.

14.1.6 Specify parameters for network scheduling

In this step, we specify the person or the group of person responsible for the network.

- Choose the “New Entries” button.
- Make the following entries:

Fields	Data to input	Description of the field
<i>Plant</i>	\$\$	
<i>Order type</i>	PS	
<i>ProdScheduler</i>	001	
<i>Adjust Dates</i>	Adjust basic dates, adjust dep. reqmts to operation date.	
<i>Scheduling Type</i>	Forwards	
<i>Automatic log</i>	X	
<i>Shift Order</i>	X	
<i>Latest Staging Date</i>	X	

OPU6

IMG / Project system /
Dates / Scheduling /
Specify parameters for
network scheduling

1906

Fields	Data to input	Description of the field
<i>Reduction type</i>	All operations in the order will be reduced.	
<i>Maximum reduction level</i>	Do not reduce.	
<i>Rescheduling</i>	Distribute distributed work according to old distribution.	

- Click on  to save.

14.1.7 Define checking control

In this step, availability check is configured. The settings will determine the business rule that the system will apply to check for availability. For, exemple, you may choose to check for availability at the creation of an activity or when the activity is released.

- Choose the “New Entries” button.
- Make the following entries:

Fields	Data to input	Description of the field
<i>Plant</i>	\$\$	
<i>Order Type</i>	PS	
<i>Availability Check</i>	2	
<i>Status check</i>	X	
<i>Check material availability when saving order</i>	X	
<i>Checking rule</i>	PS	
<i>Release material</i>	1	
<i>PRT availability</i>		
<i>No check</i>	X	
<i>Capacity availability</i>		
<i>No check</i>	X	
<i>Batch assignment</i>		
<i>Release material</i>	1	

- Click on  to save.

OPJK

IMG / Project System /
Material / Availability
Check / Define
Checking Control

1907

14.1.8 Define confirmation parameters

OPST
IMG / Project system / Confirmation / Define confirmation parameters
1908

In this step, we specify the person or the group of person responsible for the network.

- Choose the “New Entries” button.
- Make the following entries:

Fields	Data to input	Description of the field
<i>Plant</i>	\$\$	
<i>Network type</i>	PS	
<i>Final Confirmation</i>	X	
<i>Propose dates</i>	X	
<i>Propose activities</i>	X	
<i>Milestone automatic.</i>	X	
<i>Date in future</i>	X	
<i>WrkDev. active</i>	X	
<i>All components</i>	X	
<i>Confirmable</i>	X	
<i>Wrkflw for work</i>	X	

- Click on  to save.

14.1.9 Maintain progress version

SPRO
IMG / Project system / Progress / Progress Analysis / Maintain progress version
1909

In this step, the calculation of the percentage of completion and earned value is determined.

- Choose the “New Entries” button.
- Make the following entries:

Fields	Data to input	Description of the field
<i>Version</i>	\$\$	
<i>Name</i>	PS: Progress Version	

- Select the line that you ave just created, click on folder “Settings for Progress Version” and make the following entries:

Fields	Data to input	Description of the field
<i>CO Area</i>	\$\$	
<i>Progress Versio</i>	Progress version for company \$\$	
<i>Plan Version</i>	0	
<i>EV Basis</i>	Cost plan (active project, overall values)	
<i>POC weighting</i>	Cost plan (active project, total values)	
<i>Planning type</i>	Basic dates	
<i>Early/Late</i>	Earliest possible	
<i>Actual method</i>	X	
<i>Ref. plan meth.</i>	X	

- Click on  to save.

14.1.10 Define measurement method as default value

In this step, you will define how the calculation of the percentage of completion should be calculated.

- First make sure that you are in the right controlling area by selecting the two letters of your team.
- Choose the “New Entries” button.
- Make the following entries:

Fields	Data to input	Description of the field
<i>Progress version</i>	\$\$	
<i>Object type</i>	WBS element	
<i>Plan/actual indicator</i>	Plan	
<i>Measurement method</i>	0000000005	

SPRO

IMG / Project system /
Progress / Progress
Analysis / Define
measurement method
as default value

1910

- Click on  and make the following entries:

Fields	Data to input	Description of the field
<i>Progress version</i>	100\$	
<i>Object type</i>	WBS element	
<i>Plan/actual indicator</i>	Actual	
<i>Measurement method</i>	0000000005	

- Click on  and make the following entries:

Fields	Data to input	Description of the field
<i>Progress version</i>	100\$	
<i>Object type</i>	Activity, internal processing	
<i>Plan/actual indicator</i>	Plan	
<i>Measurement method</i>	0000000005	

- Click on  and make the following entries:

Fields	Data to input	Description of the field
<i>Progress version</i>	100\$	
<i>Object type</i>	Activity, internal processing	
<i>Plan/actual indicator</i>	Actual	
<i>Measurement method</i>	0000000005	

- Click on  and make the following entries:

Fields	Data to input	Description of the field
<i>Progress version</i>	100\$	
<i>Object type</i>	Activity element, external processing	
<i>Plan/actual indicator</i>	Plan	
<i>Measurement method</i>	0000000005	

- Click on  and make the following entries:

Fields	Data to input	Description of the field
<i>Progress version</i>	100\$	
<i>Object type</i>	Activity element, external processing	
<i>Plan/actual indicator</i>	Actual	
<i>Measurement method</i>	0000000005	

- Click on  to save.

14.1.11 Create statistical key figures

In this step, we maintain the statistical key figures.

KK01

Logistics / Project systems / Basic Data / Master Data / Statistical key figures / Create

1911

- Before you start creating the key figure, make sure you are in the right controlling area. In the top menu of the application, go to “Extra / Set setting controlling area” and enter controlling area \$\$.
- Make the following entries:

Fields	Data to input
<i>Stat. key figure</i>	10

- Click on “master data” and make the following entries:

Fields	Data to input	Description of the field
<i>Name</i>	Stat key figure for \$\$	
<i>Stat. key fig. UnM.</i>	%	
<i>Key fig. cat.</i>	Tot. values	

- Click on  to save.
- Make the following entries:

Fields	Data to input
<i>Stat. key figure</i>	20

- Click on “master data” and make the following entries:

Fields	Data to input	Description of the field
Name	Stat key figure for \$\$	
Stat. key fig. UnM.	%	
Key fig. cat.	Tot. values	

- Click on  to save.
- Make the following entries:

Fields	Data to input
Stat. key figure	30

- Click on “master data” and make the following entries:

Fields	Data to input	Description of the field
Name	Stat key figure for \$\$	
Stat. key fig. UnM.	%	
Key fig. cat.	Tot. values	

- Click on  to save.

14.1.12 Define statistical key figure for percentage of completion

In this step, we define here the statistical key figure in which the percentage of completion will be measured.

- Choose the “New Entries” button.
- Make the following entries:

Fields	Data to input	Description of the field
CO Area	\$\$	
Usage	Non-Aggregated POC	
Stat. key fig.	10	

SPRO
IMG / Project system / Progress / Progress Analysis / Statistical key figure for percentage of completion
1912

- Click on  and make the following entries:

Fields	Data to input	Description of the field
CO Area	\$\$	
Usage	Aggregated POC	
Stat. key fig.	20	

- Click on  and make the following entries:

Fields	Data to input	Description of the field
CO Area	\$\$	
Usage	POC for Results analysis	
Stat. key fig.	30	

- Click on  to save.

14.1.13 Define CO Version for Easy Cost Planning

In this step, we determine which CO version you use for Easy Cost Planning.

- Choose the “New Entries” button.
- Make the following entries:

Fields	Data to input	Description of the field
CO Area	\$\$	
Version	0	
Plan.Rev.	X	

- Click on  to save.

SPRO
IMG / Project system / Cost / Planned Cost / Easy Cost Planning and Execution Services / Easy Cost Planning / Define CO Version for Easy Cost Planning
1913

14.1.14 Revenue Account Determination (Assign G/L Accounts)

VKOA
IMG / Sales and Distribution / Basic Functions / Account Assignment/Costing / Revenue Account Determination / G\L Accounts
1914

In this step, you allocate G/L accounts for revenue account determination.

- Double click on “Cust.Grp/MaterialGrp/AcctKey”, click “New Entries” and make the following entries:

Fields	Data to input	Description of the field
A	V	
CndT	KOFK	
Ch	INT	
SOrg	\$\$	
A	01	
AA	01	
ActKy	ERL	
G/L Account	800000	

- Click  twice to go back to the “G\L Accounts” screen.
- Double click on “MaterialGrp/AcctKey”, click “New Entries” and make the following entries:

Fields	Data to input	Description of the field
A	V	
CndT	KOFK	
Ch	INT	
SOrg	\$\$	
AA	01	
ActKy	ERL	
G/L Account	800000	

- Click  twice to go back to the “G\L Accounts” screen.

- Double click on “AcctKey”, click “New Entries” and make the following entries:

Fields	Data to input	Description of the field
<i>A</i>	V	
<i>CndT</i>	KOFK	
<i>Ch</i>	INT	
<i>SOrg</i>	\$\$	
<i>ActKy</i>	ERL	
<i>G/L Account</i>	800000	

- Click  to save.

14.2 Master data

19.2.1 Creating raw materials

MMR1
Master Data / Raw Material / Create Raw Material
1915

- On “Create Raw Material (Initial Screen)”, enter the following information:

Fields	Data to input
<i>Material</i>	\$\$-T01
<i>Industry sector</i>	Retail

- Step 1:** Click on “Select View(s)” and highlight the following views of the muesli data. Once done, click on “Continue (Enter)”.
 - Basic Data 1 and 2
 - Purchasing
 - MRP1, MRP2, MRP3, MRP4
 - General Plant Data / Storage 1 and 2
 - Accounting 1 and 2
 - Costing 1 and 2

- Step 2:** On the “Organization levels” screen, enter the following information:

Fields	Data to input
<i>Plant</i>	\$\$
<i>Storage location</i>	88

- Step 3:** The record contains a series of mandatory data in the various views of “Material Master”. Pressing “enter” starts an automatic check which brings you to the next tab. See next page for the data to enter.

VIEWS	FIELDS	Y\$\$-T01
<i>Basic Data 1</i>	Description	Test
	Base Unit of measure	KG - Kilogram
	Material Group	\$\$
<i>Basic Data 2</i>	You have no data to enter here. (Press "enter".)	
<i>Purchasing</i>	Purchasing group:	100
	Autom. PO	X
<i>MRP1</i>	MRP group	0010
	MRP Type	PD - MRP
	MRP Controller	101
	Lot Size	EX - Lot-for-lot order quantity
<i>MRP2</i>	Prod. stor location	88
	Backflush	2 - Work center decides whether to backflush
	SchedMargin key	000
	Plnd Delivery time:	1 day
<i>MRP3</i>	Availability check	01 - Daily requirements
<i>MRP4</i>	You have no data to enter here. (Press "enter".)	
<i>General Plant Data / Stor. 1</i>	You have no data to enter here. (Press "enter".)	
<i>General Plant Data / Stor. 2</i>	You have no data to enter here. (Press "enter".)	
<i>Accounting 1</i>	Valuation class	3000 - Raw material 1
	Price control	V - Moving average price
	Moving price	4.20
<i>Accounting 2</i>	You have no data to enter here. (Press "enter".)	
<i>Costing 1</i>	Profit center	\$\$
<i>Costing 2</i>	You have no data to enter here. (Press "enter"). Then, click "yes" to save the product.	

If you forget to enter information, go back to change mode (transaction MM02) and correct it. Note that if you enter the moving price incorrectly, you can only change it using transaction MR21.

14.2.2 Define info records for raw material

ME11
Master Data / Info Record / Create Purchasing Info Record
1916

On “Create Info Record: Initial Screen”, enter the following information:

Screens	Fields	Data to input
Initial screen	<i>Vendor</i>	V01
	<i>Material</i>	\$\$-T01
	<i>Purch. org.</i>	\$\$
	<i>Plant</i>	\$\$
Purchase org. data 1 ¹	<i>Plnd dely time</i>	1
	<i>Purch group</i>	100
	<i>Standard qty</i>	100
	<i>Net price</i>	4.20

1: On the “Create Info Record: General Data” screen, click on “Purch. Org data 1”

- Click on  to save.

14.2.3 Source list

ME01
Master Data / Source List / Maintain Source List
1917

- On the “Maintain Source List: Initial Screen”, enter the following information:

Fields	Data to input
<i>Material</i>	\$\$-T01
<i>Plant</i>	\$\$

- Press “Enter” to go on to the next screen.

- On the “Maintain Source List: Overview Screen”, enter the following information:

Fields	Data to input
<i>Valid From</i>	Today
<i>Valid To</i>	One year from today
<i>Vendor</i>	V01
<i>POrg</i>	\$\$
<i>Fix</i>	x
<i>MRP</i>	1 - Record relevant to MRP

- Click on  to save.

14.2.4 Changing the bill of material

- On the “ERPsim: Validated BOM Change” screen, enter the following information:

ZCS02

Master Data / Bill of Material / ERPsim: Validated Change to BOM

1918

Fields	Data to input
<i>Material</i>	\$\$-F01

- Click on  and change the material number \$\$-R01 for \$\$-T01.
- Click on  to save.

14.2.5 Creating a G/L account

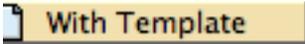
On the “ERPsim: Validated BOM Change” screen, enter the following information:

FS00

Accounting / Financial Accounting / General Ledger / Master Record / G\L Accounts / Individual Processing / Centrally

1919

Fields	Data to input
<i>G/L Account</i>	892000
<i>Company Code</i>	\$\$

- Click on  and enter the following information:

Fields	Data to input
<i>G/L Account</i>	892000
<i>Company Code</i>	0001

- Click on  to save.

14.2.6 Creating the cost elements

- First you have to enter the controlling area \$\$.
- On “Create Cost Element: Initial Screen”, enter the following information:

Fields	Data to input	
<i>Cost Element</i>	420010	420020
<i>Valid From</i>	First day of current year	

- Click on  and enter the following information:

Fields	Data to input	
<i>Cost Element</i>	420010	420020
<i>Name</i>	Labor cost R&D	Labor cost prod
<i>CElem category</i>	43	

- Select the “Default Acct Assgmt” tab and enter the following information:

Fields	Data to input
<i>Cost center</i>	\$\$

- Click on  to save.

KA06

Accounting /
Controlling / Cost
Element Accounting /
Master Data / Cost
Element / Individual
Processing / Create
Secondary

1920

14.2.7 Creating the cost elements

- First you have to enter the controlling area \$\$.
- On “Create Cost Element: Initial Screen”, enter the following information:

KA01

Accounting /
Controlling / Cost
Element Accounting /
Master Data / Cost
Element / Individual
Processing / Create
Primary

1921

Fields		
<i>Cost Element</i>	892000	792000
<i>Valid From</i>		

- Click on  and enter the following information:

Fields		
<i>Cost Element</i>	892000	792000
<i>Name</i>	Inv.Chg.Finished Pds	Finished Goods
<i>CElem category</i>	1	90

- Select the “Default Acct Assgmt” tab and enter the following information:

Fields	Data to input
<i>Cost center</i>	\$\$

- Click on  to save.

14.2.8 Creating the activity types

On the “Create Activity Type: Initial Screen” screen, enter the following information:

Fields	Data to input	
<i>Activity Type</i>	R&D	PROD
<i>Valid From</i>	First day of the current year	

KL01

Accounting /
Controlling / Cost
Center Accounting /
Master Data / Activity
Type / Individual
Processing / Create

1922

- Click on  and enter the following information:

Fields	Data to input	
<i>Name</i>	Labor R&D	Labor production
<i>Activity unit</i>	H	
<i>Cctr categories</i>	*	
<i>ATyp category</i>	1	
<i>Allocation cost elem</i>	420010	420020

- Click on  to save.

14.2.9 Change Activity Type / Price Planning

KP26

Accounting /
Controlling / Cost
Center Accounting /
Planning / Activity
Output/Prices / Change

1923

On the “Change Activity Type / Price Planning” screen, enter the following information:

Fields	Data to input	
<i>Version</i>	0	
<i>From Period</i>	01	
<i>To Period</i>	12	
<i>Fiscal Year</i>	current year	
<i>Cost Center</i>	\$\$	
<i>Activity Type</i>	R&D	PROD

- Click on  and enter the following information:

Fields	Data to input	
<i>Fixed price</i>	100	30

- Click on  to save.

14.2.10 Creating the work center

- On “Create Work Center: Initial Screen”, enter the following information:

Screens	Fields	Data to input
Initial Screen	<i>Plant</i>	\$\$
	<i>Work Center</i>	\$\$_RD
	<i>Work Center category group</i>	0006
Basic data	<i>Insert a description</i>	Work Center for R&D
	<i>Person responsible</i>	001
	<i>Usage</i>	003

CNR1

Logistics / Project
System / Basic Data /
Master Data / Work
Center / Master Record
/ Create

1924

Screens	Fields	Data to input
Capacities	<i>Capacity Category</i>	002 (Labor)
	Other formula	SAP008
	<i>Int dist key</i>	SAP020
Create work center capacity: Header ¹	<i>Capacity planner grp</i>	A
	<i>Base unit of meas.</i>	HR
	<i>Capacity utilization</i>	100
	<i>No. of indiv. cap.</i>	1
	<i>Start</i>	00:00:00
	<i>Finish</i>	24:00:00 Then, click on "enter".
	<i>Relevant to finite scheduling</i>	X
	<i>Can be used by several operations</i>	X
Scheduling	<i>Capacity Category</i>	002
	<i>Cost Center</i>	\$\$
Costing	<i>Alt. activity descr</i>	Activity type text
	<i>Activity type</i>	R&D
	<i>Activity unit</i>	HR
	<i>Reference indicator</i>	X
	<i>Formula</i>	SAP004
	<i>ActTypeIntProc</i>	R&D
	<i>Formula</i>	SAP004

- Click on  to save your work center.

1: Click enter to access the 'Create work center capacity: Header' screen or the Capacity icon on the capacities screen.

14.2.11 Change the work center

CR02

Master Data / Work Center / Change Work Center

1925

- On "Create Work Center: Initial Screen", enter the following information:

Screens	Fields	Data to input
Initial Screen	<i>Plant</i>	\$\$
	<i>Work Center</i>	\$\$
Capacities	<i>Other formula</i>	SAP008
Scheduling	<i>Capacity Category</i>	002
Costing	<i>Cost Center</i>	\$\$
	<i>Alt. activity descr</i>	Activity type text
	<i>Activity type</i>	PROD
	<i>Activity unit</i>	HR
	<i>Reference indicator</i>	X
	<i>Formula</i>	SAP004 (ignore warning)
	<i>ActTypeIntProc</i>	R&D
<i>Formula</i>	SAP004	

- Click on  to save your work center.

1: Click enter to access the 'Create work center capacity: Header' screen or the Capacity icon on the capacities screen.

14.3 Testing the project system process

These instructions will guide you through the scenario that you will use to test the project system process.

VA11

Logistics / Sales and
Distribution / Sales /
Inquiry / Create

1926

14.3.1 Create an inquiry:

Create inquiry				
First screen	Create Inquiry: Initial Screen			
	Fields	Data to input	Fields	Data to input
	<i>Inquiry Type</i>	IN	<i>Distribution Channel</i>	12
	<i>Sales Organization</i>	\$\$	<i>Division</i>	00
	Task	Navigation	Result	
	Continue		The second screen appears.	
Second screen	Create Quotation: overview screen			
	Fields	Data to input	Fields	Data to input
	<i>Sold-to party</i>	80150	<i>PO date</i>	Today
	<i>Ship-to party</i>	80150	<i>Material</i>	\$\$-F01
	<i>PO Number</i>	\$\$	<i>Order quantity</i>	10,000
	Task	Navigation	Result	
Save.		Note the number.		

14.3.2 Create a project

Create Project			
First screen (Control data tab)	Project builder		
	Task	Navigation	Result
	Create new project.	 and click on "Project".	New screen appears.
	Fields	Data to input	
	Project definition	New product \$\$	
	Description	New product development company \$\$	
	Project Profile	Project Profile \$\$	
	Task	Navigation	Result
	Continue.		New window appears.
	Fields	Data to input	
WBS Sched. prof	PSWBS		
Task	Navigation	Result	
Continue.		Basic data tab appears.	
First screen (Basic data tab)	Fields	Data to input	
	Start date	Today	
	Finish date	In one month	
	Task	Navigation	Result
	Continue.	Click on "Partner" Tab	Partner tab appears.

CJ20N
 Logistics / Project
 System / Project /
 Project Builder
1928

First screen (Partner tab)	Fields	Data to input		
	Func	Sold-to-Party	Ship-to-Party	Bill-to-Party
	Partner	80150		
	Task	Navigation	Result	
Save.		Project created.		

14.3.3 Create a WBS element

Create a WBS element				
First screen	Project builder			
	Task	Navigation	Result	
	Select project	Double click on your project name.	New screen appears.	
	Create a WBS element		New screen appears.	
	Fields	Data to input		
	Level	1		
	WBS element	New product \$\$		
	Description	New product \$\$		
	Su	X		
	PE	X		
	Acct	X		
	Bill	X		
	Task	Navigation	Result	
	Save.		WBS element created.	

14.3.4 Create activities

Create activities			
First screen	Project builder		
	Task	Navigation	Result
	Select project.	Double click on your project name.	New screen appears.
	Select WBS element.	Click on your WBS element	Element selected.
	Create activities.		New window appears.
	Fields	Data to input	
	Network profile	CC (if required)	
	Task	Navigation	Result
	Continue.		New screen appears.
	Fields	Data to input	
	Description	R&D	Production
	Normal duration	20 days	1 day
	Work	20 days	1 day
	Work Center	\$\$_RD	\$\$
Activity Type	R&D	PROD	
Task	Navigation	Result	
Save.		Activities created.	

CJ20N

Logistics / Project System / Project / Project Builder

1930**14.3.5 Create relationship**

Create relationship			
First screen	Project builder		
	Task	Navigation	Result
	Select project.	Double click on your project name.	New screen appears.
	Select activity.	Click on "Production" activity.	Activity selected.
	Create relationship.		New screen appears.
	Fields	Data to input	
	Act.	0010	
	Task	Navigation	Result
	Save.		Relationship created.

CJ20N

Logistics / Project System / Project / Project Builder

1931**14.3.6 Assign product to project**

Assign product to project			
First screen	Project builder		
	Task	Navigation	Result
	Select project.	Double click on your project name.	New screen appears.
	Select activity.	Click on "Production" activity.	Activity selected.
	Assign material.		New screen appears.
	Fields	Data to input	
	Material	\$\$-F01	
	Requirement qty	10,000 (quantity in inquiry)	
	Task	Navigation	Result
	Save.		Relationship created.

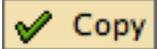
14.3.7 Calculate / display planned costs

Calculate / display planned costs			
First screen	Project builder		
	Task	Navigation	Result
	Select project.	Double click on your project name.	New screen appears.
	Select network.	Select network "  New product \$\$".	Network selected.
	Calculate costs.	Go in menu (Edit / Costs / Calculate costs).	
	Select activity.	Select one of the activities.	Activity selected.
	Display costs.	Go in menu (Edit / Costs / Plan/Actual / Activity/Element.	
	Calculate unit price.	(Divide the total amount by the material quantity and make sure you add a certain percentage to make profit).	

14.3.8 Create a quotation:

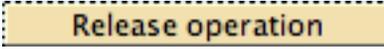
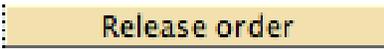
Create quotation			
First screen	Create Quotation: Initial Screen		
	Task	Navigation	Result
	Create with reference.		An other window appears.
Second screen	Create with reference screen		
	Fields	Data to input	
	<i>Quotation type</i>	QT	
	Task	Navigation	Result
	Search .		An other screen appears.
	Search inquiry list.		An other screen appears.
	Select inquiry.	Double click on the inquiry number	Inquiry selected.
	Select Inquiry.		Inquiry screen appears.
Third screen	Create quotation: Overview Screen		
	Fields	Data to input	
	<i>Valid To</i>	In one month	
	<i>WBS Element</i>	New Product \$\$	
	Task	Navigation	Result
	Select material.	Select the first line.	Line is orange.
	Change condition.		Item data screen appears.
	Fields	Data to input	
	<i>Price</i>	Enter the amount that you calculated in the previous step.	
	Task	Navigation	Result
Save.		Note the number.	

14.3.9 Create sales order

Create quotation			
First screen	Create Sales order: Initial Screen.		
	Task	Navigation	Result
	Create with reference.		An other window appears.
Second screen	Create with reference screen.		
	Task	Navigation	Result
	Search .		An other screen appears.
	Search quotation list.		An other screen appears.
	Select quotation.	Double click on the inquiry number	Inquiry selected.
	Select quotation.		Inquiry screen appears.
Third screen	Create sales order: Overview Screen		
	Fields	Data to input	
	PO Number	\$\$	
	PO Date	today	
	Task	Navigation	Result

Fourth screen	Create sales order: Header data.		
	Task	Navigation	Result
	Link to WBS element.	In menu (Goto / Header / Account assignment)	An other screen appears.
	Fields	Data to input	
	<i>WBS Element</i>	New product \$\$ (or search with ).	
	Task	Navigation	Result
	Go back.		You return to the overview screen.
Link to DIP profile.	In menu (Goto / Item / Sales B)	An other screen appears.	
Fifth screen	Create sales order: item data		
	Fields	Data to input	
	<i>Billing Form</i>	Costs	
	<i>DIP Profile</i>	PS00000\$	
	Task	Navigation	Result
Save.		Sales order saved.	

14.3.10 Release project

Release project			
First screen	Project builder		
	Task	Navigation	Result
	Select project.	Double click on your project name.	New screen appears.
	Release project.	Go in menu (Edit / Status / Release).	New window appears.
	Release operation.		Production released.
	Release order.		Order released.
	Save.		Project released.

MD01

Logistics / Materials Management / Material Requirements Planning / MRP / Planning / Total Planning / Online

1936

14.3.11 Execute MRP

Execute MRP			
First screen	MRP Run Screen		
	Fields	Data to input	
	<i>Plant</i>	\$\$	
	<i>Processing Key</i>	NEUPL	
	<i>Create purchase req.</i>	1	
	<i>Schedule lines</i>	3	
	<i>Create MRP list</i>	1	
	<i>Planning mode</i>	3	
	Tasks	Navigation	Results
	Continue.		A notice pops up at the bottom of the page.
	Ignore the notice.	press "enter"	The notice disappears.
	Start the planning run.		The planning run is carried out.

ME59

Logistics / Materials Management / Purchase Order / Create / Automatically via Purchase Requisition

1937**14.3.12 Generate automatically consolidated purchase order from purchase requisitions**

Generating automatically consolidated purchase order from purchase requisitions		
First screen	Automatic creation of purchase order from requisitions.	
	Fields	Data to input
	Purchasing organization	\$\$
	Plant	\$\$
	Tasks	Navigation
Execute the query	Press  .	A report is displayed confirming the conversion of the purchase requisition in consolidated PO. The PO number should be highlighted in green.

14.3.13 Post goods receipt**MIGO**

Logistics / Materials Management / Goods Receipt / Goods Movement

1938

Post goods receipt			
First screen	Goods Receipt Purchase Order- YOUR NAME screen		
	Field	Data to input	
	Purchase order	Enter your PO number from the previous step.	
	Tasks	Navigation	Results
	Continue		The purchase order informations appear.
	Enter storage location for each items (click on "Where" tab)		88
Complete the Good Receipts.	click on "Item OK".	The goods quality and quantity are checked for each item.	
Save.		Note the number.	

- Repeat the same operations for your other purchase order.
- Please note that to avoid selection problems with the lines of the PO, close the "Detail data" tab on the bottom left of the screen.

14.3.14 Post vendor's invoice

MIRO
Logistics / Materials Management / Invoice / Logistics Invoice Verification
1939

Post vendor's invoice																
First screen	Enter Incoming Invoice: YOUR COMPANY CODE screen.															
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #0056b3; color: white;">Fields</th> <th style="background-color: #0056b3; color: white;">Data to input</th> </tr> </thead> <tbody> <tr> <td>Invoice Date</td> <td>Today</td> </tr> <tr> <td>Posting date</td> <td>Today</td> </tr> <tr> <td>Purchase Order/ Scheduling Agreement</td> <td>Your purchase order number.</td> </tr> </tbody> </table>	Fields	Data to input	Invoice Date	Today	Posting date	Today	Purchase Order/ Scheduling Agreement	Your purchase order number.							
	Fields	Data to input														
	Invoice Date	Today														
	Posting date	Today														
	Purchase Order/ Scheduling Agreement	Your purchase order number.														
	<input type="text" value="Purchase Order/Scheduling Agreement"/> <input type="text"/> <input type="text"/> ¹															
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #0056b3; color: white;">Task</th> <th style="background-color: #0056b3; color: white;">Navigation</th> <th style="background-color: #0056b3; color: white;">Result</th> </tr> </thead> <tbody> <tr> <td>Continue</td> <td>Click on "enter"</td> <td>The purchase order informations appear</td> </tr> </tbody> </table>	Task	Navigation	Result	Continue	Click on "enter"	The purchase order informations appear									
	Task	Navigation	Result													
	Continue	Click on "enter"	The purchase order informations appear													
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #0056b3; color: white;">Fields</th> <th style="background-color: #0056b3; color: white;">Data to input</th> </tr> </thead> <tbody> <tr> <td>Amount</td> <td>Amount beside Balance</td> </tr> <tr> <td>BaselineDT (in payment tab)</td> <td>Today</td> </tr> <tr> <td>Pmnt terms (in payment tab)</td> <td>0001</td> </tr> </tbody> </table>	Fields	Data to input	Amount	Amount beside Balance	BaselineDT (in payment tab)	Today	Pmnt terms (in payment tab)	0001							
	Fields	Data to input														
	Amount	Amount beside Balance														
	BaselineDT (in payment tab)	Today														
	Pmnt terms (in payment tab)	0001														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #0056b3; color: white;">Task</th> <th style="background-color: #0056b3; color: white;">Navigation</th> <th style="background-color: #0056b3; color: white;">Result</th> </tr> </thead> <tbody> <tr> <td>Continue.</td> <td>Press "enter".</td> <td>Ignore the notice saying that the terms of payment have been changed.</td> </tr> <tr> <td>Check if the amount entered balance.</td> <td> Simulate.</td> <td>The balance (bal.) should be 0,00. IMPORTANT: Copy the invoice amount to paste it in the next transaction.</td> </tr> <tr> <td>Return to the main screen.</td> <td>click on "Back".</td> <td>Your are returned to the main screen.</td> </tr> <tr> <td>Save.</td> <td></td> <td>Note the document number and the amount.</td> </tr> </tbody> </table>	Task	Navigation	Result	Continue.	Press "enter".	Ignore the notice saying that the terms of payment have been changed.	Check if the amount entered balance.	Simulate.	The balance (bal.) should be 0,00. IMPORTANT: Copy the invoice amount to paste it in the next transaction.	Return to the main screen.	click on "Back".	Your are returned to the main screen.	Save.		Note the document number and the amount.	
Task	Navigation	Result														
Continue.	Press "enter".	Ignore the notice saying that the terms of payment have been changed.														
Check if the amount entered balance.	Simulate.	The balance (bal.) should be 0,00. IMPORTANT: Copy the invoice amount to paste it in the next transaction.														
Return to the main screen.	click on "Back".	Your are returned to the main screen.														
Save.		Note the document number and the amount.														

14.3.15 Payment of the vendor's invoice

Payment of the vendor's invoice			
First screen	Post outgoing Payment with Printout: Header Data screen.		
	Fields	Data to input	
	Company Code	\$\$	
	Document date	Today's date	
	Bank data: Account	113300	
	Bank data: Amount	From the invoice in the previous step.	
	Open item selection: Account.	V01	
	Task	Navigation	Result
Continue.	Click on "Process open items".	The next screen appears.	
Second screen	Post outgoing payment: Process open item.		
	Task	Navigation	Result
	Save.		The invoice is paid.
Repeat for vendor V02.			

MD04 (individual) or MD07 (collective)

Logistics / Shop Floor Control / Order / Create / Current Material Overview

1941

14.3.16 Convert and release production order

Production order			
First screen	Stock/Requirement List: Initial Screen		
	Fields	Data to input	
	Material	\$\$-F01	
	Plant	\$\$	
	Task	Navigation	Result
Continue.		A new screen appears.	
Second screen	Stock/Requirements List as of THE TIME THE SCREEN IS OPENED Hrs		
	Task	Navigation	Result
	Check that raw materials are available.		All required raw materials should have a green light.
Convert planned order in production order.	Place the cursor on "PIOrd" and right-click. Select "PIndOrd. --> Prod.ord."	A new screen appears.	
Third screen	Production order Create: Header screen		
	Task	Navigation	Result
Save.		Note the number.	

14.3.17 Confirm production order

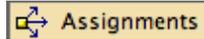
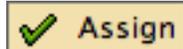
Confirm production execution			
First screen	Create Production Order Confirmation: Initial screen.		
	Fields	Data to input	
	Order	your production order number.	
	Tasks	Navigation	Results
	Continue.		The next screen appears.
Second screen	Confirmation of Production Order create: Actual data		
	Task	Navigation	Result
	Confirm that the production is done.	Click on "Final Confirm."	The production is confirmed.
Save.		The confirmation is saved.	

When saving this transaction, you should get a message at the bottom left of the screen that confirms the operation involved in the goods movement postings. The message should tell you that all goods movements were successfully posted.

14.3.18 Create delivery information

Create delivery information			
First screen	Create Delivery Info: Initial Screen		
	Fields	Data to input	
	<i>Delivery information</i>	\$\$	
	Task	Navigation	Result
	Continue.		The second screen appears.
Second screen	Create delivery info \$\$		
	Fields	Data to input	
	<i>Project definition</i>	New product \$\$ (or search your project using ).	
	<i>Shipping point</i>	\$\$	
	<i>Planned GI date</i>	today	
	<i>Delivery date</i>	today	
	<i>Ship-to-party</i>	80150	
	Task	Navigation	Result
	Save.		Delivery information saved.

14.3.19 Change delivery information

Change delivery information			
First screen	Change Delivery Info: Initial Screen		
	Fields	Data to input	
	<i>Delivery information</i>	\$\$	
	Task	Navigation	Result
	Continue.		The second screen appears.
Second screen	Assignment Overview delivery info \$\$		
	Task	Navigation	Result
	Create new document.		
	Search for your WBS element.		WBS element selected.
	Assign element .		Element assigned.
Save.		Delivery information saved	

CNS0

Logistics / Project System / Material / Execute / Delivery from Project

1945**14.3.20 Create delivery from project**

Delivery from Project			
First screen	Delivery from Project: Selection Initial Screen		
	Fields	Data to input	
	<i>Project definition</i>	New product \$\$ (or search your project using ).	
	<i>Ship-to-party</i>	80150	
	Task	Navigation	Result
	Continue.		The second screen appears.
	Select sales order.	Select your sales order number.	
	Continue.		New screen appears.
	Continue.		
Save.		Delivery saved.	

VL02N

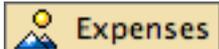
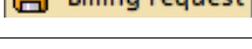
Logistics / Sales and Distribution / Shipping and Transportation / Change Outbound Delivery

1946**14.3.21 Change delivery**

Change delivery		
First screen	Change Outbound Delivery with Order Reference	
	Fields	Data to input
	<i>Delivery</i>	Enter your delivery number or search with  .
	Task	Navigation
Continue.		The second screen appears.

Second screen	Delivery Create: Item Overview screen		
	Select the "Picking" tab.		
	Fields	Data to input	
	<i>Pick quantity</i>	100	
	Task	Navigation	Result
Post the goods issue and save.	Click on "Post goods issue".	The inventory is now decreased. Note your delivery number.	

14.3.22 Create debit memo request

Create debit memo request		
Ressource related billing request: initial screen		
Field	Data to input	
Sales document	Your delivery number (you can search with ).	
Tasks	Navigation	Results
View expenditures.	 Expenses	New screen appears.
Show hierarchy.		
Select all lines.		
Lock the expenditures.		
Save.		
Go back.		New screen appears.
Create the Billing Document.	 Billing request	New window appears.
Accept message.		

14.3.23 Confirm activity

Confirm activity			
First screen	Project builder		
	Task	Navigation	Result
	Select project.	Double click on your project name.	New screen appears.
	Select activity.	Click on "Production" activity.	Activity selected.
	Confirm activity.	Go in menu Edit / Activity / Confirm.	New screen appears.
	Fields	Data to input	
	Actual start date	select the start date.	
	Actual finish date	select the finish date.	
	Actual duration	enter the duration in days.	
	Task	Navigation	Result
	Continue.		Activity confirmed.
	Save.		Project saved.

14.3.24 Update / display costs

Update / display costs			
First screen	Project builder		
	Task	Navigation	Result
	Select project.	Double click on your project name.	New screen appears.
	Select network.	Select network " New product \$\$" (Line with ).	Network selected.
	Calculate costs.	Go in menu (Edit / Costs / Update costs).	
Display costs.	Go in menu (Edit / Costs / Plan/Actual / Network).		

14.3.25 Close project

Release project			
First screen	Project builder		
	Task	Navigation	Result
	Select project.	Double click on your project name.	New screen appears.
	Release project.	Go in menu (Edit / Status / Close).	New window appears.
Save.		Project released.	

Part 4: SAP Business One® implementation at Muesli America

**A Serious Game for Learning
Enterprise Resource Planning Concepts**

HEC MONTRÉAL
ERP SIMULATION GAME
Manufacturing Game

PART 4 – SAP BUSINESS ONE® IMPLEMENTATION AT MUESLI AMERICA

In this fourth section of the book, we cover the implementation of another ERP system: SAP Business One®. This software application was acquired by SAP® several years ago and was included in their product portfolio. SAP Business One® targets small and medium organizations ranging from 50 to 250 employees.

The objective of this section is to implement SAP Business One® for the same company that you have been working with so far. Muesli AG has decided to expand its operations to the United States, and a small manufacturing plant called Muesli America was recently opened in the state of New York. Even though the German headquarters uses SAP ECC®, it was decided that due to budget and time restraints, Muesli America will use a software application with a smaller footprint that can be rapidly installed.

SAP Business One® architecture is composed of two layers. The client software consists of the graphical user interface and business object classes that connect to the database. SAP Business One® requires a Microsoft Windows environment to run. The server software consists of the system database.

As opposed to SAP ECC®, the highest hierarchical entity in the SAP Business One® database is the company. As a result, there is no client entity like in the SAP ECC® environment. Each company is a new sub-database in the server database. Data present in one company is not viewable while connected to another.

The main differences between SAP ECC® and SAP Business One® lie in flexibility. SAP ECC® has an almost infinite set of configuration options and can adapt to serve almost any kind of business. SAP Business One® is much less flexible, but this lack of flexibility is compensated for by the ease of configuration and use, as you will see in the next chapters. SAP Business One® works perfectly for small discrete manufacturing organizations such as Muesli America.

SAP Business One® contains 15 core modules:

- Administration Module, where configuration is performed for all the other modules.
- Financials Module, where various accounting and financial activities are conducted.
- Sales Opportunities Module, where existing customers and potential accounts are structured.
- Sales Module, where orders are entered, shipped, and invoiced
- Purchasing Module, where purchase orders are issued and goods are received into inventory.

- Business Partners Module, where Business Partners (customers, vendors, and leads) are contacted and maintained.
- Banking Module, where cash is received and paid out.
- Inventory Module, where Inventory is valued and managed.
- Production Module, where the bill of materials is defined and manufacturing is tracked.
- MRP Module, where purchasing and production planning takes place.
- Service Module, where after-service products are managed.
- Human Resources Module, where employee information is kept.
- Reports Module, where system-default and user-defined reports are generated (as on-screen tables, printouts or Excel files: Print Layout Designer, XL Reporter and Crystal Reports 2008 Basic. (One free license per customer)
- E-commerce, allowing customers to buy and sell online to consumers or other businesses.
- WebCRM. Allows employees to manage customer support cases, salespeople to manage prospects, and customers to submit cases all via a web browser client.

The layout of the following chapters is similar to those in the previous part. Notice that boxes with navigation information on the left-hand side will be in yellow to indicate when we refer to the SAP Business One® menu. There are no transaction codes in SAP Business One® as navigation is entirely menu-based. On the top of the box, you have the main menu section. You have to select the menu path in the middle section to access the desired transaction.

CHAPTER 15 - CONFIGURING MUESLI AMERICA

In this chapter, we describe how to configure SAP Business One® to support the activities of Muesli AG's american subsidiary. The company configuration is done in four steps : 1) creation of the company, 2) configuration of the financial processes, 3) configuration of the inventory management and 4) configuration of the purchasing and sales processes.

All the other configuration steps you executed in the preceeding chapters are set by default in SAP Business One®. This is especially true for the production module, which is not even present in the Administration menu. Most of the production module's behavior will be determined by the master data. Other options that are already configured by default just need to be activated. This is usually done by checking the option in the desired master data. For example, the batch management is simply activated in the item master data whereas in SAP ECC®, the batch management best practice would need at least two hours of configuration¹. Another example is the MRP, which recalculates everything in the planning horizon specified by the user. In SAP ECC® you have a vast choice of options to run it according to your needs.

The following subchapters detail the four steps you will need to successfully create and configure your Muesli America company.

15.1 Creating the company

The first configuration step will be to create a new company in the application. The company must be configured to support the following business rules:

- Muesli America is located in New York, NY.
- Muesli America uses the american dollars for currency.
- Muesli America's employees will be using the application in English.
- Muesli America will use the US chart of accounts

When you first launch SAP Business One®, a log-in window will appear. You can click on  in order to access the company selection and creation screen. You can also access this screen while logged into an existing company by going in the Administration section of the main menu and clicking Choose Company.

¹ Batch Management Best Practice : http://help.sap.com/bp_bl603/BBLibrary/HTML/117_EN_US.htm

Administration

Choose Company

1501

Creating the company			
First screen	Choose Company window		
	Task	Navigation	Result
	Create a company		The Create New Company window appears.
Second screen	Create New Company window		
	Fields	Data to input	
	Company Name	Muesli America \$\$	
	Database Name	\$\$	
	Copy User-Defined Fields and Tables	Not Checked	
	Copy User-Defined Objects	Not Checked	
	Local Setting	USA	
	Chart of Accounts	US_CoA	
	Base Language	English (United States)	
	Task	Navigation	Result
Define the posting periods		The Posting Period window appears.	

Third screen	Posting Period window	
	Fields	Data to input
	Category	Current year
	Period name	Current year
	Sub-Periods	Months
	No. of Periods	12
	Task	Result
	Click <input type="button" value="Continue"/>	You return to the Create New Company window.

- Then, click . The database for your new company is being created, it can take up to 5 minutes.

In this step, we enter the basic company details such as the company name and the address.

Administration
System Initialization / Company Details
1502

Defining basic company details	
Company Details window, General tab	
Fields	Data to input
Company Name	Muesli America \$
City	New York
State	New York
Country	USA

- Then, click .

15.2 Configuration of the financial processes

We now move to the initial configuration of financial accounting for Muesli America. The following list describes the underlying business rules of the following financial configuration:

- The opening cash account of Muesli America is 2,000,000.00 USD.
- For simplicity reasons, the company is not subject to taxes.
- The company's house bank account is held at Bank of America.

Administration		
System Initialization / Opening Balances / G/L Accounts Opening Balance		
1503		
Generating the opening balances		
First screen	G/L Accounts Opening Balances window	
	Tasks	Results
	Uncheck all option but Assets and click 	A new window appears.
Second screen	G/L Accounts Opening Balances window	
	Fields	Data to Input
	Opening Balance Account	25500000-01-001-01 - <i>Other Liabilities - Long Term (HO, USA, GA)</i>
	Cash at Bank - Checking / OB(LC)	2000000 (<i>second line</i>)

- Then, click .

In order to be able to create marketing documents (Sales and purchases) we need to assign tax codes to our products. For the USA localization these are not defined so we need to create them. Since Muesli America is not subject to taxes, we will define a tax code with a 0% rate.

In many countries, tax rates are not the same from region to region. So we first need to define a Tax Jurisdiction type.

Administration
Setup / Financials / Tax / Sales Tax Jurisdiction Types
1504

Defining Tax Jurisdiction Types	
Sales Tax Jurisdiction Types - Setup window	
Fields	Data to input
Name	No Tax

- Then, click .

Even if our tax rates are fixed at 0%, the system needs us to assign a G/L account to the tax expenses.

Administration
Setup / Financials / Tax / Sales Tax Jurisdictions
1505

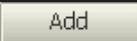
Assigning G/L tax accounts	
Sales Tax Jurisdictions - Setup window	
Tasks	Navigation
Select the No Tax Jurisdiction and click <input type="button" value="OK"/> .	The No Tax Rates - Setup window appears.
Fields	Data to input
Code	NOTAX
Name	No Tax
Sales Tax Account	22200000-01-001-01 - Sales Tax Accrual (HO, USA, GA)
Purchasing Tax Account	66000000-01-001-01 - State Sales Tax Expense (HO, USA, GA)
Use Tax Account	22330000-01-001-01 - Use Tax Accrual - State (HO, USA, GA)
Tasks	Navigation
Click on "Tax Definition"	
Fields	Data to input
Effective From	Today's date

- Then, click .

We can now define the tax code. It will be named NOTAX and its rate is 0%.

Administration
Setup / Financials / Tax / Sales Tax Codes
1506

Defining Tax Codes	
Sales Tax Codes - Setup window	
Fields	Data to input
Code	NOTAX
Name	No Tax
Type	No Tax
Code	Use  to access the list of Sales Tax Code Authorities and select NOTAX.

- Then, click .

The company's house bank account is held at the Bank of America's main branch in New York. We need to define the bank and the account information in the system. Those informations are crucial to allow inbound and outbound payments.

First off, we define the banks that will be used in the system, we only need one :

Administration
Setup / Banking / Banks
1507

Defining Banks	
Banks - Setup window	
Fields	Data to input
Country Code	USA
Bank Code	10000
Bank Name	Bank Of America

- Then, click .

Now that the needed bank has been entered in the system, we have to define Muesli America's house bank account. The account number is 113300.

Administration
Setup / Banking / House Bank Accounts
1508

Defining House Bank Accounts	
House Bank Accounts - Setup window	
Fields	Data to input
Bank Code	10000
Branch	Main
Account No.	113300
G/L Account	11200000-01-001-01 - <i>Cash at Bank - Checking (HO, USA, GA)</i>

- Then, click .

A company may have several bank accounts, so one of the bank accounts must be defined as default :

Administration
System Initialization / Company Details
1509

Defining a House Bank Account as Default	
Company Details window, Basic Initialization tab	
Fields	Data to input
Default Bank Country	USA
Default Bank	Bank Of America
Default Account No.	113300

- Then, click .

15.3 Configuration of the inventory management

Muesli America will manage its goods the same way its German headquarters do. In SAP Business One®, there is no Plant or Storage Location. Warehouses play those roles. The following business rules must be applied in order to correctly manage goods in the Muesli company :

- There are two warehouses : 02 (Finished goods) and 88 (Raw materials)
- They are both located in New York
- The Tax Code to be assigned to them is NOTAX (The one we created earlier)

Only a few informations are needed to create a warehouse. The Tax Code field is particularly important, it determines the default tax code for purchase documents. Leaving this field empty will force the user to input the tax code by hand for each product on each purchase document.

Administration
Setup / Inventory / Warehouses
1510

Creating the Warehouses		
Warehouses - Setup window		
Fields	Data to input	
Warehouse Code	02	88
Warehouse Name	Finished goods	Raw materials
Tax Code	NOTAX	
City	New York	
Country	USA	
State	NY	

- Then, click .

You might have noticed that there is a warehouse present by default in the system : 01 - General Warehouse. We will need to delete it because it will stay the default warehouse for production since it's the SAP Business One® default warehouse. Deleting it will make 02 - Finished goods warehouse the default one.

First we need to assign the new default warehouse. For that we need to go to Administration in the main menu, then System Initialization, and General Settings. We also don't want items to be automatically assigned to all warehouses because we will only add finished materials to the warehouse 02 and raw materials to the warehouse 88.

Go to the Inventory tab and do the following:

Administration
System Initialization / General Settings
1511

Setting the default warehouse	
General Settings - Inventory tab	
Fields	Data to input
Default Warehouse	Finished goods
Auto. Add All Warehouses to New Items	Uncheck

- Then, click .

Now that our Finished goods warehouse is set to default, we can delete the other one.

Administration
Setup / Inventory / Warehouses
1512

Deleting the SAP Business One® default Warehouse		
Warehouses - Setup window		
Tasks	Navigation	Result
Go to the Warehouse code 01		The warehouse record appears.
Delete it	Right-click on an empty space of the window, then select Remove	The warehouse is deleted.

15.4 Configuration of the purchasing and sales processes

This last configuration step specifies the system's behavior during the purchasing and the sales processes. The following business rules must be configured:

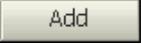
- The company pays its vendors by check.
- The customers pay by bank transfer.
- The payment terms for both our vendors and customers is net 30 days.
- As in Germany, the company has three categories of customers : hypermarkets, grocery chains, independent groceries.
- For compatibility purposes with the mother company, the base units of measure are the kilogram for weight and the centimeter for length.
- The system must block any transactions that would generate negative inventory values.
- For testing purpose, we want to allow future posting dates.

AdministrationSetup / Banking /
Payment Methods**1513****Defining Payment Methods**

Payment Methods - Setup window

Fields	Data to input	
Payment Method Code	IncBT	OutCheck
Description	Incoming Bank Transfer	Outgoing Check
Payment Type	Incoming	Outgoing
Payment Means	Bank Transfer	Check
House Bank Country	USA	USA
House Bank Bank	Bank Of America	Bank Of America
House Bank Account	113300	113300
File Format	Click  and select SAP®BPXXIPBOE_ OBOE	N/A

- Then, click

**Administration**Setup / Banking /
Payment Run Defaults**1514****Enabling Payment Methods**

Payment Run Defaults window		
	Tasks	Result
First screen	Check Payment Methods	
		A new window will appear.
Payment Run Payment Methods selection window		
Second screen	Tasks	
	Check both Payment Methods	

- Click

then click 

The company operations involve buying raw materials from vendors and selling our finished products to the customers. In order to be able to pay and receive payment, we need to define payment terms. We use the Net30 payment term type for both our vendors and customers.

Administration
Setup / Business Partners / Payment Terms
1515

Defining payment terms	
Payment terms - Setup window	
Fields	Data to input
Payment Terms Code	Net30
Start From	+30 Days

- Then, click .

Now that we have defined the payment methods and payment term, we will assign them as default for the purchasing and sales documents. We also need to change the default units of measure for length and weight since we want to keep the German standards.

Administration
System Initialization / General Settings
1516

Setting the company's general settings		
BP tab	Fields	Data to input
	Default Pmt Term for Customer	Net30
	Default Pmt Term for Vendor	Net30
	Default Payment Method for Customer	IncBT
	Default Payment Method for Vendor	OutCheck
Display tab	Fields	Data to input
	Default Length UoM	Centimeter
	Default Weight UoM	Kilogram

- Then, click .

During a goods issue (For production or sales), we want the system to block the transactions that would result in negative inventory values. We also want to allow future posting dates.

AdministrationSystem Initialization /
Document Settings**1517****Defining document settings**

Document Settings window

Fields**Data to input**

Block Negative Inventory

Check

Allow Future Posting Date

Check

- Then, click on .

Configuration of Muesli America is now completed! In the next chapters, we will define the master data necessary to run our unit tests.

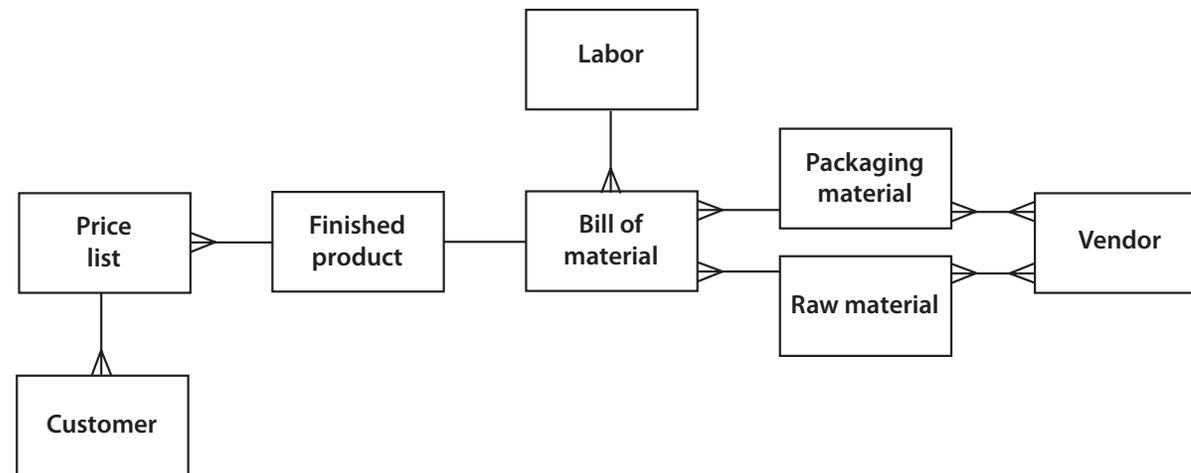
15.5 Configuration steps check list

Step	Name	Result	Completed
1501	Creating the company		
1502	Defining basic company details		
1503	Generating the opening balances		
1504	Defining Tax Jurisdiction Types		
1505	Assigning G/L tax accounts		
1506	Defining Tax codes		
1507	Defining Banks		
1508	Defining House Bank Accounts		
1509	Defining a House Bank Accounts as default		
1510	Creating the Warehouses		
1511	Setting the default warehouse		
1512	Deleting the SAP Business One default warehouse		
1513	Defining Payment Methods		
1514	Enabling Payment Methods		
1515	Defining payment terms		
1516	Setting the company's general settings		
1517	Defining document settings		

CHAPTER 16 - CREATING MASTER DATA IN SAP BUSINESS ONE®

The SAP Business One® master data structure differs from SAP ECC® in a few points. Routings and work centers do not exist in SAP Business One® and are replaced by the notion of Labor, which is created like a non-stock item and added to the BOM. Info records do not exist in SAP Business One® either, they are replaced by a preferred vendor (Field Preferred Vendor) in the raw material master data's purchasing tab. The following figure presents the conceptual data model of the main master data in SAP Business One®.

Figure 16.1: Data model of the main master data used in SAP Business One®



The following table presents a complete list of the data that needs to be created in order to test the configuration done in the previous chapter. Remember that \$ corresponds to the letter of your plant.

Master data	Alphanumeric codes					
5 business partners	V\$1	V\$2	C\$1	C\$2	C\$3	
6 finished products	Y\$-F01	Y\$-F02	Y\$-F03	Y\$-F04	Y\$-F05	Y\$-F06
6 raw materials	Y\$-R01	Y\$-R02	Y\$-R03	Y\$-R04	Y\$-R05	Y\$-R06
4 packaging materials	Y\$-P01	Y\$-P02	Y\$-P03	Y\$-P04		
2 labor records	Y\$-L01	Y\$-L02				
6 bill of materials	Y\$-F01	Y\$-F02	Y\$-F03	Y\$-F04	Y\$-F05	Y\$-F06

The creation of the master data can be shared among the different team partners. Be careful not to create the same data twice! Each team needs to create the master data for finished products, raw materials, labor, suppliers and customers as well as production and cost.

16.1 Price Lists

In SAP Business One® there is no organizational entity that can be assimilated to distribution channels and sales organizations as we have in SAP ECC®. Still, we want Muesli AMERICA to function as its German headquarters with its three distribution channels.

SAP Business One® enables us to create price lists. We create them first because they will be used during the creation of the items and business partners master data. Each item is automatically extended to all price lists. During the creation of items master data, we can then assign a price for the item in each price list.

During the customer master data creation, we will be able to define a default price list so that customers that fall into the hypermarkets category, for example, will be invoiced with the prices defined in the Hypermarkets price list. The same assignment must be made during the creation of vendor master data.

Here, we will create our three price lists to be used later. We will also create a fourth price list to be used with vendors for the purchasing prices of raw materials.

There are already default price lists present in SAP Business One®. We simply need to rename the first four.

Inventory
Price Lists / Price Lists
1601

Defining price lists	
Price Lists window	
Fields	Data to input
Price List 01	Hypermarkets
Price List 02	Grocery Chains
Price List 03	Indep. Grocers
Price List 04	Purchasing

- Then, click

16.2 Business partners

Business partners represent both vendors and customers. A business partner can also be classified as a lead, which represent a possible future business partner. Leads can be later modified to be classified as vendors or customers.

16.2.1 Vendors

The Business Partner master data for the Vendors must comply to the following business rules :

- There are two vendors : FoodBroker US Inc. and Continental Printing America Co.
- Their headquarters are located in New York, we send our payments to these addresses.

When the Business Partner Master Data window is open, look for the  button on the SAP Business One® tool bar. Click it to create a new Business Partner.

Business Partners
Business Partner Master Data
1602

Tabs	Fields	Vendor 1	Vendor 2
<i>Header</i>	Code	V\$1	V\$2
	BP Type	Vendor	
	Name	FoodBroker US Inc.	Continental Printing America Co.
<i>General tab</i>	You have no data to enter here.		
<i>Contact Persons tab</i>	You have no data to enter here.		
<i>Addresses tab</i>	Pay To Address Name	V\$1 Pay	V\$2 Pay
	Pay To City	New York	
	Pay To State	New York	
	Pay To Country	USA	
<i>Payment Terms tab</i>	Price List	Purchasing	
	Bank Country	Click 	
	Bank Code	Click  and select bank 10000, click <input type="button" value="Choose"/>	
	Account No.	V\$1000	V\$2000
	Branch No.	Main	
	Then click <input type="button" value="Update"/> and <input type="button" value="OK"/> .		

- Then, click .

16.2.2 Customers

Muesli America has a vast list of customers. For convenience purpose, we will only create 3 records in order to run unit tests on our three of customer categories. Here are the specifications to follow :

- There are three types of customers : Hypermarkets, Grocery Chains, Independent Grocers.
- Each customer category uses a different price list
- Muesli AMERICA is not subject to taxes.

When the Business Partner Master Data window is open, look for the  button on the SAP Business One® tool bar. Click it to create a new Business Partner.

Business Partners
Business Partner Master Data
1603

Tabs	Fields	Hypermarket	Grocery Chain	Independent Grocer
<i>Header</i>	Code	C\$1	C\$2	C\$3
	BP Type	Customer		
	Name	Hypermarket	Grocery	Indep. Grocer
<i>General tab</i>	You have no data to enter here.			
<i>Contact Persons tab</i>	You have no data to enter here.			
<i>Addresses tab</i>	Bill To Address Name	C\$1 Bill	C\$2 Bill	C\$3 Bill
	Bill To City	New York		
	Bill To State	New York		
	Bill To Country	USA		
	Ship To Address Name	C\$1 Ship	C\$2 Ship	C\$3 Ship
	Ship To City	New York		
	Ship To State	New York		
	Ship To Country	USA		
	Ship To Tax Code	NOTAX		
<i>Payment Terms tab</i>	Price List	Hypermarkets	Grocery Chains	Indep. Grocers
	Bank Country	Click 		
	Bank Code	Click  and select bank 10000, click <input type="button" value="Choose"/>		
	Account No.	C\$1000	C\$2000	C\$3000
	Branch No.	Main		
	Then click <input type="button" value="Update"/> and <input type="button" value="OK"/> .			

- Then, click .

16.3 Items Master Data

16.3.1 Finished products

Each firm has to define its finished products. There are specific business rules to be respected when creating the finished products master data :

- The item numbers must respect this format : Y\$-F##.
- The items must be visible in the inventory lists.
- The items are planned via the MRP and produced in-house by batches of 25,000 units.
- The unit of measure is PC (Pieces). Products are moved by pallets (1,000 PC per pallet).
- The valuation method is Moving Average.

When the Item Master Data window is open, look for the  button on the SAP Business One® tool bar. Click it to create a new item.

Inventory
Item Master Data
1604

Tabs	Fields	01	02	03	04	05	06
<i>Header</i>	Item Number	Y\$-F01	Y\$-F02	Y\$-F03	Y\$-F04	Y\$-F05	Y\$-F06
	Description	Nut Muesli 1.0 kg.	Blueberry Muesli 1.0 kg.	Strawberry Muesli 1.0 kg.	Raisin Muesli 1.0 kg.	Original Muesli 1.0 kg.	Mixed Fruit Muesli 1.0 kg.
	Item Type	Items					
	Price List	<i>Here, repeat the Unit Price (next field) setting for the 3 price lists.</i>					
	Unit Price	2.48	3.09	3.09	2.50	2.65	2.89
	Inventory Item	X					
	Sales Item	X					
	Purchased Item	Uncheck					
<i>Sales Data tab</i>	Sales UoM	PC					
	Weight	1 kg					
	Packaging UoM (Sales)	Pallet					
	Quantity per Packaging UoM	1000					
<i>Inventory Data tab</i>	Inventory UoM	PC					
	Valuation Method	Moving Average					
	Go to the warehouse list and click  . Select the Finished goods warehouse and click <input type="button" value="Choose"/> .						
	Select the warehouse row that just appeared and then click <input type="button" value="Set Default Whse"/>						
<i>Planning Data tab</i>	Planning Method	MRP					
	Procurement Method	Make					
	Order Multiple	25000					

- Then, click .

16.3.2 Raw materials

Each firm has to define all its raw materials. All teams need to create six raw materials: Y\$-R01, Y\$-R02, Y\$-R03, Y\$-R04, Y\$-R05 and Y\$-R06, where \$ corresponds to the letter of your company.

The same raw materials will be used for different finished products. Therefore, the creation of these 6 raw materials needs to be shared between the members of the team. You also have to create 4 material masters for the packaging material. The following business rules must be respected :

- The item numbers must respect this format : Y\$-R## for raw materials and Y\$-P## for packaging materials.
- The items must be visible in the inventory lists.
- The items are planned via the MRP and are bought.
- The unit of measure is kg (Kilogram).
- The valuation method is Moving Average.
- The vendor for fruits and cereals is FoodBroker Inc. and the vendor for packaging goods is Continental Printing Co.

When the Item Master Data window is open, look for the  button on the SAP Business One® tool bar. Click it to create a new item.

Inventory
Item Master Data
1605

Tabs	Fields	01	02	03	04	05	06
<i>Header</i>	Item Number	Y\$-R01	Y\$-R02	Y\$-R03	Y\$-R04	Y\$-R05	Y\$-R06
	Description	Nuts	Blueberries	Strawberries	Raisins	Wheat	Oats
	Item Type	Items					
	Price List	Purchasing					
	Unit Price	1.82	4.00	4.02	1.07	0.99	0.92
	Inventory Item	X					
	Sales Item	Uncheck					
	Purchased Item	X					
<i>Purchasing Data tab</i>	Preferred vendor	V\$1					
	Purchasing UoM	kg					
<i>Inventory Data tab</i>	Inventory UoM	kg					
	Valuation Method	Moving Average					
	Go to the warehouse list and click  . Select the Raw materials warehouse and click <input type="button" value="Choose"/> .						
	Select the warehouse row that just appeared and then click <input type="button" value="Set Default Whse"/> .						
<i>Planning Data tab</i>	Planning Method	MRP					
	Procurement Method	Buy					
	Lead Time	1					

- Then, click .

16.3.3 Packaging materials

After creating all of the ingredients, you will have to create four other raw materials: small format box (0.5 kg), large format box (1 kg), a small format plastic bag and a large format plastic bag.

When the Item Master Data window is open, look for the  button on the SAP Business One® tool bar. Click it to create a new item.

Inventory
Item Master Data
1606

Tabs	Fields	01	02	03	04
<i>Header</i>	Item Number	Y\$-P01	Y\$-P02	Y\$-P03	Y\$-P04
	Description	Large Box 1kg	Large Plastic Bag 1kg	Small Box 0.5kg	Small Plastic Bag 0.5kg
	Item Type	Items			
	Price List	Purchasing			
	Unit Price	0.28	0.12	0.21	0.09
	Inventory Item	X			
	Sales Item	Uncheck			
	Purchased Item	X			
<i>Purchasing Data tab</i>	Preferred vendor	V\$2			
	Purchasing UoM	PC			
<i>Inventory Data tab</i>	Inventory UoM	PC			
	Valuation Method	Moving Average			
	Go to the warehouse list and click  . Select the Raw materials warehouse and click <input type="button" value="Choose"/>				
	Select the warehouse row that just appeared and then click <input type="button" value="Set Default Whse"/>				
<i>Planning Data tab</i>	Planning Method	MRP			
	Procurement Method	Buy			
	Lead Time	1			

- Then, click

16.4 Labor

In SAP Business One®, as opposed to SAP ECC®, there is no concept of routing and manufacturing activities. In order to reflect machine time or workforce, SAP Business One® uses labor, which is created in the item master data.

This item type has very restricted options. It can be used to represent workforce to be included in a BOM or as a service to be directly sold. In the BOM for our finished products, one unit of each labor items will be included.

We use the same recipe as in Muesli AG, the following business rules must be applied :

- Two labor items must be created : Cereal Mixing and Packaging.
- Valuation Method is standard, item cost must be specified.

When the Item Master Data window is open, look for the  button on the SAP Business One® tool bar. Click it to create a new item.

Inventory
Item Master Data
1607

Tabs	Fields	01	02
<i>Header</i>	Item Number	Y\$-L01	Y\$-L02
	Description	Cereal Mixing	Packaging
	Item Type	Labor	
	Price List	Purchasing	
	Unit Price	0.03	0.04
	Sales Item	Uncheck	
<i>Inventory Data tab</i>	Valuation Method	Standard	
	Item Cost	0.03	0.04
	Go to the warehouse list and click  . Select the Finished goods warehouse and click <input type="button" value="Choose"/>		
<i>Planning Data tab</i>	Planning Method	None	

- Then, click .

16.5 Bill of Material

Muesli America will sell the same products as Muesli AG, so you need to follow the same recipes as in Chapter 1.

When the Bill of Materials window is open, look for the  button on the SAP Business One® tool bar. Click it to create a new BOM.

Production
Bill Of Material
1608

Fields	Data to input					
<i>Product No.</i>	Y\$-F01	Y\$-F02	Y\$-F03	Y\$-F04	Y\$-F05	Y\$-F06
<i>BOM Type</i>	Production					

In the items list, enter the following information :

Fields		Y\$-F01	Y\$-F02	Y\$-F03	Y\$-F04	Y\$-F05	Y\$-F06
Quantity	Y\$-R01	0.200					0.100
	Y\$-R02		0.200				0.050
	Y\$-R03			0.200			0.100
	Y\$-R04				0.200		0.050
	Y\$-R05	0.400	0.400	0.400	0.400	0.500	0.350
	Y\$-R06	0.400	0.400	0.400	0.400	0.500	0.350
	Y\$-P01	1	1	1	1	1	1
	Y\$-P02	1	1	1	1	1	1
	Y\$-P03						
	Y\$-P04						
	Y\$-L01	1	1	1	1	1	1
	Y\$-L02	1	1	1	1	1	1
Price List		Purchasing					

- Then, click .

CHAPTER 17 – OPERATIONAL BUSINESS PROCESSES

As a make-to-stock manufacturing company, there is a set of processes that must be performed to run your business. There are four main processes that are presented here: (i) the planning process, (ii) the procurement process, (iii) the production process, and (iv) the sales process (See figure 17.1).

Each process can be decomposed into transactions. In SAP Business One®, a transaction corresponds to an operation that interacts with the centralized data of the ERP system. To complete the four processes mentioned above, a total of 13 transactions must be performed.

Most of the transactions involved in these processes are operational in nature, such as purchasing materials or delivering finished products. We will also cover some financial transactions that are associated with these integrated business processes.

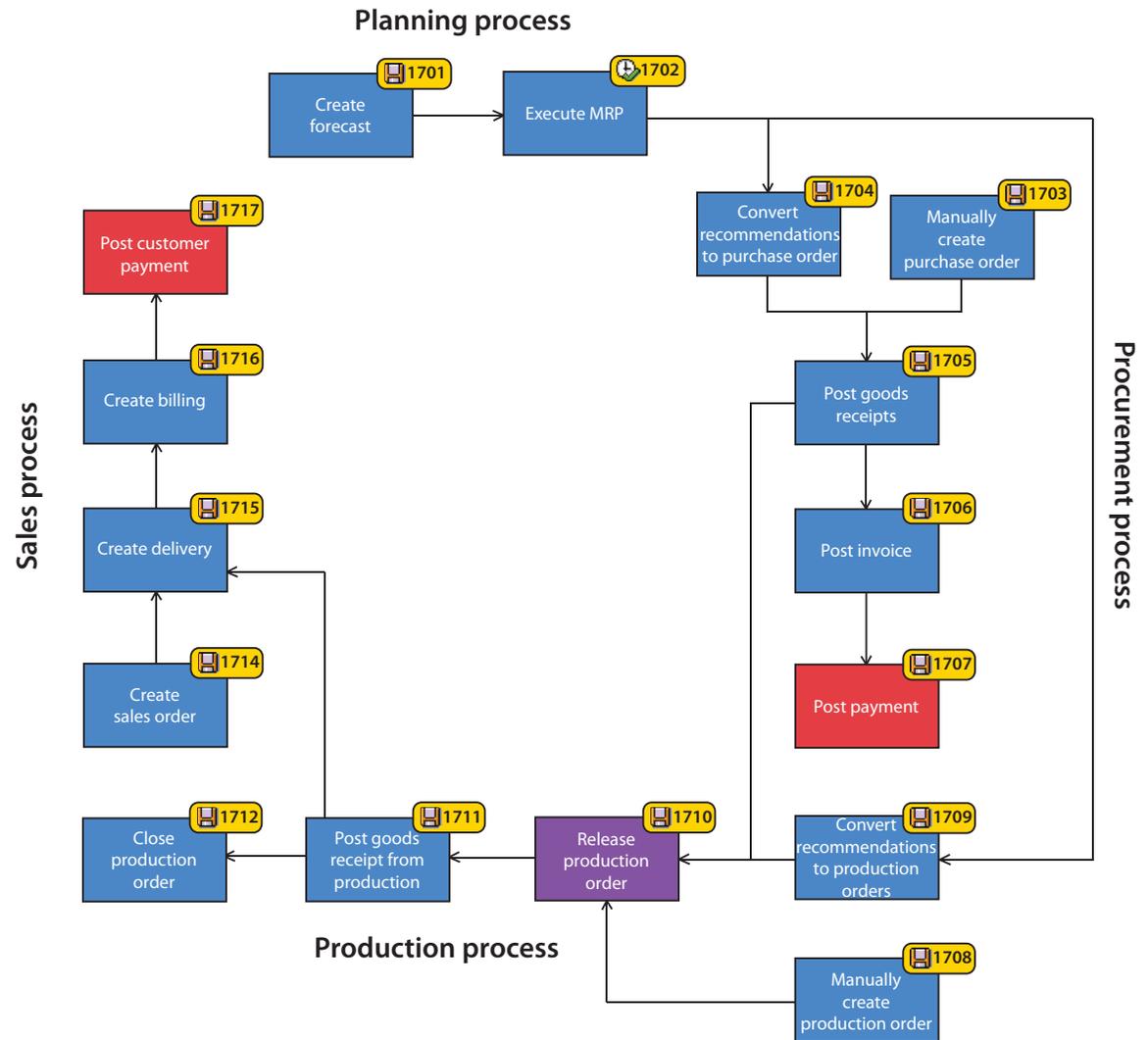


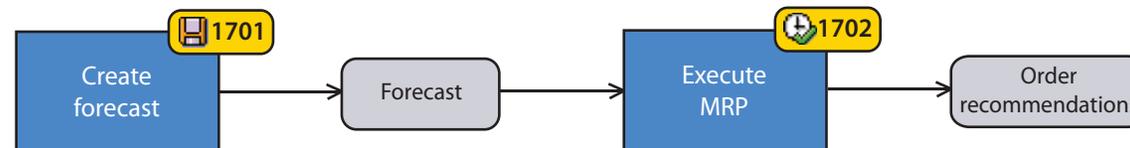
Figure 17.1: The operational processes

In the same spirit as in SAP ECC®, SAP Business One® is an integrated system that supports all these processes. For any business process, each transaction is related in some way to one or many other building blocks of the system. The idea behind an integrated system is to use all existing information to avoid data re-entry, and to create and store new data for future use in other transactions. A transaction may require using information stored in the organizational elements or the master data; it also creates new transactional and accounting documents.

17.1 Planning process

Before we can produce finished products, we need to procure the raw materials in the required quantity in time for production. The planning process facilitates the accurate calculation of raw material requirements. First, we create a forecast for each finished product (the quantity needed to fulfill expected sales). Forecasts are used as an input to the MRP (material requirement planning) process. The MRP process calculates all of the raw materials required for the production process using the BOM (bill of material) and the forecast. The MRP process will create order recommendations, which are used to create purchase orders and production orders. The forecast is saved as a single entry into the SAP Business One® database. You can produce more than one forecast with different quantities and dates and choose which one to use for the MRP run.

Figure 17.2 The planning process



Creating the forecast		
Forecasts Window		
Task	Navigation	Result
Create a new forecast		The fields become enabled.
Or access an existing one		You navigate through the existing forecasts.
Fields	Data to input	
Forecast Code	\$\$forecast	
Forecast Name	\$\$forecast	
Start Date	1st of current month	
End Date	Last day of current year	
Item No.	Enter the Item Number of the items for which you want to do the forecast.	
Months columns	Enter the forecasted quantity.	
Task	Navigation	Result
Save the forecast		Your forecast is saved. Report your results to the unit test section at the end of the chapter.

The MRP Wizard is a way to create MRP scenarios quickly and easily. The wizard guides you step-by-step through the MRP scenario definition. The MRP uses the material needs (Forecast, sales orders, minimum inventory level) and the BOM to calculate the raw material requirements. If you wish to produce 1000 large boxes of muesli, each containing 570 grams of wheat and 430 grams of oats, then you must acquire 570 kilos of wheat, 430 kilos of oats, 1000 large bags and 1000 large boxes before production can start. The MRP process calculates these requirements for all components in the BOM. The system also takes into consideration the stock of material that you already have. Hence, if you already have 400 kilos of wheat, only 170 extra kilos will be put in the purchase requisition.

Execute MRP		
First screen	Tasks	Results
	Create a new scenario	Scenario creation fields appear
	Fields	Data to input
	Scenario Name	Enter a name of your choice for the MRP scenario
	Description	Enter a description
	Tasks	Results
	Or Select an existing scenario	Scenario list appears
Click 	The second screen appears	
Second screen	Fields	Data to input
	Start Date	Enter the date you want your MRP calculations to begin at.
	End Date	Enter the date you want your MRP calculations to finish at.
	Items code	Enter the item number range you want the MRP calculations to limit to. Leave empty to consider all items.
	Tasks	Results
	Click 	The third screen appears.

	Fields	Data to input
Third screen	Existing Inventory	Check it if you want the MRP calculations to consider the existing inventory.
	In Warehouses	Select in which warehouses you want inventory to be considered.
	Purchase Orders	Check it if you want the MRP calculations to consider open purchase orders.
	Sales Orders	Check it if you want the MRP calculations to consider open sales orders.
	Production Orders	Check it if you want the MRP calculations to consider open production orders.
	Min. Inventory Level	Check it if you want to refill inventory if the stocks are below the minimum level.
	Forecast	Select the forecast you wish to use for the MRP run.
	Tasks	Results
	Click 	MRP calculations are executed and the results appear.
Fourth screen	Tasks	Results
	Click 	The procurement recommendations are saved. (You can see the results of the MRP run and view the procurement recommendations). Report your results to the unit test section at the end of the chapter.

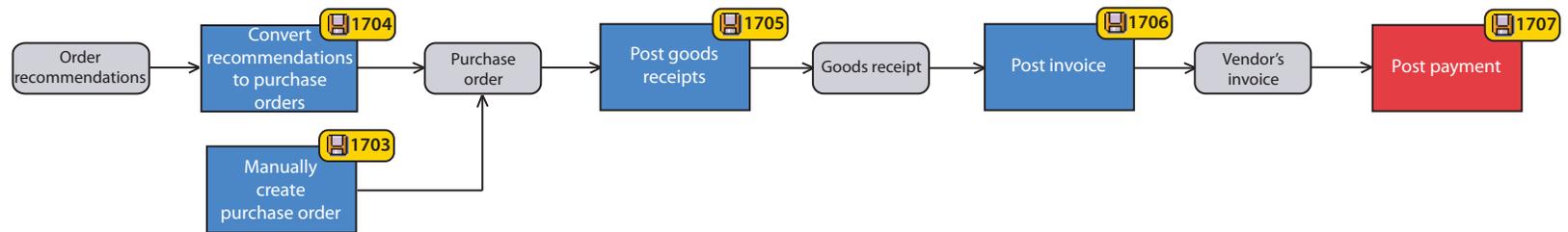
- Then, click .

17.2 Procurement process

The procurement process is typically performed by the purchasing department. For your firm, it includes four transactions: create purchase order, post goods receipt, post invoice, and post payment. In other words, the procurement process manages the ordering, receiving, and payment for the raw and packaging materials (see figure 4.3).

The MRP planning process generates a list called “Order recommendations”. It contains all the documents necessary to create purchase orders. If you assigned a preferred vendor to the item master data for the raw materials, the order recommendations will automatically include it.

Figure 17.3 The procurement process



Note that it is possible to order raw materials without running the MRP planning process, i.e. you can create a purchase order manually. To do this, go to Purchasing - A/P in the main menu, and select Purchase Order. You can use this technique to stock up raw materials when the prices are lowest. Follow the following steps to create a purchase order manually

Purchasing - A/P
Purchase Order
1703

Creating a purchase order manually	
Purchase Order window	
Fields	Data to input
Vendor	Enter the vendor code or select  to access the vendor list.
Item No.	Enter the desired item numbers.
Quantity	Enter the desired quantity to order.

- Then, click on . Report your results to the unit test section at the end of the chapter.

A purchase order constitutes an official request to the supplier (vendor) for the purchase of a specific quantity of material. Using the Order Recommendations automatically consolidates the purchase orders for each vendor. In other words, if more than one recommendation was assigned to the same vendor, only one purchase order with multiple items will be created.

MRP
Order Recommendation
1704

Generating automatically consolidated purchase order from order recommendations							
First screen	Order Recommendation - Selection window						
	<table border="1"> <thead> <tr> <th>Fields</th> <th>Data to input</th> </tr> </thead> <tbody> <tr> <td>Order type</td> <td>Purchase Orders.</td> </tr> <tr> <td>Scenario</td> <td>Select the MRP scenario.</td> </tr> </tbody> </table>	Fields	Data to input	Order type	Purchase Orders.	Scenario	Select the MRP scenario.
	Fields	Data to input					
	Order type	Purchase Orders.					
	Scenario	Select the MRP scenario.					
<table border="1"> <thead> <tr> <th>Tasks</th> <th>Results</th> </tr> </thead> <tbody> <tr> <td>Click </td> <td>A new window appears.</td> </tr> </tbody> </table>	Tasks	Results	Click 	A new window appears.			
Tasks	Results						
Click 	A new window appears.						
Order Recommendation window							
Second screen	<table border="1"> <thead> <tr> <th>Tasks</th> </tr> </thead> <tbody> <tr> <td>Select the recommendations for which you wish to create purchase orders.</td> </tr> </tbody> </table>	Tasks	Select the recommendations for which you wish to create purchase orders.				
Tasks							
Select the recommendations for which you wish to create purchase orders.							

- Then click . A pop-up will confirm the creation of your purchase order(s).

You can view those purchase orders by going into Purchasing A/P in the main menu, and click Purchase Order. Then use the navigation arrows () in the toolbar.

Report your results to the unit test section at the end of the chapter.

When goods are received, a goods receipt must be completed. The receiving clerk checks the quantity and quality of goods received and documents this in the system. You use the corresponding purchase order in order to verify the quantities received. When you enter a goods receipt, the SAP Business One® system debits the raw material inventory account and credits the GR/IR account in addition to recording the increase in raw material stock levels.

Purchasing - A/P			
Purchase Order			
1705			
Post goods receipt			
First screen	Purchase order window		
	Tasks	Navigation	Results
	Select the purchase order		The purchase order appears
Copy the purchase order as into a Goods Receipt		The Goods Receipt PO window appears with the same data.	
Second screen	Tasks		
	Verify the received quantity		

- Then click

You can access the created goods receipt via the navigation arrows () on the toolbar.

Report your results to the unit test section at the end of the chapter.

The next transaction is posting the vendor's invoice. In this step you are recording the invoice received from the vendor into the system. You use the goods receipt in order to generate the invoice.

This creates an accounts payable in the system. When you post an invoice, the SAP Business One® system credits an account payable to the vendor and debits the GR/IR account.

Purchasing - A/P
Goods Receipt PO
1706

Post vendor's invoice			
First screen	Goods Receipt PO window		
	Tasks	Navigation	Results
	Select the goods receipt		The goods receipt appears.
Second screen	Copy the goods receipt into an A/P Invoice		The A/P Invoice window appears with the same data.
	Tasks	Verify the data from the actual invoice and make the necessary changes.	

- Then click

You can access the invoice receipt via the navigation arrows () on the toolbar.

Report your results to the unit test section at the end of the chapter.

Payment is made from the bank account, which clears the accounts payable. You must pay the totality of the amount due. Your cash account will be credited when you complete the transaction. Make sure that you have enough funds to complete the payment. If not, you will have a negative cash account and your banker will be notified.

Banking
Payment Wizard
1707

Payment of the vendor's invoice		
First screen	Tasks	Results
	Start a new payment run	
	Click 	A new screen appears.
Second screen	Fields	Data to input
	Payment type / Outgoing	X
	Payment means / Check	X
	Tasks	Results
	Click 	The third screen appears.
Third screen	Tasks	Results
	Click 	A new window appears (BP Properties)
	Click 	Both vendors appear in the list.
	Click 	The fourth screen appears.

	Fields	Data to input
Fourth screen	Due Date (Not Including Tolerance Days)	Enter the invoices' due dates you want the payment run to include. (Since the payment terms are Net30, you will probably have to select a date a month from now in order to see the invoices you created a few moments ago)
	Tasks	Results
	Click 	The fifth screen appears.
Fifth screen	Tasks	Results
	Select the payment method you wish to pay with.	
	Click 	The sixth screen appears with the recommendation reports (The payments that have been found according to your selection dates and values)
Sixth screen	Tasks	Results
	Select the vendors you wish to pay.	
	Click 	The seventh screen appears.
Seventh screen	Tasks	Results
	Click 	The payment run is executed. Payments are made and accounts payable are cleared.

Payment run reports are available by clicking .

You can leave the payment wizard. Report your results to the unit test section at the end of the chapter.

17.3 Production process

The production process is composed of three transactions. Each of these transactions records the evolution of the production process and the flow of goods within the production system (see figure 17.4).

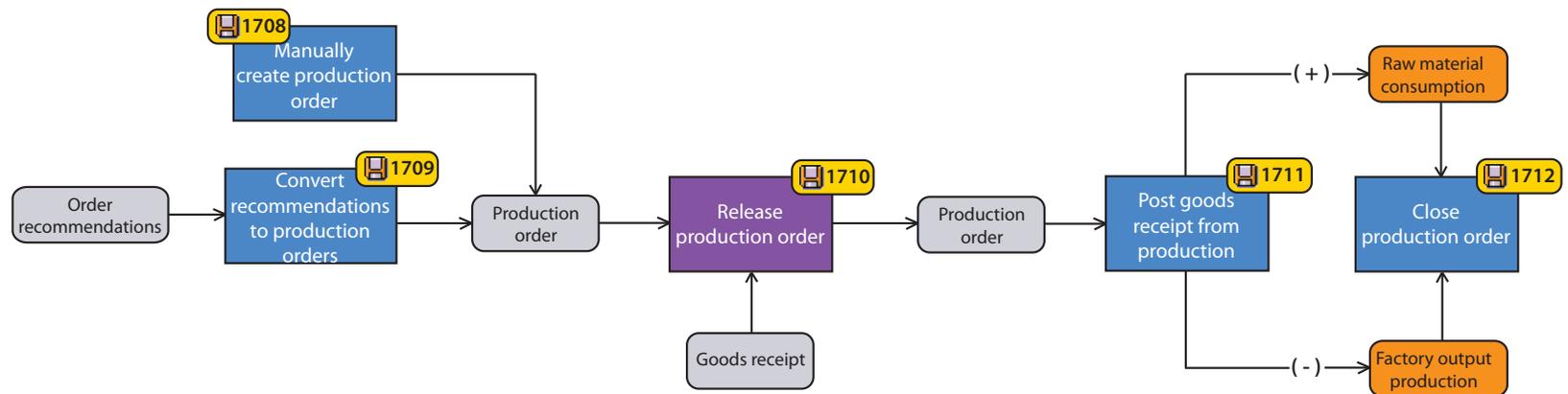
Recall that the MRP run creates production order recommendations if a gap exists between the forecast and existing stock levels and Production plans (other production orders).

Another option is to manually create a production order in the system. This way, you would bypass the step of creating a forecast. To do so, go to Production in the main menu, then Production Order.

A production order must be released before the shop floor personnel can begin production. To release a production order, one must check the availability of raw material required to go into production.

When the verification is successfully completed, the production order can be released. If the production order is not released, you will not be able to process it, i.e. shop floor document cannot be printed, raw materials cannot be issued and production cannot start.

Figure 17.4 The production process



Production
Production Order
1708

Manual creation of a Production order	
Production Order window	
Fields	Data to input
Product No.	\$\$-F%% or select  to choose the product from the list.
Planned Quantity	Enter the desired quantity.
Due Date	Enter the desired due date. (The components tab will update with the right amounts of raw materials needed)
Task	
Verify that we have all the needed raw materials in stock. In the Components tab, the Available column indicates the inventory level after the goods issue of the raw material. If a row has a negative amount in this column, then it means that there is not the sufficient amount of raw material in stock and that this quantity is missing to be able to execute the production order. If so, purchase the necessary raw materials.	

- Then click  to create the production Order. Report your results to the unit test section at the end of the chapter.

You can also create production orders automatically from Order Recommendations created by the MRP run.

MRP
Order Recommendation
1709

Generating production order from order recommendations		
First screen	Order Recommendation - Selection window	
	Fields	Data to input
	Order type	Production Orders.
	Scenario	Select the MRP scenario.
	Tasks	Results
Click 	A new window appears.	

Second screen	Order Recommendation window
	Tasks
	Select the recommendations for which you wish to create production orders.

- Then click . A pop-up will confirm the creation of your production order(s).

You can view those production orders by going into Production in the main menu, and click Production Order. Then use the navigation arrows () in the toolbar. Report your results to the unit test section at the end of the chapter.

In order to enable your shop floor workers to execute the production. You need to change the status of your production order from planned to released.

Production
Production Order
1710

Releasing the production order	
Production Order window	
Fields	Data to input
Status	Released
Tasks	Results
Click 	Your production order is released. Report your results to the unit test section at the end of the chapter.

Now that your production order is released, you need to confirm the production of finished goods in the system. This is done by entering a goods receipt from production in the system.

The confirmation process affects both inventory levels and general ledger accounts. In confirming production, SAP Business One® has been configured for this environment to increase the inventory level of finished goods and reduce the inventory levels of the raw materials based on the production quantity and BOM. In addition, SAP Business One® credits the raw inventory account and debits the raw material consumption in both the financial and the cost accounting modules. In other words, it is the confirmation of the production that triggers the consumption of raw material.

Production
Receipt from Production
1711

Confirm production execution	
Receipt from Production window	
Tasks	Results
Click 	A new window with a list of Released Production Orders appears
Select the production order and click 	The production Order appears in the Receipt from Production window
Click 	The goods are received, confirming the execution. The raw materials are automatically issued. Report your results to the unit test section at the end of the chapter.

Now that the production has been executed, we need to close the production order. In order to close it, do the following :

Production
Production Order
1712

Close Production Order		
Production Order window		
Tasks	Navigation	Results
Select the production order		The production order appears. You can see the quantities of raw materials issued.
Fields	Data to input	
Status	Closed	

Report your results to the unit test section at the end of the chapter.

When this process is completed, you may go to the inventory list. You will see that the stock level has increased.

Inventory
Inventory Reports / Items List
1713

View stock of products	
Items List - Selection Criteria window	
Fields	Data to input
Item No. From / To	\$\$-F%% or leave empty to see all products.
Tasks	Results
Click <input type="button" value="OK"/>	The Items List appears.

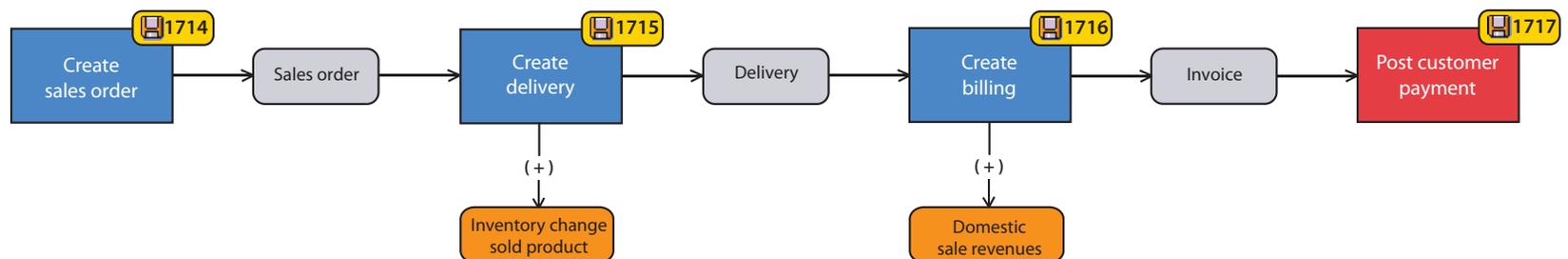
You can see that the inventory level for the finished good has increased. Report your results to the unit test section at the end of the chapter.

17.4 Sales process

The sales process consists of four transactions.

The first transaction creates a sales order. A sales order is a document that represents the formal request for goods or services from a customer. A list of information about the customer and the sale must be entered into the ERP system. A sales order carries all information relevant to the sales process: the product and the quantity requested, the sales conditions, the billing and shipping information of the customer and many other pieces of information required in the subsequent transactions of the sales process.

Figure 17.5 The sales process



The creation of the sales order has no impact on the financial accounts. Even though the sales order document is a legally binding contract, it there is no financial change recorded until confirmation of shipment of the product results in the recording of change in finished goods inventory.

Sales A/R
Sales Order
1714

Create sales order		
	Sales Order window	
Header	Fields	Data to input
	Customer	Enter the customer number or select  to choose the customer from the list
	Delivery Date	Enter the desired delivery date.
Contents tab	Fields	Data to input
	Item No.	Your customer number
	Quantity	Your customer number
	Discount	Your name
	Task	Result
Click <input type="button" value="Add"/>	Your sales order is saved. Report your results to the unit test section at the end of the chapter.	

The second transaction creates the delivery document. The delivery document is created in reference to the sales order; this document authorizes the picking, packing and shipping of the order. As the goods are issued, the finished inventory is credited and the decrease in inventory is debited from an account called “inventory change” that carries the cost of goods sold that will appear in the profit and loss statement.

Sales A/R
Sales Order
1715

Post delivery			
First screen	Sales order window		
	Tasks	Navigation	Results
	Select the sales order		The sales order appears
Second screen	Copy the sales order into a Delivery		The Delivery window appears with the same data.
	Tasks		
	Confirm the shipped quantity.		

- Then, click  to save the delivery document. Report your results to the unit test section at the end of the chapter.

After the goods are shipped, the customer is billed. An invoice is created in reference to the delivery document. A customer is billed only for the goods delivered. Invoicing the customer will generate a financial posting: an accounts receivable is credited and sales revenues will be debited. The sales revenues are also posted in the appropriate profit center.

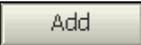
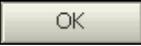
Sales A/R
Delivery
1716

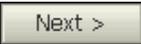
Invoicing the customer			
First screen	Delivery window		
	Tasks	Navigation	Results
	Select the delivery		The delivery appears
Second screen	Copy the delivery into an A/R Invoice		The A/R Invoice window appears with the same data.
	Tasks		
	Confirm the invoiced quantity.		

- Then, click  to save the invoice. Report your results to the unit test section at the end of the chapter.

The last transaction posts the payment from the customer. This payment is done in reference to the open items in the receivable accounts. This transaction will credit the cash account and debit the accounts receivables.

Banking
Payment Wizard
1717

Receiving the customer's payment		
First screen	Tasks	Results
	Start a new payment run	
	Click 	A new screen appears.
Second screen	Fields	Data to input
	Payment type / Incoming	X
	Payment means / Bank Transfer	X
	Tasks	Results
	Click 	The third screen appears.
Third screen	Tasks	Results
	Click 	A new window appears (BP Properties)
	Click 	The customer appears in the list.
	Click 	The fourth screen appears.

Fourth screen	Fields	Data to input
	Due Date	Enter the invoices' due dates you want the payment run to include. (Since the payment terms are 2P10Net30, you will probably have to select a date a month from now in order to see the invoices you created a few moments ago)
	Tasks	Results
	Click 	The fifth screen appears.
Fifth screen	Tasks	Results
	Select the payment method with which you wish to pay.	
	Click 	The sixth screen appears with the recommendation reports (The payments that have been found according to your selection dates and values)
Sixth screen	Tasks	Results
	Select the customers you wish to receive payments from.	
	Click 	The seventh screen appears.
Seventh screen	Tasks	Results
	Click 	The payment run is executed. Payments are made and accounts receivable are cleared. Report your results to the unit test section at the end of the chapter.

Payment run reports are available by clicking .

You can leave the payment wizard.

17.5 Unit tests

Step	Name	Result	Completed
1701	Creating the forecast		<input type="checkbox"/>
1702	Execute MRP		<input type="checkbox"/>
1703	Creating a purchase order manually		<input type="checkbox"/>
1704	Generating automatically consolidated purchase order from order recommendations		<input type="checkbox"/>
1705	Post goods receipt		<input type="checkbox"/>
1706	Post vendor's invoice		<input type="checkbox"/>
1707	Payment of the vendor's invoice		<input type="checkbox"/>
1708	Manual creation of a production order		<input type="checkbox"/>

Step	Name	Result	Completed
1709	Generating production order from order recommendations		<input type="checkbox"/>
1710	Releasing the production order		<input type="checkbox"/>
1711	Confirm production execution		<input type="checkbox"/>
1712	Close production order		<input type="checkbox"/>
1713	View stock of products		<input type="checkbox"/>
1714	Create sales order		<input type="checkbox"/>
1715	Post delivery		<input type="checkbox"/>
1716	Invoicing the customer		<input type="checkbox"/>
1717	Receiving the customer's payment		<input type="checkbox"/>

CHAPTER 18 - REPORTING AND ANALYTICAL TOOLS

In this chapter, we describe how to use the various reports and analytical tools available in SAP Business One®. There is quite a few reports included in the software that we can easily use and that are available directly from the main menu. For example, you can access the inventory management reports in the Inventory section of the main menu, then go in the Inventory Reports sub-section. Another reporting utility is the Drag & Relate menu. You can access it in the main menu, by going to the Drag & Relate tab. Finally, a query generator is available to run database queries easily.

18.1 Reporting

18.1.1 Open Items List

Sales A/R
Sales Reports / Open Items List
1801
Purchasing A/P
Purchasing Reports / Open Items List
1801
Production
Production Reports / Open Items List
1801

Every purchasing, sales and production transactions generates documents. As long as the cycle is not completed (Sales Order up to the customer payment for example) documents stay opened. The Open Items List report enables you to see those documents and act accordingly in order to finish the cycle. This report is available for purchasing, sales and production documents and is, hence, available in the three menu sections. The report provides the document number, the Business Partner code and name concerned, the due date, amount, etc. Change the document type you want to see by choosing it in the Open Documents list in the header.

Some fields have links (➡) that will open the master data or document it references to.

18.1.2 Sales Analysis

Sales A/R
Sales Reports / Open Items List
1802

This tool provides you a report of sales done. Options are available to specify what you want to see. You can view sales done classified by customer, by product or by sales employee. You can choose to include only completed sales or even orders that are not yet delivered, invoiced or paid. The list generated includes item's, customer's or sales employee's code and name (depending on which one you choose to classify your sales by), total of sales per line and gross profit in values and percentage. At the bottom of the report you can click the  icon to generate a graph from the results.

Some fields have links () that will open the master data or document it references to.

Purchasing A/P
Purchasing Reports / Purchase Analysis
1803

18.1.3 Purchase Analysis

A similar tool as the Sales Analysis is available for purchases. They can be classified by vendor, items or sales employees and offer the same filter options.

18.1.4 Inventory Management

Inventory
Inventory Reports / Inventory Status
1804

One of the key elements of the game is to be able to react to customer demand and ensure that the inventory of your products is maintained at the right level. The Inventory Status report provides you this information, showing you every items in the system along with their in stock quantity, their committed quantity (quantity in sales orders), their ordered quantity (quantities in production or purchase orders) and the available quantity.

Inventory
Inventory Reports / Inventory in Warehouse Report
1805

Along with knowing the quantity of material in stock, it is just as important to know where the material is. The Inventory in Warehouse Report provides you with the same information as the preceding one, but classified by Warehouse.

Some fields have links () that will open the master data or document it references to.

Financials
Financial Reports / Financial / Balance Sheet
1806

18.1.5 Financial Statements

In SAP Business One® you can get current financial statements at any point to get a snapshot of your financial position. You can access the financial statements in the Financials section in the main menu, then go to Financial Reports, Financial and choose Balance Sheet and/or Profit and Loss Statement.

Financials
Financial Reports / Financial / Profit and Loss Statement
1807

When you have generated the documents you can change the level of details you want to see by changing the Level field in the upper right corner of the report.

18.2 Drag & Relate reports

This utility enables you to generate personalized reports visually using a drag and drop like navigation.

Open one of the Vendor master data in a new window and then go to the Drag & Relate tab of the main menu. In the Drag & Relate menu, expand the Purchasing - A/P section. Go back to the Vendor master data and click its code (keep pressing) until a black line appears around the field. You can then drag and drop the field on A/P Invoice in the Drag & Relate menu.

The report that appears will show you a list of the Invoices sent to this particular Vendor. Some fields have links (🔗) that will open the master data or document it references to.

If only one invoice for this vendor exists, it will open it.

Any key field in any master data or documents can be used to generate a Drag & Relate report. Use your imagination to generate all sorts of useful reports.

18.3 Query Generator

18.3.1 Presentation

SAP Business One® offers a tool that enables you to generate reports from a query generator. Before you open the Query Generator, you need to know the Database Tables and Fields names we need. For that, go to View and select System Information. From now on, when you put your cursor over a field on any window, you will see its system information at the bottom of the Business One window.

It should look like this : [Form=134 Item=5 Pane=0 Variable=1 OCRD, CardCode]. Here, OCRD represents the Table name and CardCode represents the Field name.

To access the Query Generator, go to Tools/Queries/Query Generator.

In the first field on the upper left corner of the window, you enter the table name you need for you query and click Tab to add it to the table list, repeat this step if your query uses more than one table.

Then you can form your SQL query by filling the Select, Where, Sort by and Group by fields with the database fields that appeared at the center of the window.

Then, click Execute to execute your query. Additionally, you can export your results by going to File, Export and choosing MS-EXCEL. This will export your results in a tab delimited text file that you can then paste into Excel.

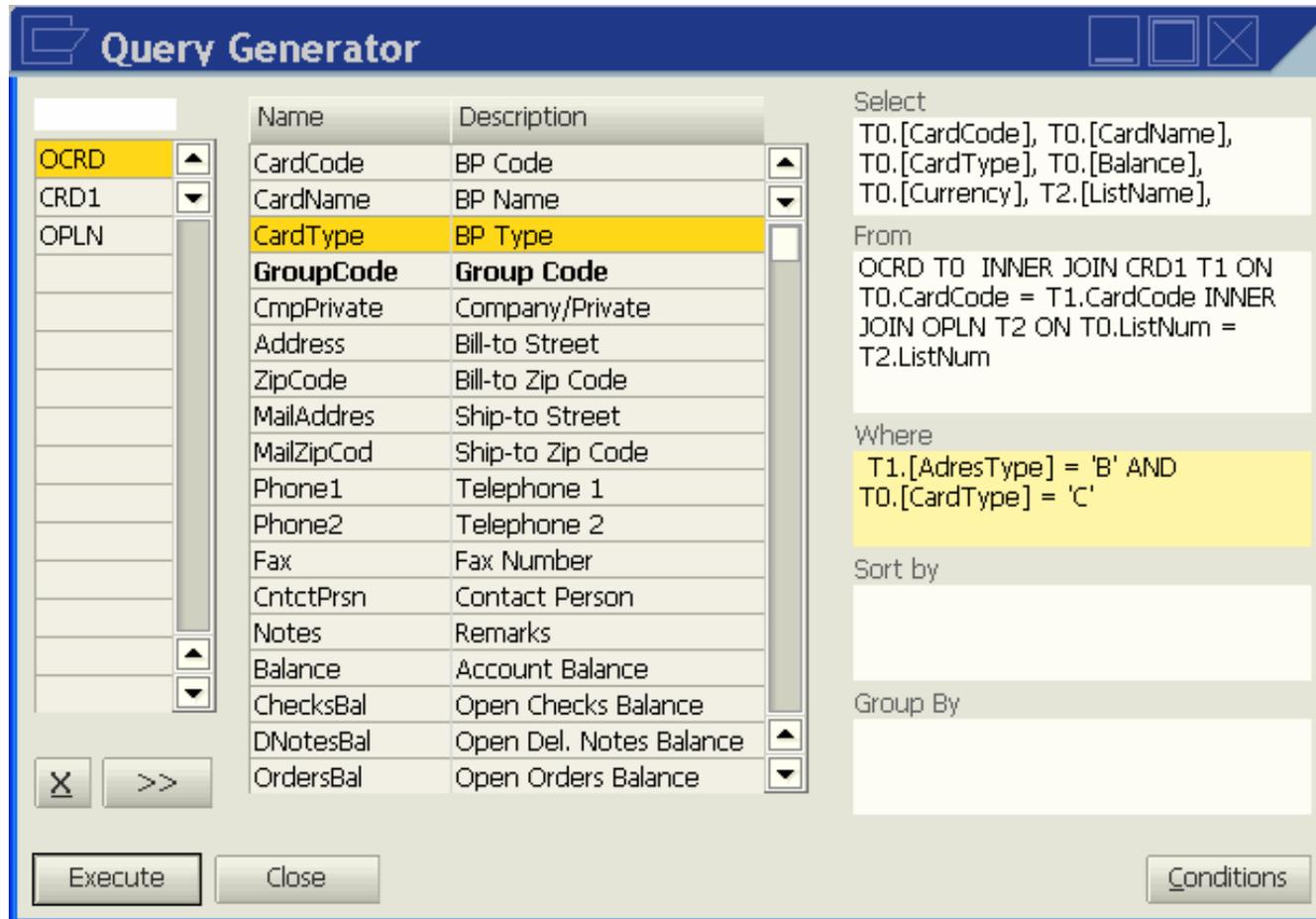
18.3.2 Example

We want a report that includes the business partner code, name, type, balance, currency, price list name, billing address city, state for customers only. The report should be sorted by business partner name.

We need the following tables : OCRD, CRD1 and OPLN. Include the following fields in the Select : CardCode, CardName, CardType, Balance, Currency from OCRD and ListNum, City, State from CRD1. In the Where we write down the following :
T1.[AdresType] ='B' AND T0.[CardType] ='C'

The query generator screen should look like the following:

Figure 18.1 The query generator



- Then, execute the query.

Part 5: Special Topics

**A Serious Game for Learning
Enterprise Resource Planning Concepts**

HEC MONTRÉAL
ERP SIMULATION GAME
Manufacturing Game

CHAPTER 19 – SAP QUERY

19.1 Create the infoset

At the end of this section, you will have created an InfoSet containing two tables. You will also modify the join between those tables.

19.1.1 Initial setup

In this step, you will create an infoset and select the first table on which you want to work.

Transaction code	SQ02
SAP Menu Path	Tools / ABAP Workbench / Utilities / SAP Query / InfoSets

1. Enter a name in the InfoSet box, starting with Z.
2. Click on “Create”.
3. Enter the following data.

Field	Input	Description
Name	Enter “Infoset” + your name	InfoSet long texts. This long text is shown to the user in the InfoSet Query or in transaction SQ01 when creating queries.
Table join using basis table	pbim	Name of a table listed in the ABAP/4 Dictionary. We will input the name of the table we want to use, in this case, PBIM

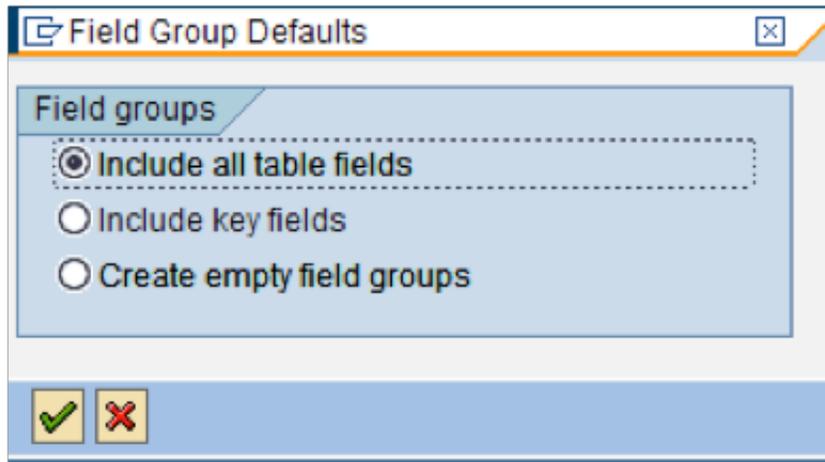
4. Click “OK”.

19.1.2 Join definition

We will now add a table to the model.

1. Click on “Insert table”. 
2. Enter the name of the table you want to add (in this case, PBHI).

3. We will now remove the unnecessary joins.
 - a. Select the join between UHRLP (table PBIM) and UZEIT (table PBHI). Right-click on the join and click on "Remove join condition".
 - b. Select the join between DATLP (table PBIM) and PDATU (table PBHI). Right-click on the join and click on "Remove join condition".
4. Click on "InfoSet Maintenance".
5. You will be prompted to define the "Field Group Defaults". Click on "Include all table fields" and click on "Continue".



6. Click on "Save".

Object R3TR A QSG ZTEST3

Attributes

Package \$TMP

Person Responsible ZHECELYES

Original System ECC

Original language EN English

Local Object Lock Overview

7. Select package "\$TMP" and click on "Save".
8. Click on "Generate". 
 - a. If a log display window appear, click on "Continue".
9. Go back to the initial screen.

19.2 Assign the infoSet to a user group

You will now assign the infoSet you just created to a user group. This will allow the user included in this group to access this infoSet.

1. Enter the name of you infoSet in the "InfoSet" field and click on "Role/User Group Assignment"
2. Scroll-down the list and select "Z_IDES" (User group name = IDES FI).

InfoSet roles and user groups ZTEST3

Assigned table	User group	User group name	Role	Role name
<input type="checkbox"/>	IDES_FI	IDES_FI		
<input type="checkbox"/>	INGO	.		
<input type="checkbox"/>	INGOWBO	.		
<input type="checkbox"/>	ISU02	Evaluation of Utilities Master		
<input type="checkbox"/>	JAYNE	Jayne's Group		
<input type="checkbox"/>	J_3RPBU18UG	PBU-18 Russia		
<input type="checkbox"/>	MBC40	Trainer of Course MBC40		
<input type="checkbox"/>	MIRO	Logistics Invoice Verification		
<input type="checkbox"/>	PERSENTW	BG der Personalentwicklung		
<input type="checkbox"/>	POST	post		
<input type="checkbox"/>	PP	GESTION DE PRODUCTION		
<input type="checkbox"/>	QDEMO	Demo-User Group		
<input type="checkbox"/>	REFX	Flexible Real Estate Managemen		
<input type="checkbox"/>	SAPTESTHR	Test der Adihoc Query		
<input type="checkbox"/>	TESTQUERY	Test, Query delivery		
<input type="checkbox"/>	TRAVELINFO	Travel Information IT 470-105		
<input type="checkbox"/>	TWPAYROLL	TAIWAN PAYROLL		
<input type="checkbox"/>	WAO_46C_PT	WAO_46C_PersTimeEval_HR		
<input type="checkbox"/>	WASTE	Waste Sheet User Group		
<input type="checkbox"/>	WRF_PPW	Price Planning Workbench		
<input type="checkbox"/>	WTY_OR	WTY Online Reporting		
<input type="checkbox"/>	YSVMA_UG	User Group - Sunnier Vineyard		
<input type="checkbox"/>	ZGOLMGC	Michel Clouber		
<input type="checkbox"/>	ZPH_CTSM1	Pharma Clin. Trial Supply Mgmt		
<input checked="" type="checkbox"/>	Z_IDES	IDES FI		
<input type="checkbox"/>	Z_SF_AA	Utilizadores de Imobilizado		
<input type="checkbox"/>	Z_USPR	US Payroll User Group		

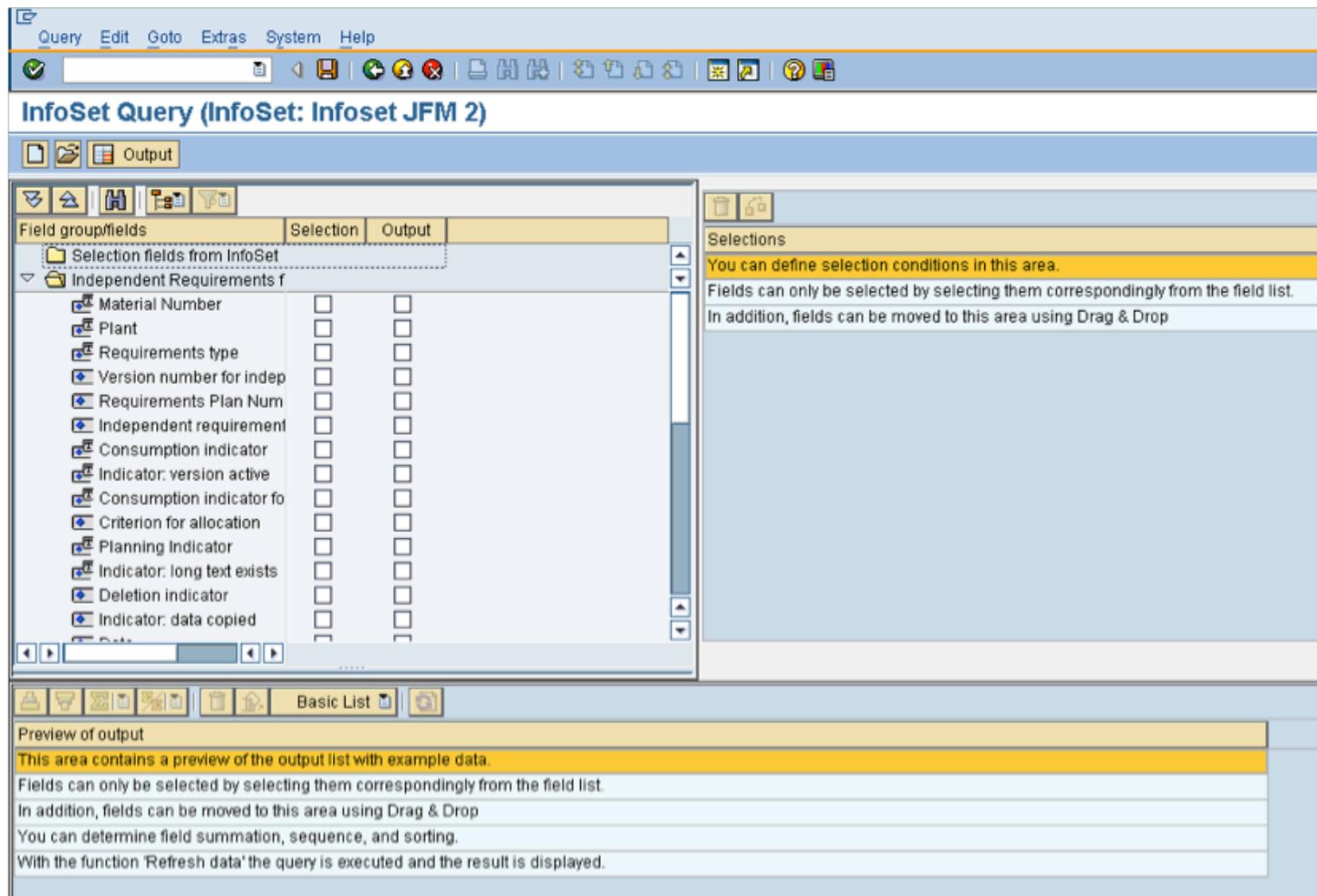
3. Click on "Save".

19.3 Create the query

Transaction code	SQ01
SAP Menu Path	Tools / ABAP Workbench / Utilities / SAP Query / Queries

1. Add a name in the field "Query". Enter the name of your InfoSet and add a "a" at the end of it.

4. Select your InfoSet and click on “Continue”.

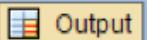


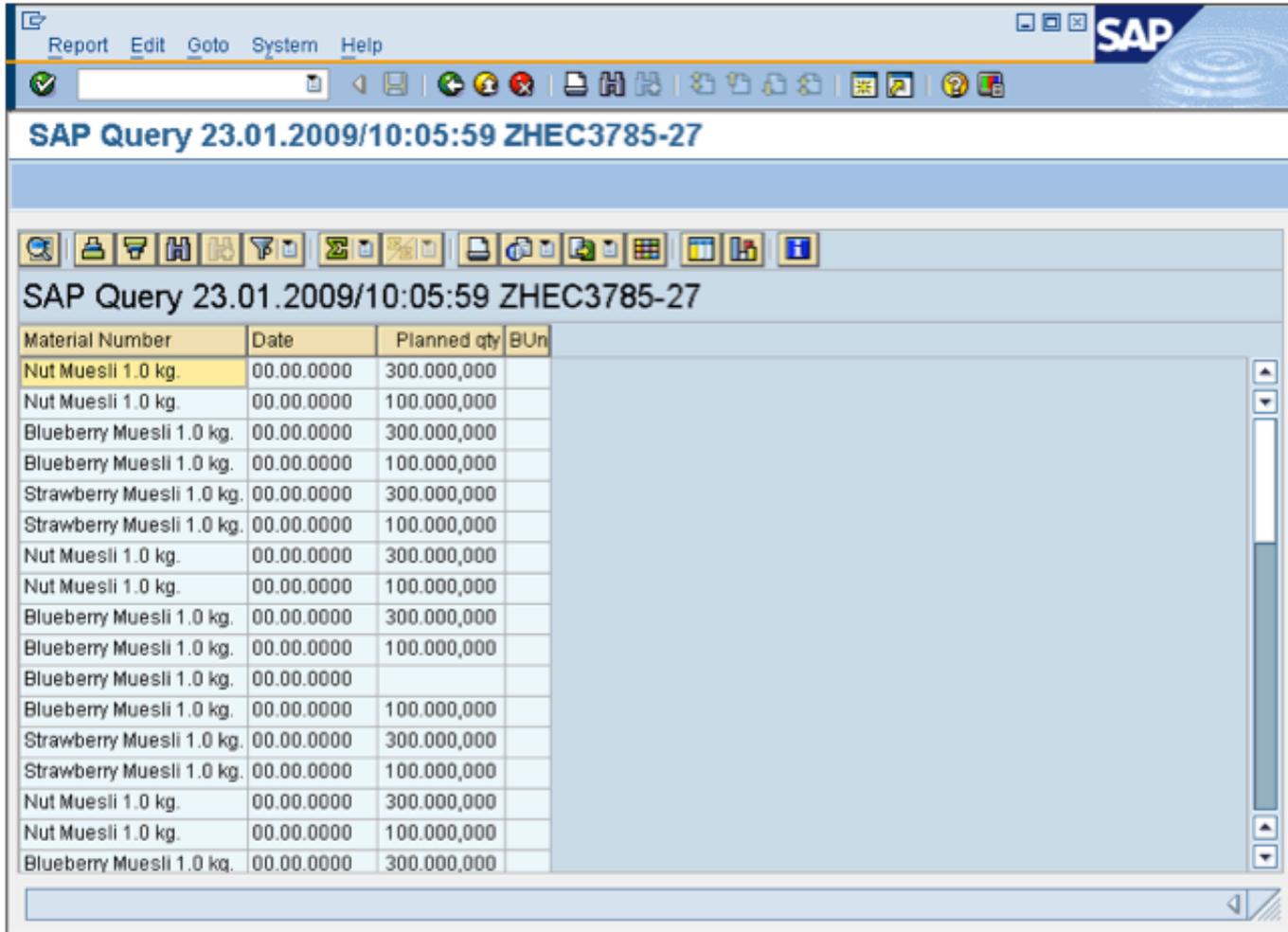
5. You will now select the data you want to add in your query. Select the following fields (Output indicator):

- a. Material Number
- b. Date
- c. Planned quantity

6. Click on Save. Make sure the user group is still “(Z_IDES)” (if prompted).

19.4 Test the query

1. Click on Output.  Output
2. If the window "Restrict Database Accesses" is prompted, set the "Maximum" field to 100 and click on "Continue".
3. You should get a report similar to the one below.



The screenshot shows the SAP Query interface. At the top, there is a menu bar with 'Report', 'Edit', 'Goto', 'System', and 'Help'. Below the menu bar is a toolbar with various icons. The main window title is 'SAP Query 23.01.2009/10:05:59 ZHEC3785-27'. Below the title is another toolbar with icons for navigation and printing. The main content area displays a table with the following data:

Material Number	Date	Planned qty	BUn
Nut Muesli 1.0 kg.	00.00.0000	300.000,000	
Nut Muesli 1.0 kg.	00.00.0000	100.000,000	
Blueberry Muesli 1.0 kg.	00.00.0000	300.000,000	
Blueberry Muesli 1.0 kg.	00.00.0000	100.000,000	
Strawberry Muesli 1.0 kg.	00.00.0000	300.000,000	
Strawberry Muesli 1.0 kg.	00.00.0000	100.000,000	
Nut Muesli 1.0 kg.	00.00.0000	300.000,000	
Nut Muesli 1.0 kg.	00.00.0000	100.000,000	
Blueberry Muesli 1.0 kg.	00.00.0000	300.000,000	
Blueberry Muesli 1.0 kg.	00.00.0000	100.000,000	
Blueberry Muesli 1.0 kg.	00.00.0000		
Blueberry Muesli 1.0 kg.	00.00.0000	100.000,000	
Strawberry Muesli 1.0 kg.	00.00.0000	300.000,000	
Strawberry Muesli 1.0 kg.	00.00.0000	100.000,000	
Nut Muesli 1.0 kg.	00.00.0000	300.000,000	
Nut Muesli 1.0 kg.	00.00.0000	100.000,000	
Blueberry Muesli 1.0 kg.	00.00.0000	300.000,000	

CHAPTER 20 - VISUAL COMPOSER

20.1 Creating a model

At the end of this section, you will have created a custom report that gives you the list of sales orders for a specific customer and sales organization number.

20.1.1 Creating a simple view

- On the top menu, select Model / New model...
- Name your model using this notation : <username>_customer_detail

20.1.2 Create an iView component

The iView will contains the elements you want to have on your report. Each element included in those will be able to communicate with each other, according to your model.

- Select “Compose” in the toolbar to your right.
- Drag-and-drop the component iView in the design area.
- Name it as following : <username>_cust_dtls_iView

20.1.3 Complete the model

You will now create your model to create a simple report. A report is essentially composed of a source table, an input form and an output form.

20.1.3.1 Create SAP data service

In this step, you will choose a BAPI that will do a query on the SAP database and extract the data according to the data you provide with the input form.

- Double-click on the component (iView) you created in the previous step.
- Choose «Find data» in the Task Panel Toolbar (far right toolbar).

- In the drop-down, select the system alias you want to use.
- In the «Look for» dropdown list, choose «Look for a service by name» and type “BAPI_CUSTOMER_GETDETAIL” in the service field.
- Click on Search.
- Find the BAPI_CUSTOMER_GETDETAIL and drag it into the workspace.
- After fetching the data, the service asks for the list of the field required by your business process.
- In this example, highlight the input ports: INPUT. Make sure it is checked and choose (check) the following fields on the rightside:

Fields	Description of the field
<i>CUSTOMERNO</i>	Customer number
<i>PI_SALESORG</i>	Sales organization

- Repeat the previous step, but this time by selecting PE_ADRESS

Fields
<i>City</i>
<i>Country</i>
<i>Name</i>
<i>Region</i>
<i>Street</i>

- Press OK.
- Save your model.

20.1.3.2 Create the input and output form

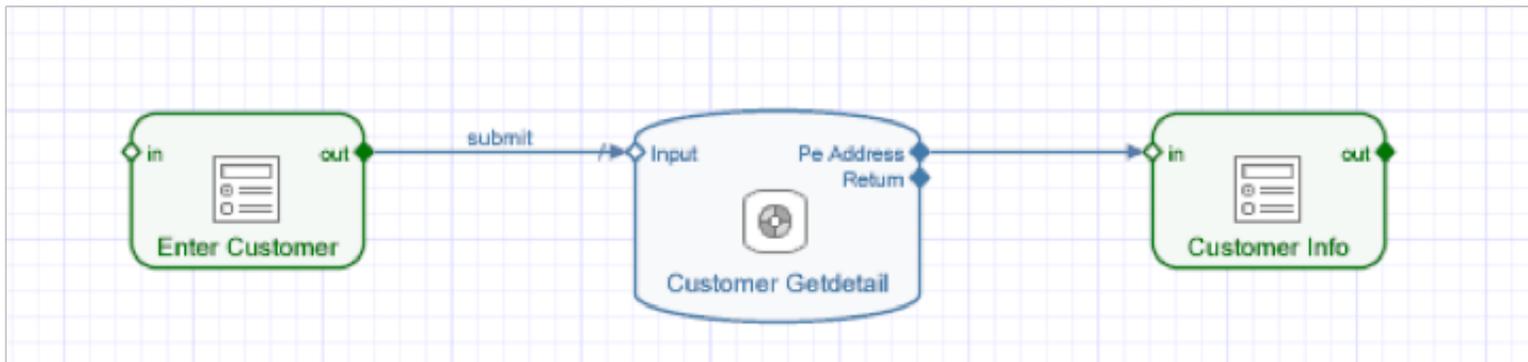
In this step, you will create the input and output forms. The input for is used to enter the data that will be used to filter the data that will be displayed in the output form.

- Click on the lozenge beside INPUT, drag it to the left and click on “Add Input Form”. Name it “Enter customer”.
- Select the input form you just created. Make sure that the fields selected (in the Properties panel) are the same as listed below:

Fields	Description of the field
<i>CUSTOMERNO</i>	
<i>PI_SALESORG</i>	
<i>SUBMIT</i>	This field is actually the submit button that will be used to apply the data that have been entered for <i>CUSTOMERNO</i> and <i>PI_SALESORG</i>

- Drag again from Pe Address and click on “Add Form View”. Name it “Customer info”.
- Save your model.

Your model should now look like this:



20.1.3.3 Arranging the form

Now that your model is done, it's time to arrange the layout to make it nice looking.

- Click on the Layout tab (top of the screen). On the layout tab, select a field. *i.e.* *Customerno*
- In the task panel toolbar, click on *Configure*.
- Select the “Enter customer” area. In the “Configure Element” toolbar, change the property “Align contents” to “Vertical”.

- Right-click on the edit field beside “PI_Salesorg*” and click on “Properties”. Select the “Formatting” tab and choose Upper-case (most fields are case sensitive). Repeat for the field “Customerno*”.
- Save your model.

20.1.3.4 Deploy your model

In this step, you will deploy your model, which will enable you to test it.

- Click on “Deploy” in the task panel toolbar.
- Check “Deploy entire model”, then click on “Deploy”.
- You should see a message saying “Deployed successfully!”
- Double-click on *Run “<your_model>”*.
- Internet Explorer should open a new tab showing the model you just created, similar to the following screen.
- Try supplying a customer number and sales organization (all upper cases)

Fields	Description of the field
<i>CUSTOMERNO</i>	0000080105
<i>Sales organisation</i>	Z01#

- The contact information of that customer should be appearing in the bottom section of the screen.

You just built a simple application giving you the option to retrieve information about your customers with only the required fields in a simple, user-friendly screen. Visual Composer helped you save time and effort, without any developer’s skills.

20.2 Creating a more complex model

Now that you have created an application that enables you to retrieve information about your customers, the next exercise will reuse that same application to retrieve the sales orders made by the queried clients. Additionally, you will introduce colored marks about the sales order’s status. The result will be displayed in a table that gives you the opportunity to sort the data.

20.2.1 Sales order model

In this step, we will add a table that display the sales order made by the selected customer.

20.2.1.1 Create the SAP data service for the sales orders

- Look for BAPI_SALESORDER_GETLIST in the services catalog.
- Drag it to the previously created model. If asked, select only the following fields in the output ports SALES_ORDERS:

Fields	Description of the field
<i>DOC_DATE</i>	Date on which the sales document was created
<i>DOC_STATUS</i>	Status of the document (completed, not yet picked, etc.)
<i>MATERIAL</i>	Material number in the sales document
<i>NAME</i>	Name of the material
<i>PLANT</i>	Plant from which the material come from
<i>SD_DOC</i>	Number of the sales document

- Drag out the input of Salesorder Getlist to the output of Enter Customer. Remember that the required fields a named differently. You will need to map these fields, which we will do in the following steps.
- Click on the newly connection between “Enter customer” and “Salesorder Getlist” and select «Configure» in the task panel toolbar.
- Assign these values to the required fields.

Fields	Value
<i>CUSTOMER_NUMBER</i>	@CUSTOMERNO
<i>SALES_ORGANIZATION</i>	@PI_SALESORG

- Click on Sales Orders port (little full square) and drag it out.
- Choose **Add table view** and name it Sales Orders.

- Click on the **Layout** tab.
- Change the page layout and the labels accordingly to the following screenshot :

Enter Customer		Customer Info			
Customer*:	<input type="text"/>	Name:	<input type="text"/>		
Sales Org*:	<input type="text"/>	Street:	<input type="text"/>		
<input type="button" value="Submit"/>		City:	<input type="text"/>		
		Region:	<input type="text"/>		
		Country:	<input type="text"/>		

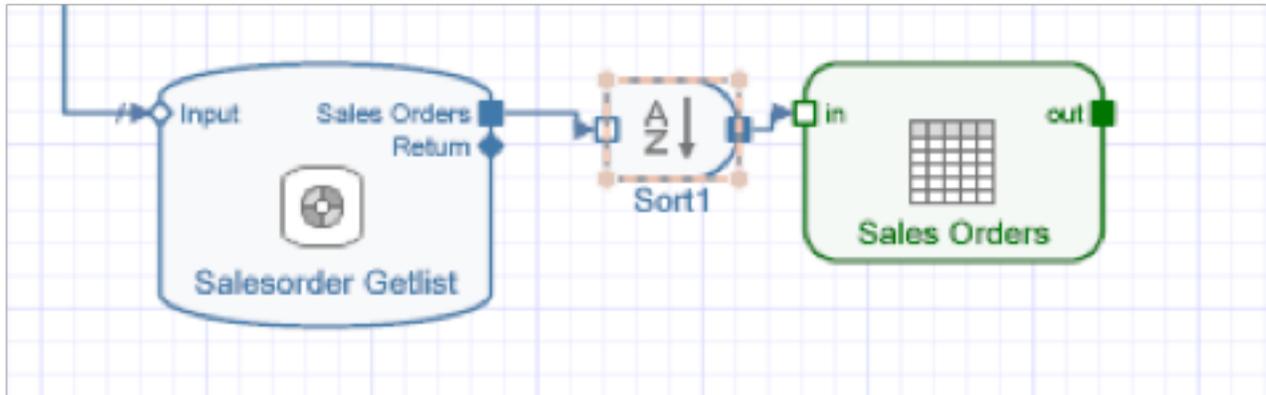
Sales Orders					
Sales Document	Material	Name	Document Date	Plant	Document Status

20.2.2 Sorting the data

We will now add an operator to sort the data for the sales orders.

- Switch back to **Design** tab and click on Compose in task panel toolbar.
- There is four groups in the compose model's section. Choose **Sort** from the group Operators.
- Drag this operator to the model.
- Remove the link between *Salesorder Getlist* and *Sales Orders* table view.

- Align the operator (Sort1) between the last two components and join them together, which should give you a result similar to this :



Next, you need to configure the sorting criteria. Double-click the operator.

- Click on the **PLUS sign** to add criteria in the task panel. We want to sort them by DOC_STATUS and direction down (open documents first, so alphabetically Z to A).

20.2.3 Customizing a field output

In this step, you will customize the report to add a special column to show the status of the sales order.

- Select **Sales Orders** table and click on **Configure** in the task panel toolbar.
- Click on the **PLUS sign** at the bottom part of the Configure Element panel.
- A *New UI Control* window should open, select **Expression Box** and rename the field name to **document_status** in that same window, leaving the *data type* to **text**.
- A new column should be added to your layout, double-click on it.
- Click on *Formula* from the general tab (next to the *Expression* edit field).
- Expand Data fields.
- Select DOC_STATUS by double-clicking on it.

- Try *Check* to see if any errors. You will see the message “Formula is valid” if everything is fine. Now, press OK.
- Go to the *Styles* tab.
- Click on **PLUS** sign.
- Enter the following conditions:

Styles	Conditions
#FF0000	@DOC_STATUS=='Open'
#FFFF00	@DOC_STATUS=='Not delivered'
#00FF00	@DOC_STATUS=='Completed'

- Click on *Close*.
- Go back to the Layout tab and select Sales Orders table.
- Uncheck the unstylish DOC_STATUS field (check every other fields) as show in the following screenshot :

	Column	Contro
✓	T document_status	&=
✓	D DOC_DATE	ab_
	T DOC_STATUS	▼
✓	T MATERIAL	ab_
✓	T NAME	ab_
✓	T PLANT	ab_
✓	T SD_DOC	ab_

20.3 Connecting two BAPIs

Having information about who ordered products and the status of that order, the next step will give the ability to know the detail of these orders.

- Invoke BAPI: BAPI_SALESORDER_GETSTATUS.

- Choose the following field by clicking on “STATUSINFO”:

Fields
<i>Material</i>
<i>Short text</i>
<i>Req qty</i>
<i>Currency</i>
<i>Net price</i>

- Connect it to the out port of **Sales orders** table view.
- Double-click on the connection and assign @SD_DOC.

20.4 Create a toolbar

You will now add a button to the input form to allow you to choose the customer.

- In the *Design* tab, right-click on «Enter Customer» and choose **Create toolbar**.
- Click on +.
- Rename to “Choose Customer”.
- Define a custom action called “CHOOSE_CUSTOMER” and click on OK.

20.5 Create a popup iView

Now that you have created a button to select the customer, you now need to create the popup form that will display those.

20.5.1 Create the popup iView

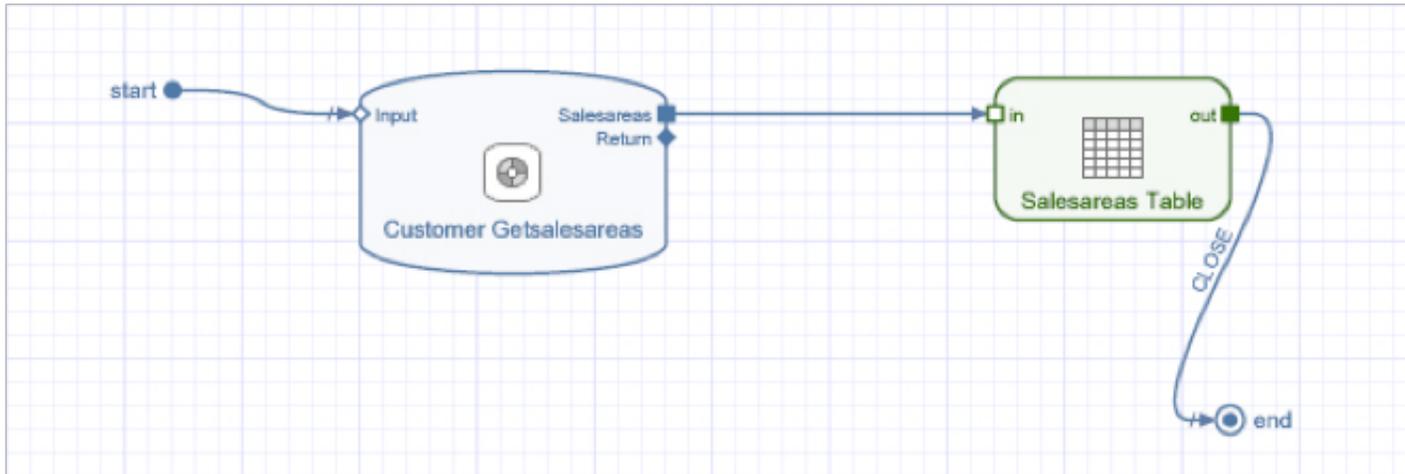
- Drag out from “Enter Customer”.
- Select open popup

- Choose the radio button “Create new iView” and change the name to “Choose Customer”.
- Double-click the connection between “Enter Customer” and “Choose customer”.
- Change the event name to “CHOOSE_CUSTOMER”.

20.5.2 Configure the popup iView

- Right-click the newly created popup iView.
- In the context menu, choose Drill down.
- Find the BAPI called : BAPI_CUSTOMER_GETSALESAREAS
- Drag out the input port of the BAPI and this time select Start point from the list.
- Select the input field “CUSTOMERNO” from the window.
- Drag out from Salesarea output port and Add table view.
- Double-click on this new table and make sure all fields are checked.
- To add a “close” button to the popup, right-click on the table view and Create a toolbar.
- Use the + sign to add a button.
- Name it “Close” and define a custom action called “CLOSE”.
- Drag out from the table view an End Point.
- Double-click the connection between table view and End Point and rename it “CLOSE”.
- Double-click on your End Point and click on “Add Field” in the Output Parameters panel.
- Select data type “text” and enter Field name “SALESORG”.

Your popup model should now look like this :



20.5.3 Map the SALESORG parameter

- In the toolbar, click on “Parent”
- Double-click on the link “CHOOSE_CUSTOMER” and map the popup field “PI_SALESORG” to “@SALESORG”.

20.6 Add a chart view

In this step, you will add a chart to your report which will show the value of the sales order over time for the customer chosen.

- Right-click on SALESORDER GETLIST and select “Define Data Service”.
- Select DISTR_CHAN, CREATION_DATE, CREATION_TIME and NET_VALUE from the sales_orders output ports.
- Drag out from *Sales Order* of SALESORDER_GETLIST BAPI and select Add chart view.

- Make the following changes to configure the chart :

Chart view:

Chart title:

Chart type:

Data series:

Category Axis:

Field:

Axis label:

Value Axis:

Axis label:

Value range:

Tick marks:

Data Animation:

Effect:

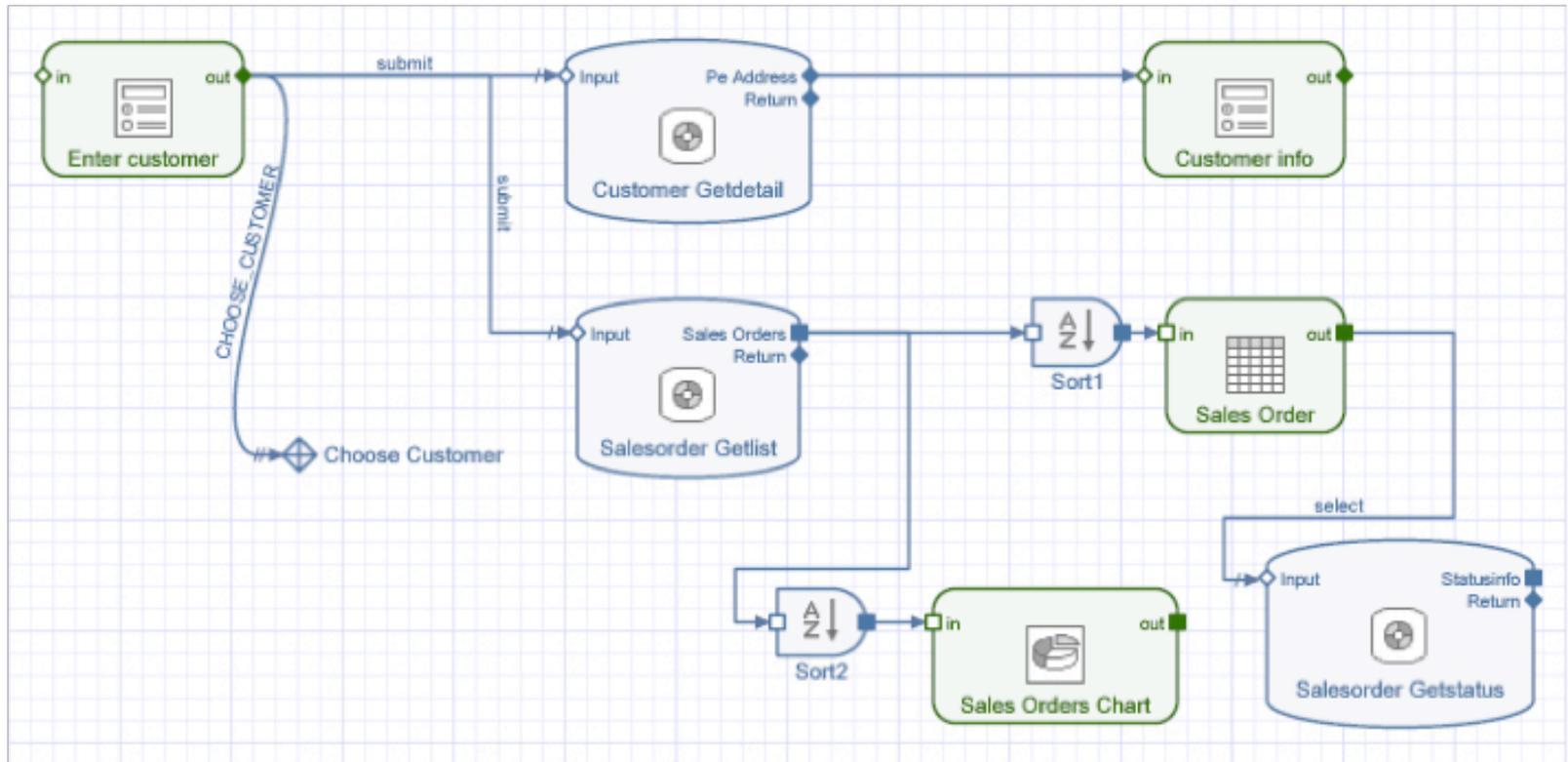
Chart Formatting:

Legend placement:

- To add data, press + in the bottom part of the task panel.
- Select the formula “@NET_VALUE” and rename the series “Order Value”.
- Add a sort operator between the BAPI and the chart, give it a sort by CREATION_DATE:down and CREATION_TIME:down.
- To do this, remove the link joining them and link the BAPI SALES ORDER with the SORT input and the output of that same component to the input of the chart view. Make sure the chart view kept the @NET_VALUE setting (see previous step).

20.7 Final result

You should now have a model similar to this one :



You can now deploy your model and test it.

Appendix

**A Serious Game for Learning
Enterprise Resource Planning Concepts**

HEC MONTRÉAL
ERP SIMULATION GAME
Manufacturing Game

INTEGRATED BUSINESS PROCESSES

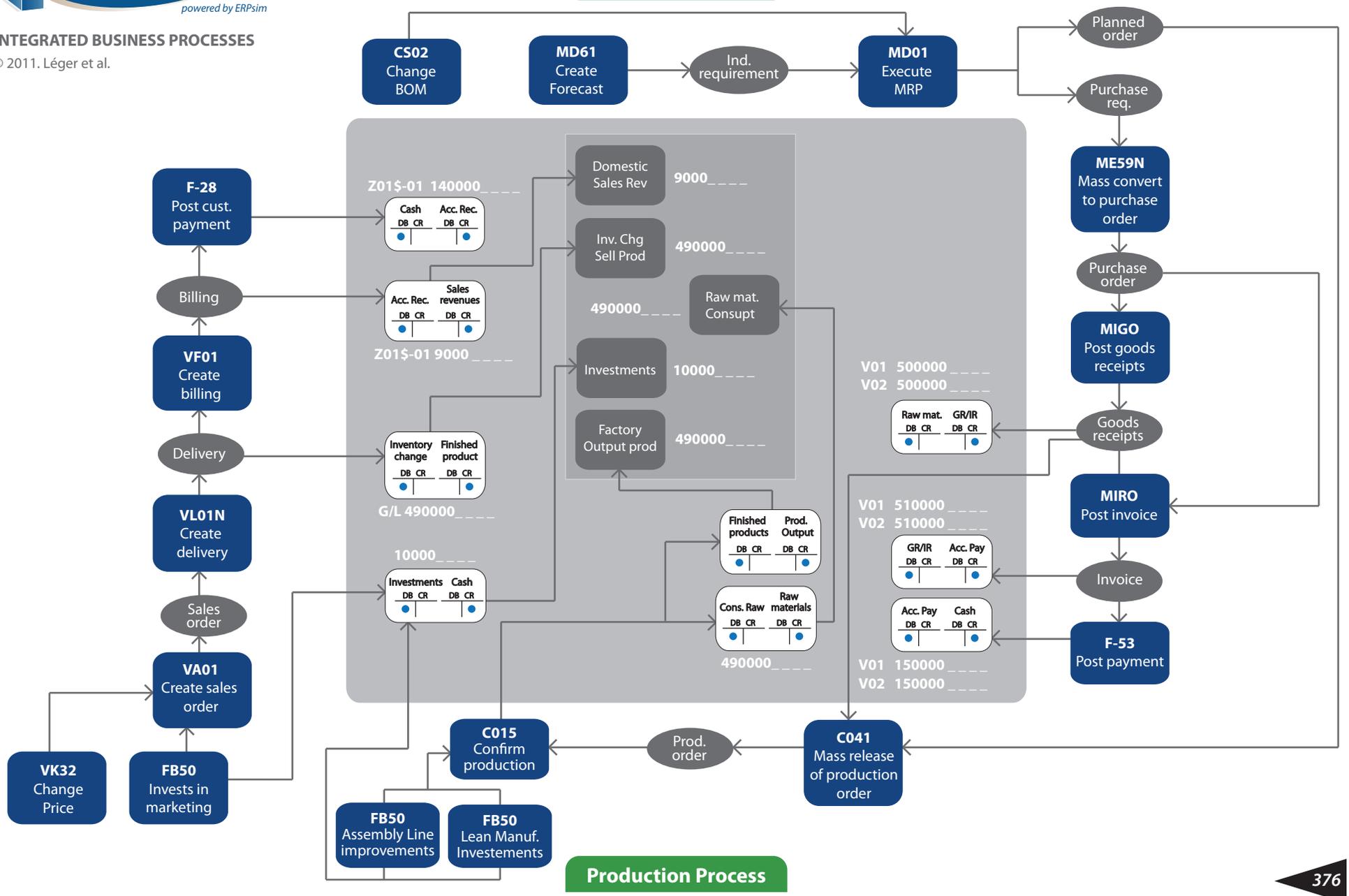
© 2011. Léger et al.

Sales Process

Procurement Process

Planning Process

Production Process



INTEGRATED BUSINESS PROCESSES
Only transactions Performed by
Participants in the Manufacturing
Simulation Game

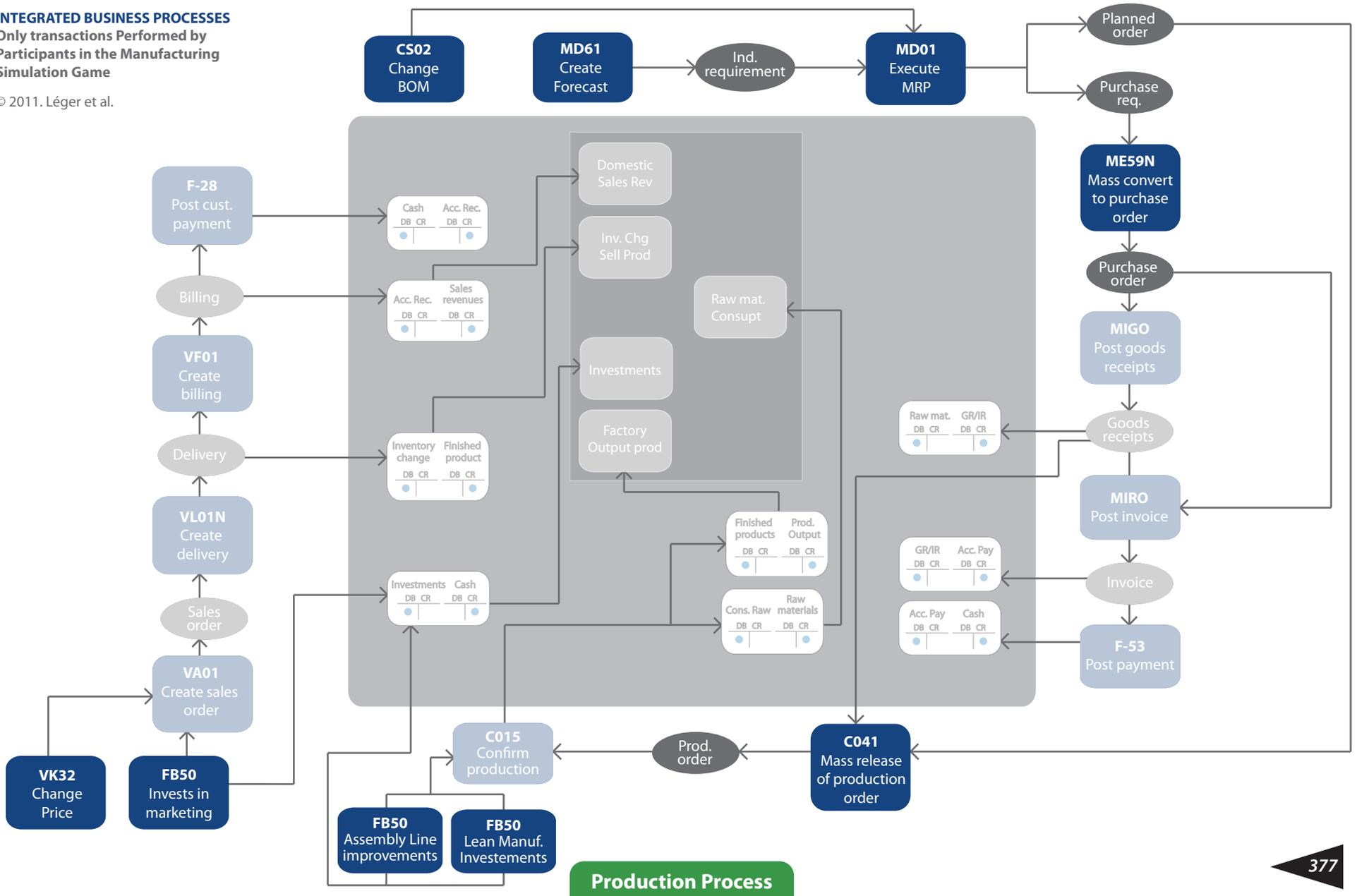
© 2011. Léger et al.

Sales Process

Procurement Process

Planning Process

Production Process



Name : _____

Student ID : _____

Sales Process

Billing

\$\$ 9000 _____

Delivery

\$\$ 8000 _____

Sales order

\$\$ _____

Planning Process

Planned order

\$\$ 000000 _____

Production Process

Prod. order

\$\$ 00000100 _____

Procurement Process

Purchase req.

\$\$-R01 : 001000 _____

\$\$-R02 : 001000 _____

\$\$-R03 : 001000 _____

\$\$-R04 : 001000 _____

\$\$-R05 : 001000 _____

\$\$-R06 : 001000 _____

\$\$-P01 : 001000 _____

\$\$-P02 : 001000 _____

\$\$-P03 : 001000 _____

\$\$-P04 : 001000 _____

Purchase order

V01 450000 _____

V02 450000 _____

Goods receipts

V01 500000 _____

V02 500000 _____

Invoice

V01 510560 _____

V02 510560 _____



APPENDIX 2 - ERPSIM DATA DICTIONNARY

The following document outlines the custom tables in the SAP system used by ERPsim.

2.1 Sales and Distribution

2.1.1 ZSIMSALES

Contains the extended virtual time information for Sales Orders.

Column	Description
Bukrs	SAP company code
Vbeln	SAP sales document number
SQtr	The virtual quarter that the sale was generated in the SAP system by ERPsim
SDay	The virtual day that the sale was generated in the SAP system by ERPsim
SPayQtr	The virtual quarter that payment will be received by ERPsim
SPayDay	The virtual day that payment will be received by ERPsim

2.1.2 ZSIM_HISTSORG

Contains snapshot-in-time of information that is relevant to each sales organization.

Column	Description
SQtr	Virtual quarter that the snapshot was taken
SDay	Virtual day that the snapshot was taken
VKOrg	Sales organization
Matnr	Material number
Area	Sim Area: NORTH, SOUTH or WEST
DC10Price	Unit price charged to hypermarkets
DC12Price	Unit price charged to grocery stores
DC14Price	Unit price charged to corner stores
Marketing	Marketing spend for material in area for the day
Currency	Currency unit for values in price and marketing fields

2.1.3 VBAK

Contains Sales Document: Header Data.

Column	Description
Vbeln	SAP sales document number
VKOrg	Sales organization
Vtweg	Distribution Channel
Kunnr	Sold-to-party

2.1.4 VBAP

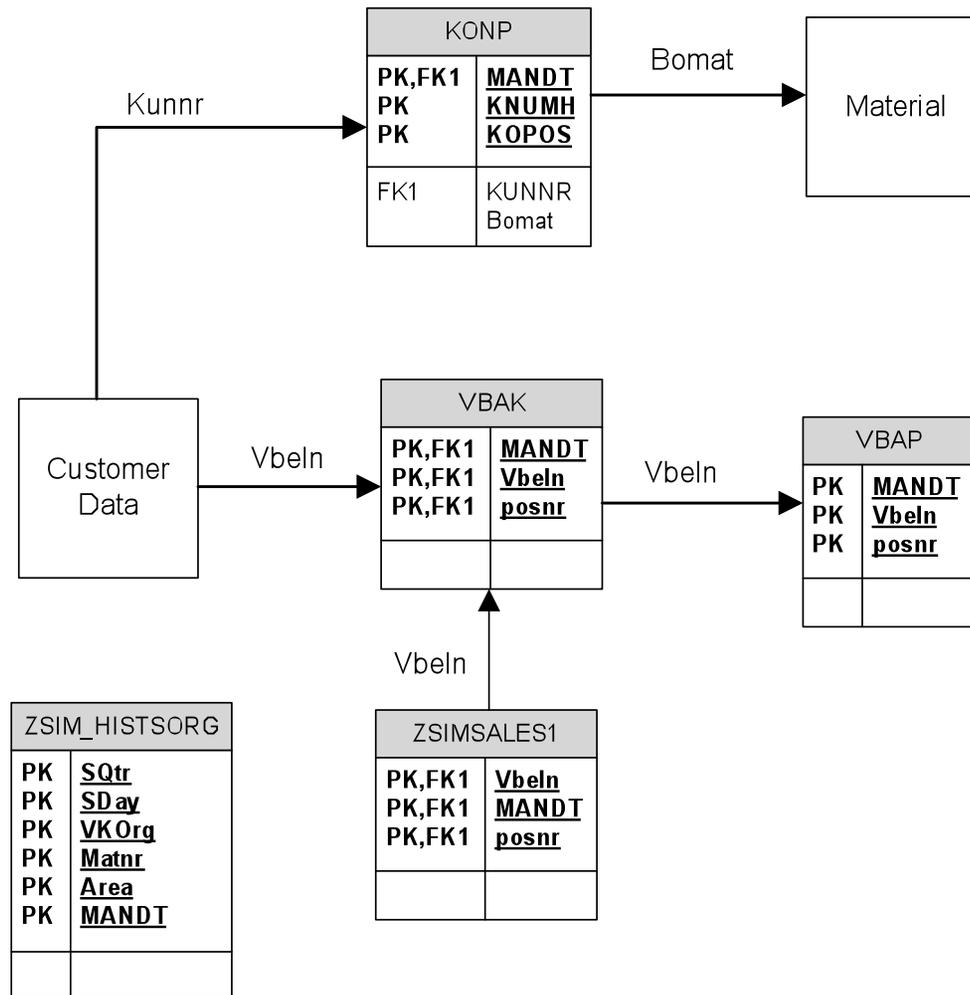
Contains Sales Document: Item Data.

Column	Description
Vbeln	SAP sales document number
Posnr	Sales Document Item
Matnr	Material number
Arktx	Sales Text for Order Item
Netwr	Net Value
Waerk	Currency
Netpr	Net Price
Kwmeng	Order Quantity
Vrkme	Unit

2.1.5 KONP

Contains the Pricing Condition items.

Column	Description
KNUMH	Condition record number
KOPOS	Sequential number of the condition
KUNNR	Customer Number 1
Bomat	Material for rebate settlement



2.2 Customer Data

2.2.1 ZSIMAREA

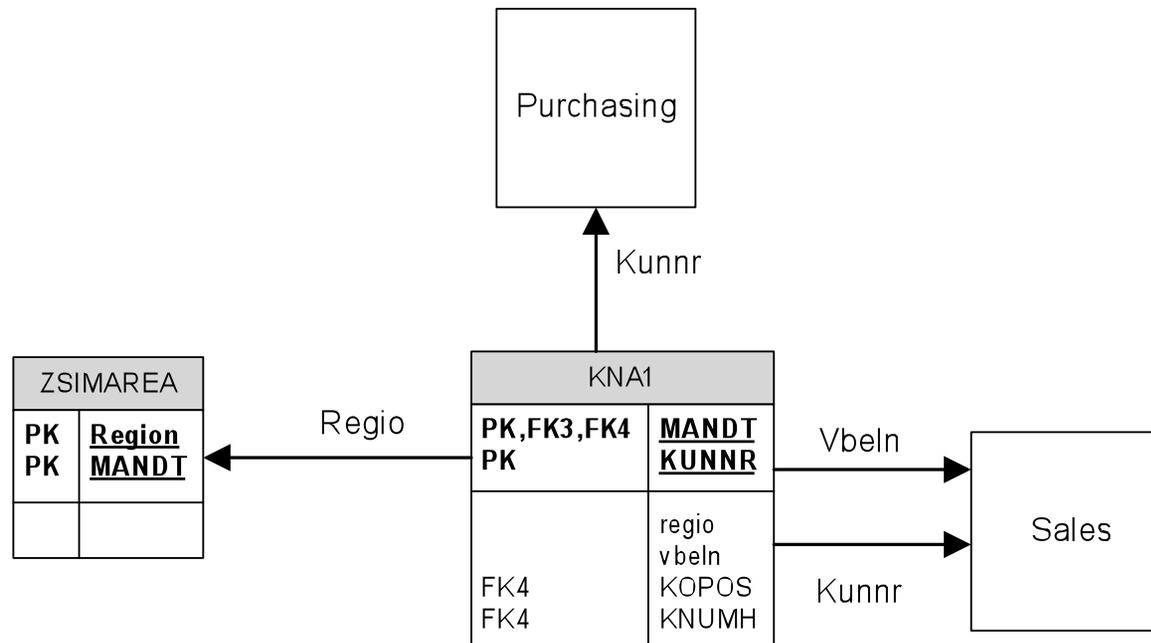
Contains the logical mapping of the region from the customer address data, to one of the three areas in the sim.

Column	Description
Region	SAP region code
Area	Sim Area: NORTH, SOUTH or WEST

2.2.2 KNA1

Contains the General Data in Customer Master.

Column	Description
Kunnr	Sold-to-party
Name1	Customer Name
Name2	Customer Name
regio	Region (State, Province, County)
Vbeln	SAP sales document number



2.3 Purchasing

2.3.1 EKKO

Contains the Purchasing Document Header.

Column	Description
Ebeln	SAP purchase document number
Ebelp	Purchase Doc. Line Item
Matnr	Material number
Menge	Quantity
Meins	Unit of Measure
Netwr	Net Value
Netpr	Net Price

2.3.2 EKPO

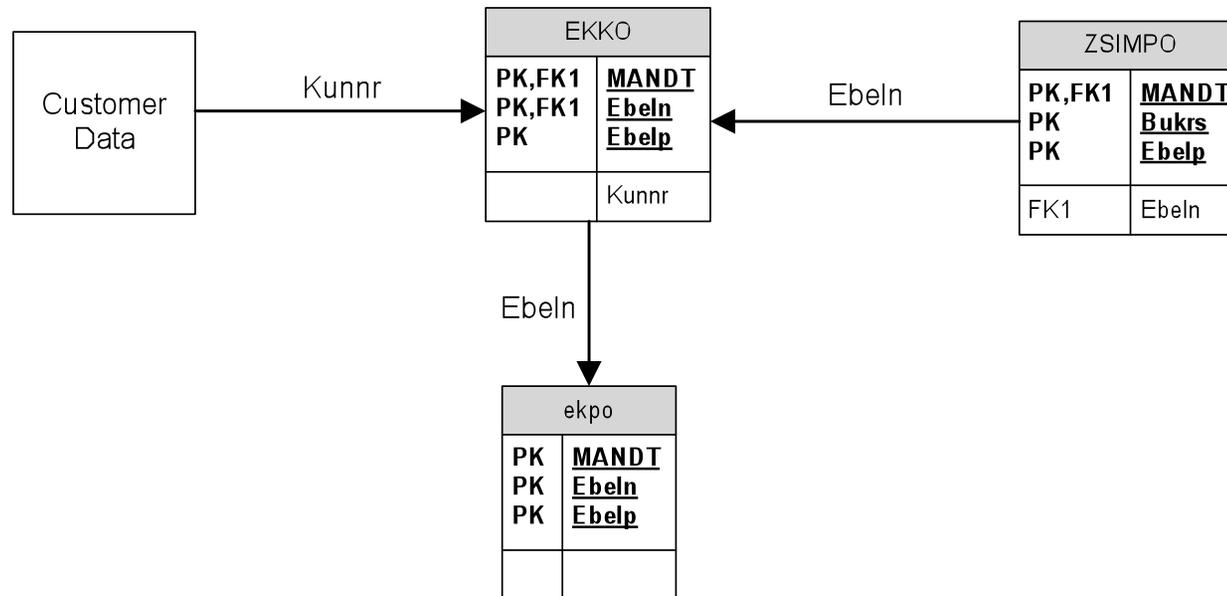
Contains the Purchasing Document Item.

Column	Description
Ebeln	SAP purchase document number
Ebelp	Purchase Doc. Line Item
Matnr	Material number
Menge	Quantity
Meins	Unit of Measure
Netwr	Net Value
Netpr	Net Price

2.3.3 ZSIMPO

Contains the extended virtual time information for Purchase Orders.

Column	Description
Bukrs	SAP company code
Ebeln	SAP purchase document number
Ebelp	Purchase Doc. Line Item
POQtr	The virtual quarter that the PO was retrieved from the SAP system by ERPsim
PODay	The virtual day that the PO was retrieved from the SAP system by ERPsim
MIGOQtr	The virtual quarter that goods will be delivered in by ERPsim
MIGODay	The virtual day that goods will be delivered on by ERPsim
PayQtr	The virtual quarter that vendor payment will occur in by ERPsim
PayDay	The virtual day that vendor payment will occur on by ERPsim



2.4 Production

2.4.1 ZSIMPRODORD

Contains the extended virtual time information for Production Orders.

Column	Description
Bukrs	SAP company code
Aufnr	SAP production order number
CR_Qtr	The virtual quarter that the Pr. Ord. was retrieved from the SAP system by ERPsim
CR_Day	The virtual day that the Pr. Ord. was retrieved from the SAP system by ERPsim
Setup_Qtr	The virtual quarter that setup for this Pr. Ord. will begin in
Setup_Day	The virtual day that setup for this Pr. Ord. will begin on
Start_Qtr	The virtual quarter when production will begin for this Pr. Ord.
Start_Day	The virtual day when production will begin for this Pr. Ord.
End_Qtr	The virtual quarter when production will be complete for this Pr. Ord.
End_Day	The virtual day when production will be complete for this Pr. Ord.
SU_Time	The virtual time taken to prepare the production line for this Pr. Ord.

2.4.2 Afpo

Contains Order item.

Column	Description
Aufnr	SAP production order number
Posnr	Order Item Number

2.4.3 Afko

Contains Order header data PP orders.

Column	Description
Aufnr	SAP production order number
Bukrs	SAP company code
Matnr	Material number

2.4.4 Afru

Contains Order Confirmations.

Column	Description
Rueck	Completion confirmation number for the operation
Rmzhl	Order Confirmation Number
Aufnr	SAP production order number

2.4.5 ZSIM_HISTPROD

Contains snapshot-in-time of information that is relevant to each material.

Column	Description
SQtr	Virtual quarter that the snapshot was taken
SDay	Virtual day that the snapshot was taken
Werks	Plant
Matnr	Material number
Maktx	Material description
Inventory	Closing balance of inventory on hand in units
Sales	Units sold of material for the day
Yield	Units produced of material for the day
Scrap	Units scrapped during production for the day
Unit	Unit of measure for values in Inventory, Sales, Yield and Scrap fields
CostStd	Valuation of one unit of material at standard cost
CostMovAvg	Valuation of one unit of material at actual historical purchase cost
CostMkt	Valuation of one unit of material at market replacement cost
Currency	Currency unit for values in CostStd, CostMovAvg and CostMkt fields

2.4.6 STPO

Contains the BOM item.

Column	Description
Matnr	Material number
STLTY	BOM category
STLNR	Bill of material
STLKN	BOM item node number
STPOZ	Internal counter
NFMAT	Follow-up material in BOM item - NOT IN USE

2.4.7 ZSIM_HISTBOM

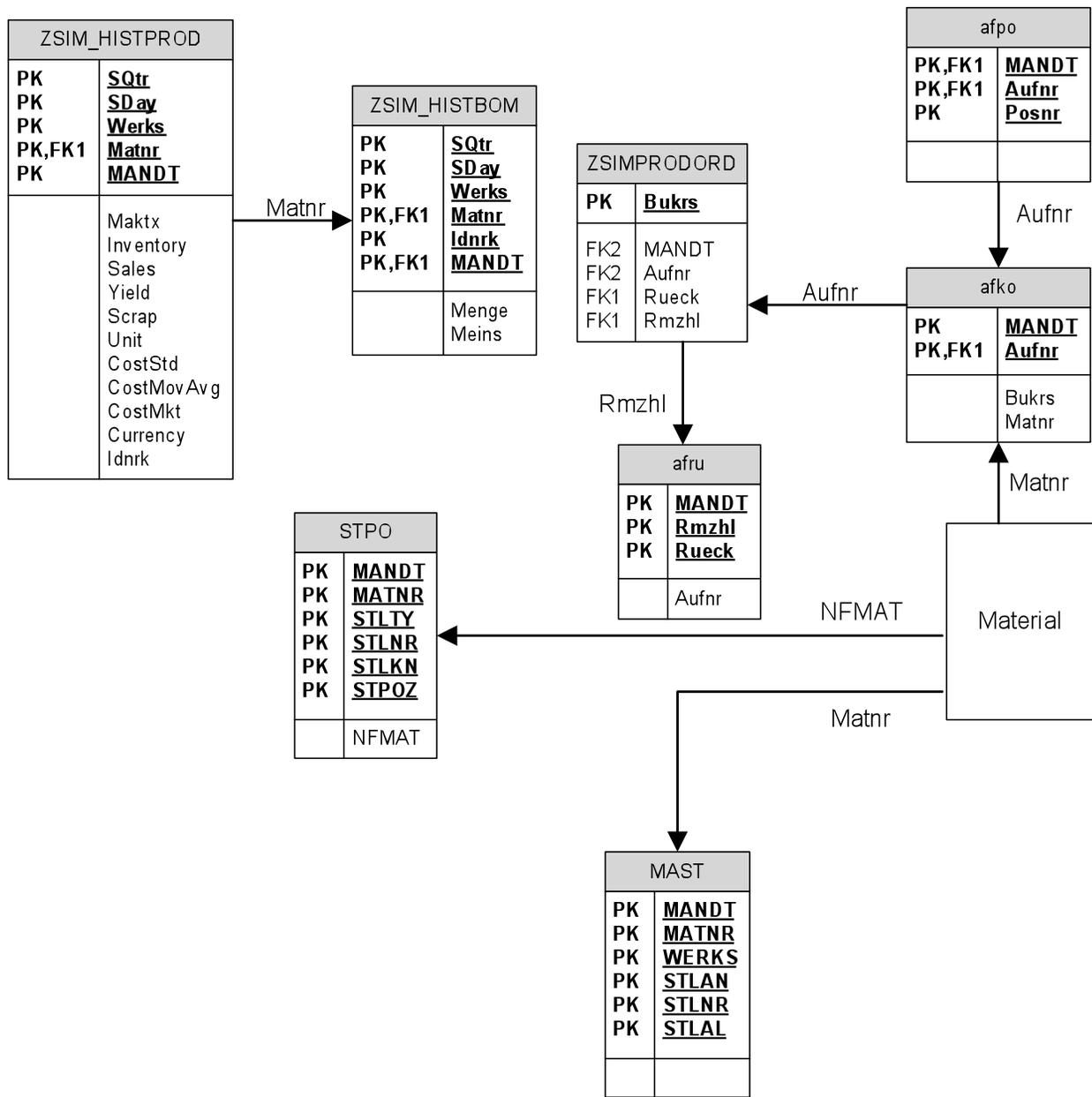
Contains snapshot-in-time of information of material components (bill of materials).

Column	Description
SQtr	Virtual quarter that the snapshot was taken
SDay	Virtual day that the snapshot was taken
Werks	Plant
Matnr	Material number
Idnrk	Component material number
Menge	Units of component material needed to make one unit of material
Meins	Unit of measure for amount in Menge

2.4.8 MAST

Contains the Material to BOM Link.

Column	Description
Matnr	Material number
Werks	Plant
STLAN	BOM Usage
STLNR	Bill of material
STLAL	Alternative BOM
LOSVN	From Lot Size
LOSBS	To Lot Size
ANDAT	Date record created on
ANNAM	User who created record
AEDAT	Changed On
AENAM	Name of Person Who Changed Object
CSLTY	Indicator: configured material (material variant



2.5 Material

2.5.1 MARA

Contains the General Material Data.

MATNR	Description
Matnr	Material number
ActualDay	Current (or last) simulated day

2.5.2 MARD

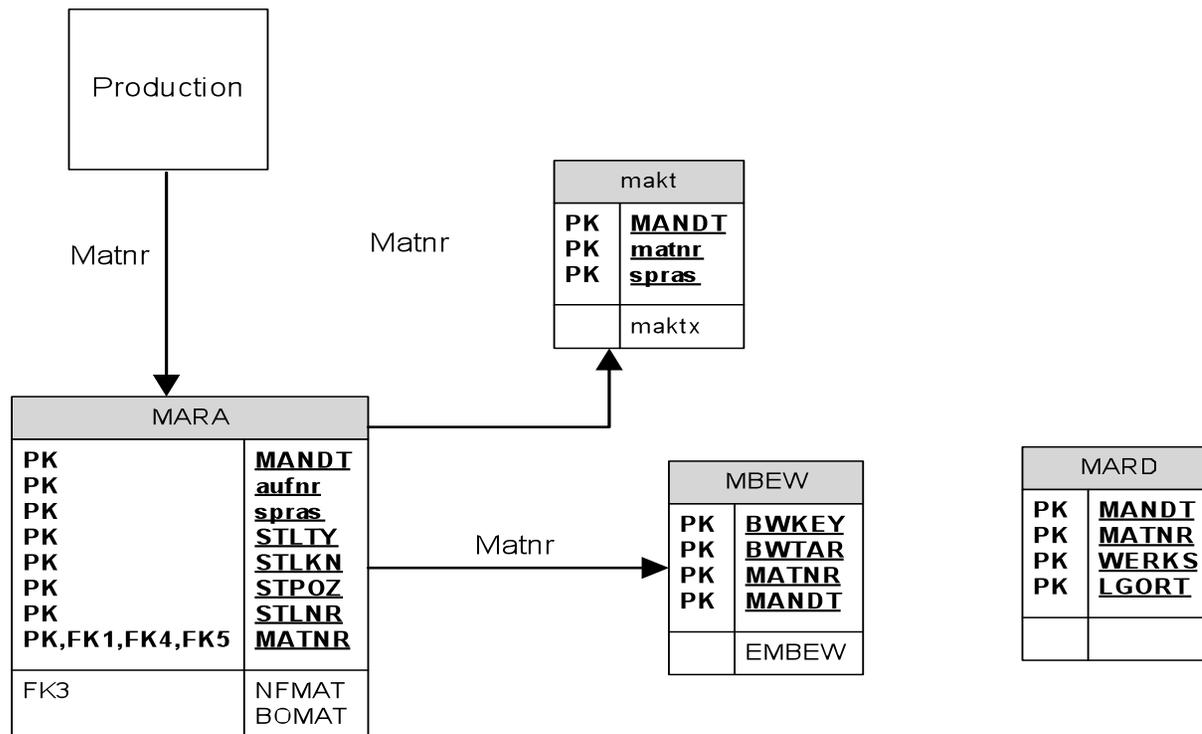
Contains the Storage Location Data for Material.

MATNR	Description
Matnr	Material number
WERKS	Plant
LGORT	Storage Location

2.5.3 MBEW

Contains the General Material Data.

MATNR	Description
BWKEY	Valuation Area
BWTAR	Valuation Type
Matnr	Material number
EMBEW	Data Division MBEW



2.6 Times

2.6.1 ZSIMTIME

Contains the currently running or last run virtual quarter and day of the simulation.

Column	Description
ActualQtr	Current (or last) simulated quarter
ActualDay	Current (or last) simulated day

2.6.2 ZSIMTIMEPERIOD

Contains the mapping of virtual time to actual time. Essentially, the real time period that elapsed during the running of the corresponding virtual day.

Column	Description
DayStart	Date of start of period
TimeStart	Time of start of period
DayEnd	Date of end of period
TimeEnd	Time of end of period
ActualQtr	Virtual quarter that corresponds to the real time period
ActualDay	Virtual day that corresponds to the real time period

ZSIMTIMEPERIOD1	
PK	<u>DayStart</u>
PK	<u>TimeStart</u>
PK	<u>MANDT</u>
	DayEnd TimeEnd ActualQtr ActualDay

ZSIMTIME1	
PK	<u>MANDT</u>
	ActualQtr ActualDay

2.7 Global Sim Informations

2.7.1 ZSIM_HISTGLOBE

Contains snapshot-in-time of information that is global to the game.

Column	Description
SQtr	Virtual quarter that the snapshot was taken
SDay	Virtual day that the snapshot was taken
Prime	The prime interest rate

2.7.2 ZSIM_HISTCCODE

Contains snapshot-in-time (closing balances) of information that is relevant to each company.

Column	Description
SQtr	Virtual quarter that the snapshot was taken
SDay	Virtual day that the snapshot was taken
Bukrs	Company code
IntRate	Effective interest rate
Currency	Which currency the information was recorded in
GLProfit	Calculated net income
GLAcc#####	Closing balance of general ledger account #####



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