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# Demand Planning with SAP® APO - Execution

- ▶ Step-by-Step Explanations with Easy to Follow Instructions
- ▶ Combination of Theory, Business Relevance and ,How to' Approach
- ▶ APO DP Execution Explained using a Business Scenario
- ▶ Centralized Process Flow Diagram to Illustrate Integration

# Table of Contents

<b>Preface</b>	<b>7</b>
<b>1 SAP SCM solution for DP execution</b>	<b>11</b>
1.1 Supply chain management	11
1.2 SCM solutions	12
1.3 APO as an SAP SCM Solution	13
1.4 Introduction of demand planning execution with SAP APO	15
1.5 Summary	16
<b>2 Our business scenario</b>	<b>17</b>
2.1 DM Consumer Appliances, Inc. business scenario	17
2.2 Demand planning scenario	19
2.3 Business challenges	22
2.4 APO DP as a solution to business requirements and challenges	22
2.5 Summary	23
<b>3 Data loading</b>	<b>25</b>
3.1 Sources of historical data	25
3.2 Historical data loading to the InfoCube	27
3.3 Historical data load to the planning system	45
3.4 Summary	50
<b>4 Statistical forecasting</b>	<b>51</b>
4.1 Types of forecasting	51
4.2 Calculating proportional factors	57
4.3 Forecast execution	63
4.4 Disaggregation and aggregation of demand plans	87
4.5 Summary	92
<b>5 Lifecycle planning, promotions and consensus planning</b>	<b>93</b>
5.1 Lifecycle planning	94
5.2 Promotions	110
5.3 Consensus demand planning	124
5.4 Summary	133

<b>6</b>	<b>Mass Processing</b>	<b>135</b>
6.1	Design for mass processing	138
6.2	Mass processing execution	169
6.3	Summary	173
<b>7</b>	<b>Release and transfer of demand plan</b>	<b>175</b>
7.1	Release of demand to SNP and transfer of demand to ERP	176
7.2	Verification of demand in APO and in ERP	182
7.3	Summary	196
<b>8</b>	<b>Implementation and rollout methodology</b>	<b>197</b>
8.1	Business justification for implementation and rollout	198
8.2	Prerequisites for implementation and rollout	199
8.3	Implementation methodology	200
8.4	Rollout methodology	205
8.5	Change management	217
8.6	Business benefits realization	218
8.7	Summary	221
<b>9</b>	<b>Appendices</b>	<b>223</b>
9.1	Business scenario data: DM Consumer Appliances, Inc.	223
9.2	APO BW process flow and APO DP process flow	229
9.3	Important transaction codes	232
9.4	Important tables	235
9.5	Important user exits and BADIs functionality	238
9.6	Important SAP Notes	240
<b>A</b>	<b>About the Authors</b>	<b>246</b>
<b>B</b>	<b>Index</b>	<b>249</b>
<b>C</b>	<b>Disclaimer</b>	<b>255</b>

## 2 Our business scenario

Demand planning execution is best understood through a business example. We will describe a business scenario, a demand planning scenario, and its challenges. Then, we will explain the demand planning solution with APO DP.

We will reference the business scenario mentioned in Chapter 3 through Chapter 7. This chapter will provide a central reference point as we demonstrate APO DP execution across the following chapters.

We explained the business scenario in detail in Chapter 3 of the book *Demand Planning with SAP APO — Concepts and Design*.

Nevertheless, we will once again touch upon the key aspects of the business scenario and explain the demand planning scenario from an APO DP execution standpoint for our company, *DM Consumer Appliances, Inc.*

The following chapters of this book explain demand planning execution for the business scenario.

### 2.1 DM Consumer Appliances, Inc. business scenario

*DM Consumer Appliances, Inc.* is a consumer products company and has sold medium size high definition television [HDTV] sets for the last eight years, with its head office at Atlanta, GA in the United States of America. *DM Consumer Appliances, Inc.* has a supply chain network with following entities:

- ▶ *Atlanta Manufacturing Plant*
- ▶ *Frankfort Distribution Center*
- ▶ *Columbus Retail Store*
- ▶ *Philadelphia Retail Store*

*DM Consumer Appliances, Inc.* sells its products through two distribution channels as follows:

Direct Sales:

- ▶ Direct sales to consumers through its *Columbus Retail Store*, or through its *Philadelphia Retail Store*
- ▶ Direct sales to consumers over web

Indirect Sales:

- ▶ Sales through the *Frankfort Distribution Center* to its commercial customers like wholesalers or retailers
- ▶ Sales through the *Atlanta Manufacturing Plant* to its commercial customers located in the vicinity of the manufacturing plant

The flow of demand from end customers, commercial customers, and their corresponding dependent demand is illustrated in the Figure 2.1.

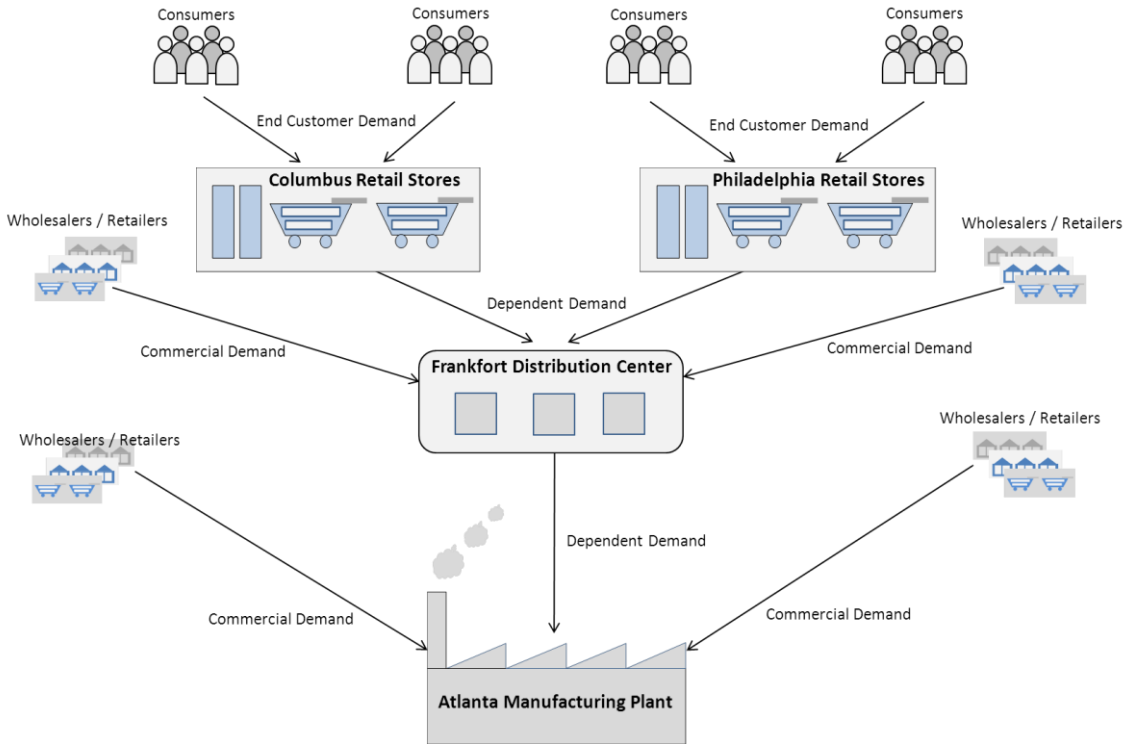


Figure 2.1: Demand flow in supply chain network of DM Consumer Appliances, Inc.

DM Consumer Appliances, Inc. manufactures, distributes, and sells LCD (Liquid Crystal Display) high definition television [HDTV] ranging in size from 32-40 inches in two different resolutions, e.g. 720 pixels (abbreviated as 720p) and 1080 pixels (abbreviated as 1080p). The target market segment of DM Consumer Appliances, Inc. is household customers and sells its products using the brand name DM. DM Consumer Appliances, Inc. sells the following products that belong to the product group *LCD TVs*:

- ▶ 32" DM LCD 720p HDTV
- ▶ 32" DM LCD 1080p HDTV
- ▶ 39" DM LCD 1080p HDTV

DM Consumer Appliances, Inc. launches a 40 inch LED (Light Emitting Diode) technology-based HDTV with a resolution of 1080 pixels under the same brand name DM for a new product group *LED TVs* as follows: *40" DM LED 1080p HDTV*

The product *40" DM LED 1080p HDTV* has a lifecycle of two years. DM Consumer Appliances, Inc. promotes the new product by offering discounts to its customer for the initial six months of the product launch. During the promotional period, the new product *40" DM LED 1080p HDTV* affects the sales of the product *39" DM LCD 1080p HDTV*.

DM Consumer Appliances, Inc. uses SAP ERP (Enterprise Resource Planning) for supply chain execution and forms the main logistics system. The demand plan for all of the *LCD TVs* and *LED TVs* individual products at the *Atlanta Manufacturing Plant* get transferred to ERP for production planning. The network demand plan for all of the individual products for *LCD TVs* and *LED TVs* at non-manufacturing plants gets released to the supply planning system.

We describe the demand planning scenario at DM Consumer Appliances, Inc. in the next section.

## 2.2 Demand planning scenario

DM Consumer Appliances, Inc. foresees the demand planning scenarios as explained below.

DM Consumer Appliances, Inc. maintains sales history data in flat files for a combination of different planning entities for a period of two years and primarily at product group level. DM Consumer Appliances, Inc. likes to keep the option of changing/ cleansing/ overwriting the data at the intermediate stages of data loading. DM Consumer Appliances, Inc. decides on the best practice available for dataflow that provides the option of modifying data at multiple stages and provides the option of advanced reporting at aggregate level.

DM Consumer Appliances, Inc. carries out demand planning of *LCD TVs* based on its available sales history at product group level. Sales history reflects some element of randomness without any strong traces of trend or seasonal behavior. DM Consumer Appliances, Inc. studies the sales history at the product group level diligently and chooses the appropriate forecasting methods such that it does not give forecast inaccuracies. Accurate forecasts help DM Consumer Appliances, Inc. maintain a balance between inventory carrying costs and loss of sales cost. Hence, forecast accuracy in demand planning for DM Consumer Appliances, Inc. is of paramount importance.

In order to maintain accuracy, forecasting is planned at the product group level. Forecast accuracies are measured based on both minimal *bias* and minimal *standard deviation* yardsticks. Measurement of these two aspects reflects an understanding of forecast behavior from two different perspective, i.e., *bias* and *deviation*. DM Consumer Appliances, Inc. likes to be proactively alerted of any forecast inaccuracies beyond the tolerance limit so that it can be acted on immediately.

DM Consumer Appliances, Inc. carries out forecasting monthly, because it is easy to take stock of the aggregate forecast at a relatively larger period level, as this helps in arriving at an accurate forecast. Furthermore, it is easy to identify and control seasonal behavior of forecasts on a monthly basis. Monthly forecasts are transferred to the production execution system for operational planning.

DM Consumer Appliances, Inc. wants to forecast for the medium term and also wants to reflect the latest history in its forecasts. Therefore, it selects a two years history only, as anything more than that period may not reflect reality in a fast changing technology product like a TV. Similarly, DM Consumer Appliances, Inc. does not want to forecast for more than two years as a longer period forecast may be impractical, given the pace at which the electronics world of TV changes. Also, it helps to maintain a predictable inventory level as DM Consumer Appliances, Inc. does not want to compromise on delivery schedules and inventory carrying costs. Nevertheless, forecast is run every week so that the demand remains updated every week.

DM Consumer Appliances, Inc. likes to make use of all possible methods to come up with a demand plan that can reflect near reality. Therefore, DM Consumer Appliances, Inc. wants to start with quantitative forecasting approaches and then makes use of qualitative approaches to the finally disaggregated individual products during consensus planning. The reason for quantitative approach is: DM Consumer Appliances, Inc. is in the business of a commodity product *LCD TVs* for more than eight years in the field of manufacturing, distribution, and retail and has a very good understanding of the product behavior, evolution, and maintains a strong and reliable repository of sales history. DM Consumer Appliances, Inc. wants to make good use of this experience and leverage that towards predictable forecasting using proven statistical methods.

Once forecasting is done for product group *LCD TVs*, the forecast is disaggregated to the individual *LCD TVs* products.

Next, DM Consumer Appliances, Inc. introduces a new product *40" DM LED 1080p HDTV* which does not have any history. However, DM Consumer Appliances, Inc. does not want to copy the history from its equivalent products, instead it carries out lifecycle planning for the newly launched product. DM Consumer Appliances, Inc. refers to the history of *39" DM LCD 1080p HDTV*, i.e., one of the similar products in the *LCD TVs* product group to carry out forecasting for the new LED TV for its maturity phase. Next, lifecycle planning ensures that there is a gradual increase in demand during the initial two phases, i.e., launch and growth for the new LED TV and demand decreases during the decline phase. All the phenomenon of different product lifecycle phases are reflected in the forecasting of the newly launched product *40" DM LED 1080p HDTV*.

DM Consumer Appliances, Inc. carries out promotions for its newly launched LED TV *40" DM LED 1080p HDTV* for the initial six months by offering a 25% store discount. The promotion in turn impacts the sales of the analogous LCD TV, i.e., *39" DM LCD 1080p HDTV*. While the promotion enhances the sales of the newly launched LED TV, it demotes the sale of the analogous LCD TV only for the initial six months. However, DM Consumer Appliances, Inc. carries out a cost benefit analysis to figure out that the benefit, of the promotion far exceeds the loss of the demotion.

Next, for all the individual products belonging to both the product groups, i.e., *LCD TVs* and *LED TVs*, DM Consumer Appliances, Inc. takes into account inputs and buy-in from various other departments and stakeholders and accordingly corrects the forecast and comes up with a consensus demand plan. The inputs and buy-in that DM Consumer Appliances, Inc. gets from various departments and stakeholders is based on their sales experience, expertise, etc. and this group consensus reflects the qualitative approach of DM Consumer Appliances, Inc. towards consensus demand planning. The consensus demand plan is therefore the summation of the statistical forecast, promotions, and manual corrections for all of the individual products that are part of the *LCD TVs*, as well as *LED TVs*. DM Consumer Appliances, Inc. also introduces the alerts management approach that proactively alerts the user in the event of consensus demand plan deviating from the corrected statistical forecast beyond a tolerance level.

Once the consensus plan is ready for all of the individual products for *LCD TVs* and *LED TVs*, DM Consumer Appliances, Inc. decides to release the network demand plan for all individual products accumulated at non-manufacturing locations (*Frankfort Distribution Center, Columbus Retail Store and Philadelphia Retail Store*) to the supply planning system for supply planning. Once the network demand plan has been released to the supply planning system, DM Consumer Appliances, Inc. decides to transfer the demand plan for all individual products accumulated at the *Atlanta Manufacturing Plant* to the ERP system for production planning.

DM Consumer Appliances, Inc. plans to release the demand plan to supply planners prior to the transfer of the demand plan to the production planner. This is because supply planning at non-manufacturing locations generate an additional dependent demand plan for production which gets combined with the independent demand plan for production. To meet the total demand at the *Atlanta Manufacturing Plant*, consolidated production planning is carried out by production planners. Production planners at DM Consumer Appliances, Inc. do not proceed with production planning unless both the dependent demand plan, as well as the independent demand plan is available to them. For the dependent demand plan to become available for production planning at *Atlanta Manufacturing Plant*, supply planning at the non-manufacturing location needs to be carried out. That is the reason why independent demand planning at non-manufacturing locations is carried out prior to independent demand planning at *Atlanta Manufacturing Plant*.

DM Consumer Appliances, Inc. assumes fewer complexities in production processes and assumes fairly stable and uninterrupted capacity. Therefore, production planning is quite simple in the ERP system. DM Consumer Appliances, Inc. assumes that the supply chain network will get more and more complicated in the near future and therefore, would like to make use of a supply planning system that is tightly integrated with demand planning.



# B Index

## A

Accelerated SAP methodology 200  
 Action types 98  
 Active data table 36  
 Activity 63, 136  
 Activity for forecasting 139  
 Activity for release to SNP 145  
 Activity for transfer to ERP 153  
 Advanced Planning and Optimization 22  
 Advanced Planning and Optimization  
   Demand Planning 13  
 Aggregation 87  
 Alert management 21, 72, 82  
 Alert monitor 83  
 APO 13, 14  
 APO BW 25  
 APO DP 22  
 APO DP global rollout 211  
 APO DP implementation 22  
 APO DP process flow 229  
 APO DP solution elements 22  
 APO software 199  
 ASAP methodology 200, 202  
 ASAP methodology for implementation  
   roadmap 202  
 ASAP methodology phases 201  
 Assign selection objects 121  
 Assign the like profile, phase In profile and  
   phase out profile 102  
 Automatic Model Selection 1 78, 83

## B

Background job 136  
 Background job scheduling 63  
 Benefits of ASAP methodology 218  
 Benefits of Global ASAP methodology 219  
 Benefits of mass processing through  
   process chain 179  
 Big bang rollout 210

BPH 204  
 Business benefits 22  
 Business benefits realization 218  
 Business blueprint 201  
 Business challenges 22  
 Business justification for implementation  
   and rollout 198  
 Business process 204, 216  
 Business Process Hierarchy 204, 216  
 Business Process Library 202  
 Business requirements 22  
 Business scenario 22, 204, 216  
 Business scenario data 223

## C

Cannibalization 111, 118  
 Cannibalization group 111, 113  
 Causal forecasting 52  
 Change management 217  
 Complex-to-simple rollouts 211  
 Composite forecasting 52  
 Consensus demand plan 21  
 Consensus demand planning 124  
 Consensus forecast 126  
 Consensus independent demand plan 144  
 Consensus plan 137  
 Consensus planning 15  
 Core execution system 190  
 Corrected forecast 126  
 Cost benefit analysis 21  
 Create a process chain for release and  
   transfer of demand plan 161  
 Create activity for release to SNP 145  
 Create activity for transfer to ERP 153  
 Create the demand planning background  
   job for forecasting 170  
 Create the demand planning job for  
   release to SNP 149

Create the demand planning job for transfer to ERP 156

Create the like profile 97

Creating a process chain for macros execution 169

Croston's Model 70

## D

Data loading 25

Data loading from the DataSource 32

Data loading from the DSO to InfoCube 38

Data loading to PSA in DataSource 27

Data Transfer Process 32, 38

Data View 66

DataSource 27, 32

Decline stage 94

Delphi technique 54

Demand management 190

Demand planning 11, 12, 15

Demand planning job 63

Demand planning job for forecasting 142

Demand planning job for macros execution 160

Demand planning job for release to SNP 149

Demand planning job for transfer to ERP 156

Demand planning scenario 22

Demand Planning Scenario 19

Dependent demand plan 21

Design for lifecycle planning 96

Design for macros execution 158

Design for mass processing 138

Design for promotions and cannibalization 111

Design for release of demand plan to SNP 144

Design for transfer of demand to ERP 151

Direct demand planning job scheduling 177

Direct demand planning job scheduling for forecasting 170

Direct sales 17

Disaggregation 57, 87

DM Consumer Appliances, Inc. 17

DP 12, 15

DP execution 11

DP implementation 197

DP rollout 197

DSO 32, 38

DTP 32

## E

ECC 14

EM 12

ERP 14

ERP demand management 190

Error Total 56

ET 56

Event Management 12

EWM 12

Extended Warehouse Management 12

## F

F&R 12

Final preparation 201

Fit-gap analysis 209

Flat file as source of sales history 27

Forecast accuracy 20, 56

Forecast deviation 56

Forecast error 56

Forecast execution 63

Forecast model 68

Forecast model alignment 69

Forecast strategy 50 78

Forecast strategy 80 70

Forecast visibility 56

Forecasting 51, 170

Forecasting and Replenishment 12

Forecasting through mass processing 138

Forecasting with Automatic Model Selection 1 78

Forecasting with Croston's Model 70

## G

GATP 12

Global Accelerated SAP methodology 205

Global ASAP methodology 205, 213

Global ASAP methodology phases for global rollouts 208

Global ASAP methodology phases for global template building 206

Global Available to Promise 12

Global business blueprint 206

Global program preparation 206

Global realization 206

Global rollout roadmap 213

Global rollouts 205

Global template 206, 211

Global template building 213

Global template maintenance 207

Global template-based rollout 213

Global template-based rollout with SAP Solution Manager 213

Go live support 202

Group consensus 54

Growth stage 94

## H

Harmonization 211

Harmonized requirements 207

HDTV 17

High Definition Television 17

Historical data load to the planning system 45

Hyper care 202

## I

Implementation methodology 200

Implementation with SAP Solution Manager 202

Important SAP Notes 240

Important tables 235

Important transaction codes 232

Important user exits and BADIs functionality 238

Independent demand plan 21

Indirect sales 18

InfoCube 27, 36, 38, 42, 45

InfoPackage 27

Interactive demand planning 64

Interactive demand planning book 67

Interactive demand planning functions 64

Interactive planning book 65

Inventory carrying cost 56

## J

JDA Supply Chain Planning and Optimization 13

Job scheduling for forecasting 170

## L

Launch stage 94

LCD 18

LCD TVs 18

LED TVs 19

Lifecycle planning 15, 20, 94, 96, 103

Lifecycle planning execution 103

Like profile 96, 97

Load data from the InfoCube to the planning area 46

Local business blueprint 209

Local final preparation 209

Local Go Live support 209

Local project preparation 209

Local realization 209

Localization 209, 211

Localized requirements 207

Logistics management 11

Long-range forecasting 55

Loss of sales cost 56

## M

Macro 158

Macro execution 126, 158, 169, 172

Macro execution through mass processing 158

Macrobuilder 66

Macros execution through direct background job scheduling 172

Macros execution through process chain scheduling 172

Macros view 66

Maintain release profile 144

Maintain transfer profile 151

Manual correction 126

Mass processing 135, 138

Mass processing execution 169

Mass processing for forecasting 170  
Mass processing for macro execution 172  
Maturity stage 94  
Medium-range forecasting 55  
MLR 52  
Multi-location rollouts 209  
Multiple Linear Regression 52

## O

Oracle SCM 12

## P

Phase in period 95  
Phase in profile 96, 99  
Phase out period 95  
Phase out profile 96, 100  
Pilot final preparation 206  
Pilot implementation 211  
Pilot site 206, 207  
Pilot site implementation 206  
Pilot site selection 207  
Planned independent requirements 182,  
190  
Planning area 49  
Planning Book 66  
Planning job 136  
PP/DS 12  
Prerequisites for implementation and  
rollout 199  
Process chain 63, 136, 138, 160  
Process chain design 160  
Process chain design for demand planning  
160  
Process chain for forecasting 161  
Process chain for macros execution 169  
Process chain scheduling 63, 179  
Process chain scheduling for forecasting  
171  
Process chainfor release and transfer of  
demand plan 161  
Process step 204, 216  
Product group 18  
Product group level 56  
Product lifecycle 94  
Product view 187

Production Planning and Detailed  
Scheduling 12

Project preparation 201  
Promotion 21, 126  
Promotion attribute types 112  
Promotion Attribute Types 111  
Promotion base 111, 115  
Promotion key figures 114  
Promotion level 114, 115  
Promotion planning 110, 118  
Promotions 110, 111  
Promotions planning 15  
Proportional factor 57  
Proportional factors 58  
PSA 27, 32

## Q

Qualitative forecasting 53  
Qualitative forecasting approach 20  
Quantitative forecasting 53  
Quantitative forecasting approach 20

## R

Realization 201  
Release and transfer of demand 177, 179  
Release and transfer of demand plan 161  
Release and transfer of demand through  
direct demand planning job scheduling  
177  
Release and transfer of demand through  
process chain scheduling 179  
Release demand plan to supply planner  
21  
Release of demand plan 144  
Release of demand plan to SNP 144  
Release of demand to SNP 176  
Release of demand to SNP and transfer of  
demand to ERP 176  
Release profile 144  
Release to SNP 149  
RMSE 56  
Rollout methodology 205  
Rollout strategies 209  
Rollout strategy 210, 211  
Root Mean Square Error 56

**S**

Sales and operations planning 15  
 Sales history 19  
 Sales history in the DSO 36  
 Sales history in the InfoCube 42  
 Sales history in the planning area 49  
 Sales history in the PSA 30  
 SAP Advanced Planning and Optimization 13  
 SAP APO 11, 12, 14  
 SAP APO BW process flow 229  
 SAP ECC 14  
 SAP ERP 14  
 SAP implementation and rollout methodologies 197  
 SAP methodology 197  
 SAP roadmap 201, 205  
 SAP SCM 12, 13, 14, 22  
 SAP Supply Chain Management 13  
 Schedule the background job 169  
 Schedule the process chain design 169  
 SCM 11, 13, 14  
 SCM software 199  
 SCM solution 12  
 Selected objects view 66  
 Selection 66  
 Selection profile 66  
 Selector 65  
 Service Parts Planning 12  
 Short range forecasting 55  
 Simple-to-complex rollouts 211  
 SNC 12  
 SNP 12  
 SNP interactive planning book 183  
 Solution Composer 201, 205  
 Solution Manager 199, 201, 202, 205, 213  
 Source Systems 25  
 SPP 12  
 Staggered rollout 210, 211  
 Standardization 211  
 Standardized requirements 207  
 Statistical forecasting 15  
 Statistical method 52  
 Stock/requirements list 190, 194  
 Structural aggregation 87

Structural disaggregation 87  
 Supplier Network Collaboration 12  
 supply chain execution 14  
 Supply Chain Management 13  
 supply chain planning 14  
 Supply Network Management 11  
 Supply Network Planning 12  
 Supply plan 187

**T**

Template-building project 211  
 Time based disaggregation 87  
 Time-based aggregation 87  
 Total forecast 57, 126  
 TP/VS 12  
 Transaction/ configuration 204, 216  
 Transfer demand plan to production planner 21  
 Transfer of demand to ERP 151, 176  
 Transfer profile 151  
 Transfer to ERP 156  
 Transformation 32, 38  
 Transportation Planning and Vehicle Scheduling 12  
 Types of forecasting 51

**U**

Univariate forecasting 52  
 Univariate statistical forecast execution 68  
 Univariate statistical forecasting 68, 69

**V**

Verification of demand in APO and in ERP 182  
 Verification of released demand 182, 187  
 Verification of released demand in APO 182  
 Verification of released demand in SNP 183  
 Verification of released demand in the interactive product view 187  
 Verification of released demand in the SNP interactive planning book 183  
 Verification of transferred demand 190, 194

Verification of transferred demand in  
demand management 190  
Verification of transferred demand in ERP  
190  
Verification of transferred demand in  
stock/requirements list 194

**W**

Weighing factor 98  
Weighing profile 98  
Workspace 65, 66