Jörg Thomas Dickersbach

Supply Chain Management with SAP APO™

Structures, Modelling Approaches and Implementation of SAP SCM™ 2008

3rd edition

Springer

Contents

PART I – OVERVIEW

1 SCM Projects with SAP APO™ 3
1.1 The Supply Chain Management Approach 3
1.2 Supply Chain Management Projects with SAP APO™ 6
1.3 SAP APO™ Project Management and Peculiarities 7

2 SCM Processes and SAP APO™ Modules 9

3 SAP APO™ Architecture 15
3.1 Technical Building Blocks of SAP APO™ 15
3.2 Master Data Overview 17
3.3 Model and Version 23
3.4 Planners 24
3.5 Order Categories 25
3.6 Pegging 25
3.7 Data Locking 28

PART II – DEMAND PLANNING

4 Demand Planning 33
4.1 Demand Planning Overview 33
4.1.1 Demand Planning Process 33
4.1.2 Planning Levels and Consistent Planning 34

4.2 Data Structure for Demand Planning 36
4.2.1 Characteristics, Key Figures and Structure Overview 36
4.2.2 Planning Object Structure and Planning Area 37
4.2.3 Configuration of the Planning Object Structure 38
4.2.4 Configuration of the Planning Area 39
4.2.5 Disaggregation 42
4.2.6 Organisation of Characteristic Value Combinations 43
4.2.7 Time Series 45
4.3 Planning Book, Macros and Interactive Planning 46
4.3.1 Planning Book 46
4.3.2 Macros 52
4.3.3 Fixing of Values 56
4.4 Statistical Forecasting 57
4.4.1 Basics of Forecasting 57
4.4.2 Data History 58
4.4.3 Univariate Forecast Models 58
4.4.4 Multiple Linear Regression (MLR) 60
4.4.5 Forecast Execution 60
4.4.6 Life Cycle Planning 64
4.5 Promotion Planning 67
4.6 Dependent Demand in Demand Planning 72
4.7 Collaborative Forecasting 75
4.8 Background Planning 77
4.9 Release of the Demand Plan 79
4.9.1 Topics for the Demand Plan Release 79
4.9.2 Forecast Release 79
4.9.3 Forecast After Constraints 81
4.9.4 Transfer to SAP ERP™ 83

5 Forecast Consumption and Planning Strategies 85
5.1 Make-to-Stock 85
5.2 Make-to-Order 86
5.3 Planning with Final Assembly 87
5.4 Planning Without Final Assembly 89
5.5 Planning for Assembly Groups 91
5.6 Technical Settings for the Requirements Strategies 92

PART III – ORDER FULFILMENT

6 Order Fulfilment Overview 97

7 Sales 99
7.1 Sales Order Entry 99
7.2 Availability Check Overview 100
7.2.1 Functionality Overview for the Availability Check 100
7.2.2 ATP Functionality for Document Types 101
7.3 Master Data and Configuration 104
7.3.1 Master Data for ATP 104
7.3.2 Basic ATP Configuration 105
7.3.3 Time Buckets and Time Zones 107
7.4 Product Availability Check 109
7.4.1 Product Availability Check Logic 109
7.4.2 Product Availability Check Configuration 111
7.5 Allocations 114
7.5.1 Business Background and Implications 114
7.5.2 Configuration of the Allocation Check 116
7.5.3 Allocation Maintenance and Connection to DP 120
7.5.4 Collective Product Allocations 121
7.6 Forecast Check 121
7.7 Rules-Based ATP 122
7.8 Transportation and Shipment Scheduling 132
7.9 Backorder Processing 134

8 Transportation Planning 145
8.1 Transportation Planning Overview 145
8.2 Master Data and Configuration 147
8.2.1 Master Data for TP/VS 147
8.2.2 Geo-Coding 152
8.2.3 Configuration of the CIF 154
8.3 TP/VS Planning Board 154
8.4 TP/VS Optimisation 156
8.5 Scheduling 159
8.6 Carrier Selection 160
8.7 Collaboration 161
8.8 Release and Transfer to SAP ERP™ 162
8.9 Dynamic Route Determination 162

PART IV – DISTRIBUTION

9 Distribution and Supply Chain Planning Overview 165
9.1 Distribution and Supply Chain Planning Scenarios 165
9.2 Applications for Distribution and Supply Chain Planning 167
9.3 Order Cycle for Stock Transfers 171
9.4 Integration of Stock Transfers to SAP ERP™ 173
9.5 SNP Planning Book 178

10 Integrated Distribution and Production Planning 183
10.1 Cases for Integrated Planning 183
10.2 SNP Optimiser 184
10.2.1 Basics of the Supply Network Optimiser 184
10.2.2 Optimiser Set-up and Scope 185
10.2.3 Costs and Constraints 187
10.2.4 Discretisation 189
10.2.5 Technical Settings 191
10.3 Capable-to-Match 193
10.3.1 CTM Planning Approach 193
10.3.2 Prioritisation, Categorisation and Search Strategy 195
10.3.3 CTM Planning 198
10.3.4 CTM Planning Strategies 203
10.3.5 Supply Distribution 206

11 Distribution Planning 207
11.1 Master Data for Distribution Planning 207
11.2 SNP Heuristic 210
11.3 Planned Stock Transfers 210
11.4 Stock in Transit 212
11.5 Storage and Handling Restrictions 213
11.6 Sourcing 215

12 Replenishment 217
12.1 Deployment 217
12.1.1 Deployment Overview 217
12.1.2 Deployment Heuristic 218
12.1.3 Deployment Optimisation 225
12.2 Transport Load Builder 227

PART V – PRODUCTION

13 Production Overview 235
13.1 Production Process Overview 235
13.2 Applications for Production Planning 239
13.2.1 Scenario and Property Overview 239
13.2.2 Lot Size 245
13.2.3 Scrap 247
13.3 Feasible Plans 250
13.4 Master Data for Production 252
13.4.1 Production Master Data Overview 252
13.4.2 Resource for SNP 256
13.4.3 PDS and PPM for SNP 257
13.4.4 Resources for PP/DS 262
13.4.5 PDS and PPM for PP/DS 267
13.4.6 Integration to PP-PI 273
13.5 Dependencies to the SAP ERP™ Configuration 275

14 Rough-Cut Production Planning 277
14.1 Basics of Rough-Cut Production Planning 277
14.2 SNP Heuristic 280
14.3 Capacity Levelling 282
14.4 SNP Optimisation for Production Planning 283
14.5 Capable-to-Match (with SNP Master Data) 285
14.6 Scheduling in SNP 286
14.7 Integration to PP/DS and SAP ERP™ 289
14.7.1 Process Implications of Rough-Cut and Detailed Planning 289
14.7.2 Integration to PP/DS 290
14.7.3 Integration to SAP ERP™ 294

15 Detailed Production Planning 295
15.1 Basics of PP/DS 295
15.1.1 Order Life Cycle and Order Status 295
15.1.2 Scheduling and Strategy Profile 297
15.1.3 Planning Procedure 299
15.1.4 Real Quantity 300

15.2 Heuristics for Production Planning 300
15.2.1 Concept of Production Planning and MRP Heuristic 300
15.2.2 Production Planning Heuristics 301
15.2.3 MRP Heuristic 304
15.2.4 Net Change Planning and Planning File Entries 305
15.2.5 Mass Processing 305
15.3 Consumption Based Planning 308
15.4 Material Flow and Service Heuristics 309
15.5 Tools for Visualisation and Interactive Planning 311
15.5.1 Product View 311
15.5.2 Product Overview 314
15.5.3 Product Planning Table 315
15.6 Reporting 316
15.7 Special Processes for Production Planning 319
15.7.1 MRP Areas 319
15.7.2 Production in a Different Location 321
15.8 Capable-to-Match (with PP/DS Master Data) 322

16 Sales in a Make-to-Order Environment 325
16.1 Process Peculiarities and Overview 325
16.2 Capable-to-Promise 327
16.2.1 Steps Within the CTP Process 327
16.2.2 Configuration of the CTP Process 328
16.2.3 Problems with Time-Continuous CTP 330
16.2.4 Bucket-Oriented CTP 332
16.2.5 Interactive CTP 335
16.2.6 Limitations for CTP 335
16.3 Multi-level ATP 336
16.3.1 Steps Within the Multi-level ATP Process 336
16.3.2 Configuration of the Multi-level ATP 338
16.3.3 Limitations for Multi-level ATP 339

17 Detailed Scheduling 341
17.1 Planning Board 341
17.2 Basics of Detailed Scheduling 346
17.2.1 Scheduling Strategies 346
17.2.2 Error-Tolerant Scheduling 348
17.2.3 Finiteness Level 349
17.3 Scheduling Heuristics 349
17.4 Sequence Dependent Set-up 353

17.5 Sequence Optimisation 356
17.5.1 Optimisation as Part of the Planning Process 356
17.5.2 Optimisation Model and Scope 357
17.5.3 Optimisation Controls Within the Optimisation Profile ... 359
17.5.4 Handling and Tools for Optimisation 365

18 Production Execution 367
18.1 Planned Order Conversion 367
18.2 ATP Check and Batch Selection 369
18.3 Production Order Handling 370

19 Modelling of Special Production Conditions 373
19.1 Alternative Resources 373
19.2 Modelling of Labour 377
19.3 Overlapping Production 378
19.4 Fixed Pegging and Order Network 379
19.5 Push Production 383

PART VI – EXTERNAL PROCUREMENT

20 Purchasing 387
20.1 Purchasing Overview 387
20.1.1 Process Overview 387
20.1.2 Order Life Cycle and Integration to SAP APO™ 387
20.2 Suppliers and Procurement Relationships 391
20.3 Supplier Selection 392
20.4 Scheduling Agreements 394
20.5 Supplier Capacity 397

21 Subcontracting 401
21.1 Subcontracting Process Overview 401
21.2 Modelling of the Production at the Receiving Plant 402
21.3 Modelling of the Production at the Supplier 405
21.4 Subcontracting Process Variants 408
21.5 Subcontracting in SNP 411

PART VII – CROSS PROCESS TOPICS

22 Stock and Safety Stock 415
22.1 Stock Types in APO™ 415
22.2 Safety Stock 416

23 Interchangeability 421
23.1 Interchangeability Overview 421
23.2 Interchangeability in DP 422
23.3 Interchangeability in SNP 423
23.4 Interchangeability in PP/DS 424
23.5 Interchangeability in ATP 426

24 Exception Reporting 427
24.1 Basics of Alert Monitoring 427
24.2 Alert Types 429
24.3 Alert Handling 433
24.4 Alert Calculation in the Background 435
24.5 Supply Chain Cockpit 435

PART VIII – SYSTEM INTEGRATION

25 Core Interface 439
25.1 Overview of the Core Interface 439
25.2 Configuration of the Core Interface 439
25.3 Integration Models and Data Transfer 442
25.4 Master Data Integration 446
25.5 Transactional Data Integration 450
25.6 Operational Concept 452
25.6.1 Organisation of the Integration Models 452
25.6.2 Organisation of the Data Transfer 453
25.6.3 Data Consistency 454
25.6.4 Queue Monitoring 454

26 Integration to DP 461
26.1 Data Storage in Info Cubes 461
26.2 Data Loading Structures 463
26.3 Data Upload 466

APPENDIX

References 471

Abbreviations 479

Transactions and Reports 481

Index 495