

# Logistic Core Operations with SAP



Jens Kappauf • Bernd Lauterbach  
Matthias Koch

# Logistic Core Operations with SAP

Inventory Management, Warehousing,  
Transportation, and Compliance



Springer

Jens Kappauf  
SAP AG, Walldorf  
Germany  
[info@books.kappauf.eu](mailto:info@books.kappauf.eu)

Bernd Lauterbach  
SAP AG, Walldorf  
Germany  
[b.lauterbach.logistics@googlemail.com](mailto:b.lauterbach.logistics@googlemail.com)

Matthias Koch  
SAP AG, Walldorf  
Germany  
[m.koch.logistics@googlemail.com](mailto:m.koch.logistics@googlemail.com)

ISBN 978-3-642-18201-3                    e-ISBN 978-3-642-18202-0  
DOI 10.1007/978-3-642-18202-0  
Springer Heidelberg Dordrecht London New York

Library of Congress Control Number: 2012931238

© Springer-Verlag Berlin Heidelberg 2012

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilm or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

The use of general descriptive names, registered names, trademarks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

All printed screens, SAP, the SAP Logo, my SAP, SAP R/3, ABAP, NetWeaver Portal are subject to copyright or are trademarks of SAP AG, Dietmar-Hopp-Allee 16, 69190 Walldorf, Germany.

Printed on acid-free paper

Springer is part of Springer Science+Business Media ([www.springer.com](http://www.springer.com))

# Contents

|          |   |          |
|----------|---|----------|
| <b>1</b> | <b>Introduction .....</b>                                 | <b>1</b> |
| 1.1      | Purpose of This Project .....                             | 1        |
| 1.2      | Whom Do These Books Address? .....                        | 2        |
| 1.2.1    | SAP-Beginners .....                                       | 2        |
| 1.2.2    | Ambitious Users .....                                     | 2        |
| 1.2.3    | Managers and IT-Decision-Makers .....                     | 2        |
| 1.3      | Operational Significance of Logistics .....               | 3        |
| 1.3.1    | Supplementary Logistics Services .....                    | 3        |
| 1.3.2    | Customer-Oriented Logistics .....                         | 3        |
| 1.3.3    | Definition of “Logistics” for This Book .....             | 4        |
| 1.3.4    | Differentiation from Materials Management .....           | 4        |
| 1.3.5    | Functional Classification of Logistics .....              | 5        |
| 1.3.6    | Classic Logistics Core Areas .....                        | 5        |
| 1.3.7    | Expansion of the Traditional Core Areas .....             | 5        |
| 1.3.8    | Objective: As Comprehensive a Portrayal As Possible ..... | 5        |
| 1.3.9    | Related Literature in the Appendix .....                  | 5        |
| 1.3.10   | Logistics Functional Areas .....                          | 6        |
| 1.3.11   | Procurement Markets .....                                 | 6        |
| 1.3.12   | Sales Markets .....                                       | 7        |
| 1.4      | Structure of This Book .....                              | 7        |
| 1.4.1    | Transport Logistics .....                                 | 7        |
| 1.4.2    | Warehouse Logistics and Inventory Management .....        | 8        |
| 1.4.3    | Trade Formalities .....                                   | 8        |
| 1.4.4    | Controlling and Reporting .....                           | 8        |
| 1.4.5    | Overview of Volume 1 .....                                | 9        |
| 1.4.6    | Appendix .....  | 9        |
| 1.5      | Thanks .....  | 9        |

|   |    |
|---|----|
| <b>2 Transport Logistics .....</b>  | 11 |
| 2.1 The Fundamentals of Transport Logistics .....   | 11 |
| 2.1.1 Business Significance .....   | 13 |
| 2.1.2 Transportation from the Shipper View .....  | 13 |
| 2.1.3 Transportation from the View of the Logistics Service Provider .....                                      | 14 |
| 2.1.4 Shipper and Service Provider Hybrids .....  | 15 |
| 2.2 SAP Systems and Applications .....  | 16 |
| 2.2.1 Subprocesses and Components of SAP Transportation Solutions .....   | 17 |
| 2.2.2 Transportation Processing Scenarios and Their Integration in Procurement and Distribution Logistics ..... | 19 |
| 2.3 Master Data in Transport Logistics .....  | 28 |
| 2.3.1 Customers and Vendors in SAP ERP .....  | 30 |
| 2.3.2 Plants, Storage Locations, Shipping Points and Loading Points in SAP ERP .....                            | 31 |
| 2.3.3 Business Partners in SAP SCM .....  | 31 |
| 2.3.4 Materials in SAP ERP .....  | 33 |
| 2.3.5 Products in SAP SCM .....   | 36 |
| 2.3.6 Transportation Network and Transport Equipment in SAP ERP .....   | 37 |
| 2.3.7 Transportation Network and Resources in SAP SCM .....   | 38 |
| 2.3.8 Organizational Data in SAP ERP and in SAP SCM .....   | 42 |
| 2.4 Transportation Management with SAP ERP .....  | 44 |
| 2.4.1 Types of Transportation Processing .....  | 44 |
| 2.4.2 Shipment Documents .....  | 45 |
| 2.4.3 Transport Packaging .....   | 48 |
| 2.4.4 Important Functions in the Shipment Document .....  | 49 |
| 2.4.5 List Processing and Planning Functions .....  | 52 |
| 2.4.6 Freight Cost Calculation .....  | 53 |
| 2.5 Transportation Planning with SAP APO .....  | 59 |
| 2.5.1 Transportation Optimization with SAP APO (TP/VS) .....  | 60 |
| 2.5.2 Documents and Transportation Optimization .....   | 61 |
| 2.5.3 Scenarios with APO Transportation Planning .....  | 62 |
| 2.6 Transportation Management with SAP TM .....   | 65 |
| 2.6.1 Document and Process Overview .....   | 66 |
| 2.6.2 Cross-Divisional Functions .....  | 69 |
| 2.6.3 Business Objects and Functions Illustrated in a Sample Process .....                                      | 70 |
| 2.6.4 Order Management .....  | 74 |
| 2.6.5 Transportation Planning and Optimization .....  | 82 |
| 2.6.6 Booking Freight Space .....   | 89 |
| 2.6.7 Subcontracting .....  | 91 |

|   |            |
|---|------------|
| 2.6.8 Transportation Charge Management .....  | 94         |
| 2.6.9 Integration with SAP Event Management .....   | 97         |
| 2.7 Summary .....   | 98         |
| <b>3 Warehouse Logistics and Inventory Management .....</b>                                 | <b>99</b>  |
| 3.1 The Fundamentals of Warehouse Logistics .....   | 99         |
| 3.1.1 Management-Related Significance .....   | 100        |
| 3.1.2 Systems and Applications .....  | 101        |
| 3.1.3 Organizational Structures and Master Data .....                                       | 103        |
| 3.2 Inventory Management .....  | 105        |
| 3.2.1 Goods Movement .....  | 109        |
| 3.2.2 Inventory Valuation .....   | 116        |
| 3.2.3 Special Stock and Special Procurement Forms .....                                     | 119        |
| 3.2.4 Handling Units .....  | 125        |
| 3.3 Warehouse Management with WM .....  | 128        |
| 3.3.1 Warehouse Structure and Integration .....   | 131        |
| 3.3.2 Inbound Delivery .....  | 137        |
| 3.3.3 Transfer Order and Quantity Deviations .....  | 141        |
| 3.3.4 Goods Issue .....   | 143        |
| 3.3.5 Warehouse-Internal Processes .....  | 151        |
| 3.4 Warehouse Management with SAP EWM .....   | 155        |
| 3.4.1 System Integration .....  | 156        |
| 3.4.2 Warehouse Organization and Stock Movement .....                                       | 157        |
| 3.4.3 Goods Receipt .....   | 173        |
| 3.4.4 Warehouse-Internal Processes .....  | 185        |
| 3.4.5 Goods Issue .....   | 192        |
| 3.4.6 Cross-Warehouse Functions .....   | 206        |
| 3.5 Summary .....   | 213        |
| <b>4 Trade Formalities: Governance, Risk, Compliance .....</b>                              | <b>215</b> |
| 4.1 The Basics .....  | 215        |
| 4.2 Process Risks .....   | 216        |
| 4.3 SAP Applications for Logistics Processing According<br>to Trade Formalities .....       | 217        |
| 4.4 Foreign Trade Processing with SAP ERP .....   | 219        |
| 4.4.1 Master Data and Integration .....   | 220        |
| 4.4.2 Legal Control .....   | 222        |
| 4.4.3 Preference Determination .....  | 222        |
| 4.4.4 Documentary Payments .....  | 224        |
| 4.4.5 Communication/Printing .....  | 226        |
| 4.4.6 Periodic Declarations .....   | 226        |
| 4.5 Governance, Risk and Compliance with SAP BusinessObjects<br>Global Trade Services ..... | 226        |
| 4.5.1 General Process and Integration in SAP ERP .....                                      | 227        |

|  |            |
|--|------------|
| 4.5.2 Compliance Management: Sanctioned Party List Check ..... | 228        |
| 4.5.3 Compliance Management: Import/Export Control .....       | 231        |
| 4.5.4 Customs Management .....                                 | 234        |
| 4.5.5 Risk Management .....                                    | 235        |
| 4.6 Summary .....  | 237        |
| <b>5 Controlling and Reporting .....</b>                       | <b>239</b> |
| 5.1 SAP Event Management (SAP EM) .....                        | 239        |
| 5.1.1 Basic Characteristics of SAP EM .....                    | 240        |
| 5.1.2 Application Interface .....                              | 243        |
| 5.1.3 Event Handlers and Event Messages .....                  | 245        |
| 5.1.4 Event Handling .....                                     | 247        |
| 5.1.5 Information Input and Output .....                       | 249        |
| 5.1.6 Data Entry for Event Messages .....                      | 250        |
| 5.1.7 Web Interface .....                                      | 251        |
| 5.1.8 Standard Processes in Event Management .....             | 252        |
| 5.2 Auto-ID Infrastructure and Object Event Repository .....   | 258        |
| 5.2.1 Basics of RFID and EPC Technology .....                  | 259        |
| 5.2.2 Auto-ID Infrastructure .....                             | 262        |
| 5.2.3 Object Event Repository .....                            | 266        |
| 5.3 Reporting and Determining Key Performance Indicators ..... | 268        |
| 5.3.1 SAP NetWeaver Business Warehouse .....                   | 269        |
| 5.3.2 The Information System in SAP ERP .....                  | 269        |
| 5.3.3 The SCOR Data Model .....                                | 271        |
| 5.3.4 Reports and Dashboards: Examples .....                   | 272        |
| 5.3.5 Data Extraction from SAP Logistics Applications .....    | 275        |
| 5.4 Summary .....  | 276        |
| <b>Glossary .....</b>  | <b>277</b> |
| <b>Bibliography .....</b>                                      | <b>283</b> |
| <b>Index .....</b>   | <b>285</b> |