Jocelyn Dart, Erik Dick, Ginger Gatling, Oliver Hilss, Somya Kapoor, Silvana Kempf, Susan Keohan, Thomas Kosog, Paul Médaille, Mike Pokraka, Alan Rickayzen, Shalini Sabnani, Jörn Sedlmayr, Ted Sohn

Practical Workflow for SAP®

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# Contents at a Glance

## PART I Using SAP Business Workflow

1. Introduction ................................................................. 39
2. Requirements Gathering Strategy .................................... 57
3. Configuring the System .................................................. 83
4. Work Item Delivery ........................................................ 95
5. Agents ...................................................................... 133
6. Workflow Administration .............................................. 161
7. Using SAP NetWeaver Business Warehouse for SAP Business Workflow Reporting .................................................. 211

## PART II Developing Your Own Workflow

8. Creating a Workflow ...................................................... 221
10. Business Objects ......................................................... 289
11. ABAP Classes ............................................................. 353
12. Agent Determination Rules ........................................... 413
13. Using Events and Other Business Interfaces .................... 441
14. Custom Programs ....................................................... 475
15. Service-Enabling Workflows ......................................... 501
16. Advanced Diagnostics .................................................. 535
17. Upgrading SAP Business Workflow ................................ 555

## PART III User Interface Technologies and SAP Business Workflow

18. User Interface Options ................................................ 567
19. Using Web Dynpro ABAP .............................................. 575
20. Using Web Dynpro Java ............................................... 593
21. Using Business Server Pages ......................................... 613
22. Using Forms ................................................................ 637
23. Alloy — Lotus Notes Integration ..................................... 645
24. Duet — Microsoft Office Integration ............................... 661

## PART IV Using SAP Business Workflow in SAP Business Suite Applications

25. SAP Supplier Relationship Management .......................... 679
26. SAP Customer Relationship Management ........................ 735
27. SAP ERP Human Capital Management — Processes and Forms .......................................................... 793
28. Setting Up an SAP-Provided SAP ERP Workflow ............... 825
29. ArchiveLink .................................................................. 835

## Appendices
### Contents

Foreword .................................................................................................................. 27
Preface .................................................................................................................... 29

## PART I: Using SAP Business Workflow

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
<td>39</td>
</tr>
<tr>
<td>1.1</td>
<td>What Is SAP Business Workflow</td>
<td>39</td>
</tr>
<tr>
<td>1.2</td>
<td>What Is SAP NetWeaver Business Process Management</td>
<td>42</td>
</tr>
<tr>
<td>1.3</td>
<td>How Does SAP Business Workflow Fit Into the SAP Overall Business Process Management Strategy</td>
<td>43</td>
</tr>
<tr>
<td>1.4</td>
<td>In Which Business Situations Should I Use SAP Business Workflow</td>
<td>44</td>
</tr>
<tr>
<td>1.4.1</td>
<td>Factor 1: Human Involvement</td>
<td>45</td>
</tr>
<tr>
<td>1.4.2</td>
<td>Factor 2: Repetition</td>
<td>45</td>
</tr>
<tr>
<td>1.4.3</td>
<td>Factor 3: The Fruits of Success</td>
<td>46</td>
</tr>
<tr>
<td>1.4.4</td>
<td>Factor 4: The Cost of Failure</td>
<td>48</td>
</tr>
<tr>
<td>1.5</td>
<td>What Can Be Achieved Using SAP Business Workflow</td>
<td>49</td>
</tr>
<tr>
<td>1.6</td>
<td>Features of SAP Business Workflow</td>
<td>49</td>
</tr>
<tr>
<td>1.6.1</td>
<td>Robust Integration into SAP Applications</td>
<td>50</td>
</tr>
<tr>
<td>1.6.2</td>
<td>Workflow Builder</td>
<td>50</td>
</tr>
<tr>
<td>1.6.3</td>
<td>Graphical Status Visualization</td>
<td>51</td>
</tr>
<tr>
<td>1.6.4</td>
<td>Routing Mechanisms</td>
<td>52</td>
</tr>
<tr>
<td>1.6.5</td>
<td>Deadline/Escalation Management</td>
<td>53</td>
</tr>
<tr>
<td>1.6.6</td>
<td>Synchronization Management</td>
<td>53</td>
</tr>
<tr>
<td>1.6.7</td>
<td>Integration with Groupware Products</td>
<td>53</td>
</tr>
<tr>
<td>1.6.8</td>
<td>Ad-hoc Process Enhancers</td>
<td>53</td>
</tr>
<tr>
<td>1.6.9</td>
<td>Desktop Integration</td>
<td>54</td>
</tr>
<tr>
<td>1.6.10</td>
<td>Analytics with SAP NetWeaver Business Warehouse</td>
<td>54</td>
</tr>
<tr>
<td>1.6.11</td>
<td>Robust Extensible Architecture</td>
<td>55</td>
</tr>
<tr>
<td>1.7</td>
<td>Some Terminology</td>
<td>55</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Requirements Gathering Strategy</td>
<td>57</td>
</tr>
<tr>
<td>2.1</td>
<td>Introduction</td>
<td>57</td>
</tr>
<tr>
<td>2.2</td>
<td>Understanding the Business Process</td>
<td>59</td>
</tr>
</tbody>
</table>
Contents

2.2.1 Business Drivers for the Process .............................................................. 59
2.2.2 Expected Benefits of Workflow .............................................................. 61
2.2.3 How Does the Process Work in Theory .................................................. 63
2.2.4 How Does the Process Work in Practice ................................................. 63
2.2.5 Unions and Workers Councils ............................................................... 66
2.3 Gathering Object Data ............................................................................. 66
   2.3.1 What Data Is Needed by Workflow ..................................................... 67
   2.3.2 Where to Look for Data ....................................................................... 68
   2.3.3 What Data Already Exists .................................................................... 68
   2.3.4 Making the Most of the Data Collected .............................................. 69
2.4 Determining the Agents .......................................................................... 72
   2.4.1 Who Are Your Agents? ....................................................................... 73
   2.4.2 Criteria for Finding Agents .................................................................. 74
2.5 Determining Work Item Delivery Routes ..................................................... 77
2.6 Confirming the Workflow Design ................................................................. 78
2.7 Workflow Administration ........................................................................... 80
2.8 Planning for Production Start .................................................................... 80
2.9 Planning for Future Enhancements .............................................................. 81

3 Configuring the System ............................................................................... 83
   3.1 Quick Start: Configure the SAP Workflow Engine in Seconds .............. 85
      3.1.1 Automatic Workflow Customizing .................................................... 85
      3.1.2 Specifics of Automatic Customizing ............................................... 87
      3.1.3 IMG Activities for Authorization Management ............................ 90
   3.2 Task-Specific Customizing ..................................................................... 91
      3.2.1 Maintaining the Organizational Plan .............................................. 91
      3.2.2 Agent Assignment for Tasks ........................................................... 92
      3.2.3 Activating the Triggering Events for a Workflow or a Task .......... 92
   3.3 Transport and Client Copy ..................................................................... 92
      3.3.1 Transport of Tasks ......................................................................... 93
      3.3.2 Transport of Settings for Tasks and Workflows ......................... 93
      3.3.3 Transporting a Workflow Definition ............................................. 93
   3.4 Customizing for the SAP Workflow Engine .......................................... 94

4 Work Item Delivery ................................................................................... 95
   4.1 The Human Factor ................................................................................ 95
   4.2 SAP Business Workplace ..................................................................... 98
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1.4 Recipients</td>
<td>140</td>
</tr>
<tr>
<td>5.1.5 Actual Agents</td>
<td>141</td>
</tr>
<tr>
<td>5.1.6 Assigning Multiple Agents per Work Item</td>
<td>142</td>
</tr>
<tr>
<td>5.1.7 Deadline and Notification Agents</td>
<td>143</td>
</tr>
<tr>
<td>5.2 Agent Assignment Using the Organizational Structure</td>
<td>144</td>
</tr>
<tr>
<td>5.2.1 The Basic Organizational Plan</td>
<td>144</td>
</tr>
<tr>
<td>5.2.2 The Extended Organizational Plan</td>
<td>148</td>
</tr>
<tr>
<td>5.2.3 Doing Without an Organizational Plan</td>
<td>150</td>
</tr>
<tr>
<td>5.3 Agent Assignment Using Task Groups</td>
<td>150</td>
</tr>
<tr>
<td>5.4 Implementing and Maintaining the Structure in Practice</td>
<td>151</td>
</tr>
<tr>
<td>5.4.1 Strategies for Organization Plan Maintenance</td>
<td>151</td>
</tr>
<tr>
<td>5.4.2 Transporting Organization Plans</td>
<td>153</td>
</tr>
<tr>
<td>5.4.3 Reassigning Work Items from One User to Another</td>
<td>154</td>
</tr>
<tr>
<td>5.4.4 Substituting Users</td>
<td>155</td>
</tr>
<tr>
<td>5.4.5 When Do You Choose to Refresh the Organizational Environment</td>
<td>157</td>
</tr>
<tr>
<td>5.4.6 Training and Encouraging Agents</td>
<td>158</td>
</tr>
<tr>
<td>6 Workflow Administration</td>
<td>161</td>
</tr>
<tr>
<td>6.1 Reporting on Workflows</td>
<td>162</td>
</tr>
<tr>
<td>6.1.1 Reporting on Workflow Progress</td>
<td>163</td>
</tr>
<tr>
<td>6.1.2 Reporting on Workflow Performance</td>
<td>164</td>
</tr>
<tr>
<td>6.1.3 Work Items by Processing Duration</td>
<td>165</td>
</tr>
<tr>
<td>6.1.4 Work Items with Monitored Deadlines</td>
<td>166</td>
</tr>
<tr>
<td>6.1.5 Reporting on Agent Behavior</td>
<td>166</td>
</tr>
<tr>
<td>6.1.6 Identifying and Justifying Potential Improvements</td>
<td>167</td>
</tr>
<tr>
<td>6.2 Error Resolution</td>
<td>168</td>
</tr>
<tr>
<td>6.3 General Techniques for Resolving Runtime Errors</td>
<td>171</td>
</tr>
<tr>
<td>6.3.1 Basic Settings for Error Monitoring</td>
<td>171</td>
</tr>
<tr>
<td>6.3.2 Finding and Fixing Work Items</td>
<td>172</td>
</tr>
<tr>
<td>6.3.3 Diagnosis of Workflows with Errors</td>
<td>172</td>
</tr>
<tr>
<td>6.3.4 Work Item Selection</td>
<td>173</td>
</tr>
<tr>
<td>6.3.5 Work Item Frequency</td>
<td>175</td>
</tr>
<tr>
<td>6.4 Working with the Work Item Display</td>
<td>176</td>
</tr>
<tr>
<td>6.4.1 Work Item Display — Standard View</td>
<td>177</td>
</tr>
<tr>
<td>6.4.2 Work Item Display — Technical View</td>
<td>179</td>
</tr>
<tr>
<td>6.4.3 How to Work with the Work Item Container Display</td>
<td>181</td>
</tr>
</tbody>
</table>
6.5 Working with the Workflow Log ..................................................... 182
   6.5.1 User View .......................................................................... 182
   6.5.2 Technical View ................................................................. 185
6.6 Resolving Agent Determination Errors ...................................... 188
   6.6.1 Fixing Work Items with No Agents or Wrong Agents ......... 188
   6.6.2 Preventing Agent Determination Problems from Recurring ......................................................... 191
   6.6.3 Support Tools for Agent Determination Problems .......... 191
   6.6.4 Resolving Buffering Errors .................................................. 192
   6.6.5 Fixing Work Items with Buffering Problems ................. 193
   6.6.6 Preventing Buffering Problems from Recurring .............. 194
   6.6.7 Support Tools for Buffering Problems ............................. 194
6.7 Other Support Tools .................................................................... 195
6.8 Help Desk in the Intranet ............................................................. 196
   6.8.1 Web-Based Help Desks ...................................................... 196
   6.8.2 Self Help .......................................................................... 197
6.9 A Day in the Life of a Workflow Administrator ......................... 198
   6.9.1 Who Should be the Workflow Administrator ................. 199
   6.9.2 Who Makes the Business Decisions in the Event of Failure ......................................................... 201
   6.9.3 Crisis Response ................................................................. 203
   6.9.4 Day-to-Day Monitoring ..................................................... 205
   6.9.5 Periodic Reality Checks ...................................................... 206
   6.9.6 Housekeeping and Archiving ............................................ 208
   6.9.7 Making the Most of a Precious Resource ....................... 209

7 Using SAP NetWeaver Business Warehouse for SAP Business Workflow Reporting ........................................... 211
    7.1 SAP NetWeaver Business Warehouse Basics for the Workflow Expert ............................................................. 212
    7.2 Standard Workflow Analysis with SAP NetWeaver Business Warehouse ............................................................. 214
       7.2.1 Data Flow and Overview of Provided Content ............ 215
       7.2.2 Aggregation Layer .......................................................... 215
       7.2.3 InfoCube Aggregated Process Data .............................. 216
       7.2.4 Using Standard BI Content ........................................... 217
PART II: Developing Your Own Workflow

8 Creating a Workflow ................................................................. 221
  8.1 Workflow Builder Basics ....................................................... 222
  8.1.1 Look and Feel of the Workflow Builder ............................... 222
  8.1.2 Building Your First Workflow .......................................... 226
  8.1.3 Saving, Activating, and Testing ........................................ 229
  8.2 Enhancing Your Workflow .................................................... 231
  8.2.1 Deadline Monitoring ....................................................... 231
  8.2.2 How to Create and Use Tasks .......................................... 234
  8.2.3 Using Asynchronous Tasks ............................................. 241
  8.2.4 How to Access Data and Activities .................................. 243
  8.2.5 Notifications ............................................................... 245
  8.3 Basics of Containers and Bindings ........................................ 246
  8.3.1 How to Create Containers and Bindings for Tasks ............... 247
  8.3.2 Creating Container Elements in the Workflow Container ....... 247
  8.3.3 Changing Container Elements ......................................... 249
  8.4 Steps .................................................................................. 251
  8.4.1 What Other Step Types Exist .......................................... 252
  8.4.2 How to Insert New Steps ............................................... 254
  8.4.3 What Kinds of Outcomes Exist ....................................... 256
  8.4.4 Which Task and Step Attributes Impact Work Item Execution ........................................ 258
  8.5 Documenting, Translating, Transporting, and Team Development ... 259
  8.5.1 Documenting Workflow Definitions .................................. 259
  8.5.2 Translating a Workflow into Other Languages .................. 260
  8.5.3 Transporting New Versions of a Workflow ....................... 260
  8.5.4 How Do You Share Workflow Development Within a Team ........................................ 261

9 Advanced Workflow Design Techniques ................................... 263
  9.1 Step Conditions ..................................................................... 263
  9.1.1 Step Condition: Create Work Item .................................. 265
  9.1.2 Step Condition: Complete Work Item ............................... 265
  9.1.3 Step Condition: Completion Execution ............................ 266
  9.2 How to Implement Parallel Processing .................................. 267
  9.2.1 How to Implement Table-Driven Dynamic Parallel Processing ........................................ 268


<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.2.2 How to Implement a Fork</td>
<td>272</td>
</tr>
<tr>
<td>9.3 Reusing Workflows as Subworkflows</td>
<td>273</td>
</tr>
<tr>
<td>9.4 Modeled Deadlines</td>
<td>274</td>
</tr>
<tr>
<td>9.4.1 Notify Recipients Via Email That a Deadline Has Been Missed</td>
<td>275</td>
</tr>
<tr>
<td>9.4.2 Skip the Work Item If Deadline Has Been Missed</td>
<td>275</td>
</tr>
<tr>
<td>9.5 Containers</td>
<td>276</td>
</tr>
<tr>
<td>9.5.1 Containers and Bindings in Depth</td>
<td>277</td>
</tr>
<tr>
<td>9.5.2 Reimplementation of the Container</td>
<td>280</td>
</tr>
<tr>
<td>9.6 Binding</td>
<td>282</td>
</tr>
<tr>
<td>9.6.1 Binding Editor</td>
<td>282</td>
</tr>
<tr>
<td>9.6.2 Expressions</td>
<td>283</td>
</tr>
<tr>
<td>9.7 Blocks and Local Workflows</td>
<td>284</td>
</tr>
<tr>
<td>9.7.1 Local Workflows as a Practical Example of Block Implementation</td>
<td>284</td>
</tr>
<tr>
<td>9.7.2 Local Workflows and Other SAP-Provided Example Workflows</td>
<td>285</td>
</tr>
<tr>
<td>9.7.3 When to Use Local Workflows Versus Subworkflows</td>
<td>285</td>
</tr>
<tr>
<td>9.8 Ad-hoc Features and Review Workflows</td>
<td>286</td>
</tr>
<tr>
<td>9.8.1 Ad-Hoc Features to Change Workflows on the Fly</td>
<td>286</td>
</tr>
<tr>
<td>9.8.2 Review Workflows</td>
<td>287</td>
</tr>
</tbody>
</table>

10 Business Objects ................................................................. 289

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.1 Business Object Basics</td>
<td>291</td>
</tr>
<tr>
<td>10.1.1 Business Objects: Some Basic Terminology</td>
<td>293</td>
</tr>
<tr>
<td>10.1.2 Relationships Between Business Objects</td>
<td>294</td>
</tr>
<tr>
<td>10.1.3 Business Object Tools</td>
<td>297</td>
</tr>
<tr>
<td>10.1.4 Viewing Existing Business Object Types</td>
<td>299</td>
</tr>
<tr>
<td>10.2 Creating Your Own Business Object Types</td>
<td>307</td>
</tr>
<tr>
<td>10.2.1 Creating New Business Objects</td>
<td>310</td>
</tr>
<tr>
<td>10.2.2 Extending Existing Object Types Via Delegation</td>
<td>312</td>
</tr>
<tr>
<td>10.3 Creating Business Object Type Components</td>
<td>313</td>
</tr>
<tr>
<td>10.3.1 Adding an Interface</td>
<td>314</td>
</tr>
<tr>
<td>10.3.2 Creating Key Fields</td>
<td>314</td>
</tr>
<tr>
<td>10.3.3 Creating Attributes</td>
<td>315</td>
</tr>
<tr>
<td>10.3.4 Creating Methods</td>
<td>319</td>
</tr>
<tr>
<td>10.3.5 Creating Events</td>
<td>328</td>
</tr>
</tbody>
</table>
## Contents

10.4 Business Object Type Programming ................................................ 329
  10.4.1 Key Fields and the Object Declaration .............................. 330
  10.4.2 Programming Attributes .................................................... 332
  10.4.3 Programming Methods ...................................................... 339

10.5 Some Useful Predefined Object Types ............................................. 345
  10.5.1 Object Type SELFITEM ...................................................... 345
  10.5.2 Object Type WF_TASK ........................................................ 346
  10.5.3 Object Type SYSTEM .......................................................... 346
  10.5.4 Object Type FORMABSENCE .............................................. 346
  10.5.5 Object Type USR01 ............................................................ 346

10.6 Real-World Examples for Business Object Customizing ................... 347
  10.6.1 Custom Attribute ............................................................... 347
  10.6.2 Custom Method ................................................................. 349

11 ABAP Classes ................................................................................. 353
  11.1 ABAP Classes Basics .............................................................. 354
    11.1.1 History ........................................................................... 354
    11.1.2 Why Use Classes ........................................................... 355
    11.1.3 More Resources .............................................................. 357
  11.2 Comparing ABAP Classes and BOR Objects .................................. 358
    11.2.1 Interfaces ........................................................................ 358
    11.2.2 Object Identification ........................................................ 359
    11.2.3 Class/Component Level .................................................... 360
    11.2.4 Attributes ........................................................................ 360
    11.2.5 Methods ........................................................................... 361
    11.2.6 Events ............................................................................ 361
  11.3 Utility Classes ............................................................................. 361
    11.3.1 Creating a Utility Class ..................................................... 362
    11.3.2 Component Visibility ......................................................... 364
    11.3.3 Methods .......................................................................... 365
    11.3.4 Using a Utility Class in a Task ............................................ 366
    11.3.5 Attributes .......................................................................... 368
    11.3.6 Functional Methods .......................................................... 370
  11.4 Business Classes .......................................................................... 374
    11.4.1 Local Persistent Object Reference ..................................... 376
    11.4.2 Implementing FIND_BY_LPOR ........................................ 379
    11.4.3 Implementing LPOR ........................................................... 380
    11.4.4 Instantiating ABAP Class Objects ...................................... 381
Contents

13.2.3 Remember to Turn the Trace Off When You Are Done .... 445
13.3 Defining Events ................................................................. 447
13.4 Raising Events from Business Applications .................. 447
13.4.1 Raising Events Via Change Documents ...................... 449
13.4.2 Raising Events Via Status Changes ......................... 451
13.4.3 Raising Events Via Message Control ....................... 453
13.4.4 Raising Events Via Changes to HR Master Data ......... 454
13.4.5 Raising Events Via Business Transaction Events .......... 455
13.4.6 Raising Events by Calling a Workflow API ............... 457
13.5 Using Events in Workflows ............................................. 457
13.5.1 How to Use Events in Workflows ......................... 457
13.5.2 Triggering Events ..................................................... 458
13.5.3 Start Conditions for Workflows ............................ 462
13.5.4 Terminating Events .................................................. 464
13.5.5 Workflow Header Events ........................................ 467
13.5.6 Parked Events .......................................................... 468
13.5.7 Event Queues .......................................................... 469
13.6 Generic Object Services .................................................. 470
13.6.1 Starting Workflows Manually ................................. 471
13.6.2 Viewing the Logs of Related Workflows ................. 473
13.6.3 Subscribe to an Object Instance ............................. 473
13.6.4 Sending an Email .................................................... 473
13.7 Starting Workflows from Messages ............................. 474

14 Custom Programs .............................................................. 475
14.1 The Engine ................................................................. 475
14.1.1 Work Items ............................................................ 476
14.1.2 Events ................................................................. 481
14.1.3 Work Item States .................................................. 481
14.2 Workflow APIs ............................................................ 484
14.2.1 The Simple WAPI Container .................................. 484
14.2.2 SAP_WAPI_CREATE_EVENT ................................. 485
14.2.3 SAP_WAPI_START_WORKFLOW ............................ 485
14.2.4 SAP_WAPI_WORK ITEMS_TO_OBJECT .................. 487
14.2.5 SAP_WAPI_READ_CONTAINER .............................. 487
14.3 Advanced Business Interface Techniques .................... 488
14.3.1 When Should a Workflow with an Event Be Started .... 488
## Contents

14.3.2 Raising Events by Calling a Function Module ...................... 489  
14.3.3 Advanced Event Linkage .................................................... 494  
14.3.4 Adding Generic Object Services to Your Own Transactions .......................................................... 497  
14.3.5 Implementing the Workflow Toolbox in Your Own Transactions .......................................................... 498  
14.4 Office Document Interfaces ............................................................ 499  
  14.4.1 Business Communications Services ..................................... 500  
  14.4.2 SO_*_API1 function modules ............................................. 500  

### 15 Service-Enabling Workflows ...................................................... 501  
15.1 Workflow in the Context of a Business Process ......................... 501  
15.2 Web Services and Service-Oriented Architecture ....................... 502  
  15.2.1 What Are Web Services .................................................... 503  
  15.2.2 Web Services Description Language .................................. 503  
  15.2.3 Web Services and SOAP .................................................... 505  
  15.2.4 Other Web Service Standards .......................................... 506  
15.3 What Is Service-Oriented Architecture ....................................... 507  
15.4 SOA at SAP ............................................................................. 510  
15.5 Implementing the Service Interface for a Workflow .................... 512  
  15.5.1 The Function Module ....................................................... 512  
  15.5.2 Service-Enabling in the Application (Inside-Out Approach) .......................................................... 513  
  15.5.3 Service Enabling from the Enterprise Services Repository (Outside-In Approach) .......................................................... 520  

### 16 Advanced Diagnostics ................................................................. 535  
16.1 The Tools of the Trade ............................................................... 535  
16.2 The Diagnosis Logs ................................................................... 537  
  16.2.1 The Workflow Log ............................................................ 537  
  16.2.2 The Diagnosis Transaction ............................................... 538  
  16.2.3 The Event Trace ............................................................. 540  
  16.2.4 The RFC Log ................................................................... 542  
16.3 Debugging with the ABAP Debugger ......................................... 543  
  16.3.1 The Workflow Trace ....................................................... 545  
  16.3.2 When to Use the Workflow Trace ...................................... 549  
16.4 Preparing a Task to Go to Production ......................................... 549
Contents

17 Upgrading SAP Business Workflow .......................................................... 555
  17.1 First Steps to Upgrading Workflow .................................................. 555
  17.2 Steps to Take Before the Upgrade Begins ...................................... 557
    17.2.1 Complete All Running Workflow Instances ............................ 557
    17.2.2 Create Workflow Test Plans ................................................. 557
    17.2.3 WF and T Tasks Versus WS and TS Tasks ............................. 557
    17.2.4 Clean Runtime Tables ....................................................... 558
  17.3 Steps to Take During and After the Upgrade .................................. 559
    17.3.1 Conversion of Event Linkage Tables .................................... 559
    17.3.2 Basis Support Package ........................................................ 559
    17.3.3 Configure Your System for Workflow .................................. 559
    17.3.4 Workflow Definition and Binding ....................................... 559
    17.3.5 Tables SWW_CONTOB and SWW_CONT .............................. 560
    17.3.6 Changed Locking Behavior of Runtime .................................. 561
    17.3.7 Other Issues After the Upgrade .......................................... 563
  17.4 Important SAP Notes ....................................................................... 563

PART III: User Interface Technologies and SAP Business Workflow

18 User Interface Options ........................................................................... 567
  18.1 Inbox and the User Interface ............................................................ 568
  18.2 Containers, Bindings, and Data Flow .............................................. 570
    18.2.1 Where the Customized UI Fits in with the Data Flow
        When Using Universal Worklist ................................................. 570
    18.2.2 Common Steps When Using Web Dynpro and Business
        Server Pages with Universal Worklist ..................................... 572

19 Using Web Dynpro ABAP ..................................................................... 575
  19.1 Example Based on User Decision .................................................... 576
    19.1.1 Standard User Decision .......................................................... 576
    19.1.2 User Decision with Note in Universal Worklist ....................... 577
    19.1.3 User Decision with Web Dynpro ABAP .................................. 580
  19.2 Required Settings in Web Dynpro ABAP .......................................... 583
    19.2.1 Web Dynpro ABAP Application .............................................. 583
    19.2.2 Window ................................................................................ 586
    19.2.3 Main View .......................................................................... 587
19.3 Configuration for the Universal Worklist ........................................ 590
19.4 Ensuring the User Only Executes the Work Item in the Universal
  Worklist .......................................................................................... 592

20 Using Web Dynpro Java ................................................................. 593
  20.1 Real-World Example of Web Dynpro Java and Workflow .............. 593
  20.2 What Must Be Done on the Workflow Side ............................... 595
  20.3 What Must Be Done on the Java Side ........................................... 603
     20.3.1 Presentation Layer ............................................................. 603
     20.3.2 Model Layer ..................................................................... 605
  20.4 What Must Be Done in the Universal Worklist ............................ 608

21 Using Business Server Pages ......................................................... 613
  21.1 Building the Example BSP and Workflow ................................. 613
     21.1.1 Laying the Groundwork ...................................................... 613
     21.1.2 Setting Up the Web Service Handler .................................. 621
  21.2 Launching the BSP and Transferring Data .................................. 622
     21.2.1 Defining the Workflow Service and Creating a Task .......... 622
     21.2.2 Creating a Test Workflow ................................................... 624
     21.2.3 Launching a BSP Application from the Business
        Workplace ........................................................................ 625
     21.2.4 Launching a BSP Application from Another Web
        Application ........................................................................ 626
     21.2.5 Launching a BSP Application from the Universal
        Worklist ............................................................................. 626
  21.3 Completing Workflow Tasks from BSP Applications ................. 629

22 Using Forms .................................................................................. 637
  22.1 SAP Interactive Forms by Adobe ............................................... 637
  22.2 SAP Business Workflow Forms .................................................. 638
     22.2.1 Simple Forms Creation ..................................................... 638
     22.2.2 Document Templates ........................................................ 641

23 Alloy — Lotus Notes Integration ..................................................... 645
  23.1 The Design Paradigm ............................................................... 646
     23.1.1 Sidebar .......................................................................... 646
Contents

23.1.2 Mail Inbox ................................................................. 647
23.1.3 Decision Views ........................................................... 648
23.1.4 Calendar Items ............................................................. 650
23.2 Prerequisites for Alloy ....................................................... 652
23.3 Generic Workflow Capabilities ................................................ 653
23.4 Adding New Decisions to Alloy ............................................. 653
   23.4.1 Adding New Decision Steps ....................................... 655
   23.4.2 Design a New User Interface for the Decision ............... 656
   23.4.3 Add Additional Data from the SAP Context .................. 658
   23.4.4 Adding a Dialog Task ................................................. 659
   23.4.5 Sidebar Enhancements ............................................... 659
23.5 Standard Alloy Decisions .................................................... 660

24 Duet — Microsoft Office Integration ..................................... 661
   24.1 Design Time Layout ....................................................... 663
   24.2 How an Approval Workflow Application Works in Duet .......... 666
   24.3 Prerequisites to Use the Duet Workflow Approval Template ....... 669
   24.4 Creating Your Approval Workflow Application ..................... 670
      24.4.1 Adding New Decisions to Duet ................................. 672
      24.4.2 Design a New User Interface for the Decision ............... 674
      24.4.3 Add Additional Data from the SAP Context .................. 675
      24.4.4 Adding a Dialog Task ............................................... 675
      24.4.5 Sidebar Enhancements ............................................... 676

PART IV: Using SAP Business Workflow in SAP Business Suite
Applications

25 SAP Supplier Relationship Management ................................. 679
   25.1 Approval Processes ....................................................... 681
      25.1.1 Simple Approval Processes ....................................... 682
      25.1.2 Complex Approval Processes .................................... 682
      25.1.3 Key Concepts and Requirements That Make Up the
            Foundation of SAP SRM Approval Processing ................. 683
   25.2 SAP SRM Approval Frameworks ......................................... 688
   25.3 Process-Controlled Workflow in Detail ................................. 690
      25.3.1 Technical Background ............................................... 693
      25.3.2 Basic Assumptions for Document Processing ................. 694


25.3.3 Configuration of Approval Levels ............................................. 694
25.3.4 Business Rules Framework ..................................................... 697
25.3.5 Agent Determination ............................................................. 698
25.3.6 Approval Process Overview: User-Focused Process
    Visualization ............................................................................ 701
25.4 Real-World Example of a Process-Controlled Workflow .............. 704
    25.4.1 Simplest Scenario, Execute Without Approval ..................... 705
    25.4.2 Configuring Two-Step Approval ........................................ 706
    25.4.3 Details on BRF Integration ................................................ 707
25.5 Application-Controlled Workflow in Detail .................................. 710
    25.5.1 One-/Two-Step Approval .................................................. 710
    25.5.2 N-step BAdI ................................................................. 711
    25.5.3 SAP-Provided BAdIs and Workflow Templates .................... 712
    25.5.4 Line Item Based BAdI ..................................................... 713
    25.5.5 Approvers Changing Documents in Application-Controlled Workflow ......................................................... 713
    25.5.6 Configuring Approval Processes ......................................... 714
    25.5.7 Agent Determination ....................................................... 716
    25.5.8 Ad-hoc Agent Assignment ................................................ 717
    25.5.9 Implementing Dynamic Processes ....................................... 719
    25.5.10 Tracking Workflow Instances ......................................... 724
25.6 Real-World Example of Application-Controlled Workflow .............. 724
    25.6.1 Without Approval .......................................................... 724
    25.6.2 Two-Step Approval ........................................................ 725
25.7 Inbox ....................................................................................... 726
25.8 Offline Functionality ................................................................... 727
    25.8.1 Outbound Processing ....................................................... 727
    25.8.2 Offline Approval by the Recipient ..................................... 728
    25.8.3 Inbound Processing ......................................................... 728
25.9 Deadline Monitoring .................................................................. 728
25.10 Recommendations When Getting Started ................................... 729
    25.10.1 Upgrading a System ....................................................... 730
    25.10.2 Archiving ................................................................. 732
    25.10.3 New Installation ......................................................... 732

26 SAP Customer Relationship Management .................................... 735

26.1 Introduction ............................................................................... 736
    26.1.1 One Order Concept ....................................................... 737
Contents

26.1.2 Business Transaction and SAP CRM Business Objects ........ 739
26.1.3 Transaction History .......................................................... 741
26.1.4 SAP CRM UI Framework .................................................. 742
26.1.5 Portal Integration ............................................................... 745

26.2 Customizing and Workflow Administration .................................. 745
26.2.1 Workflow Customizing ....................................................... 745
26.2.2 Workflow Administration ................................................... 745

26.3 Integrating Your Own Workflows ............................................... 746
26.3.1 Status Management ........................................................... 746
26.3.2 Actions .............................................................................. 746
26.3.3 Agent Determination ......................................................... 747

26.4 SAP CRM Worklist ................................................................... 749
26.4.1 Basics About the Workflow Inbox ...................................... 751
26.4.2 Dynamic Navigation and the Workflow Inbox .................... 751
26.4.3 Navigational Customizing of the Workflow Inbox ............... 753
26.4.4 Specifics of Dialog Tasks Based on Workflow ABAP Classes .......................................................... 755
26.4.5 Additional Customizing and Personalization ...................... 756
26.4.6 SAP ERP Integration ........................................................... 757
26.4.7 Universal Worklist Integration ............................................ 759
26.4.8 Administrative Standard Workflows ................................... 760

26.5 SAP CRM Standard Workflows .............................................. 760
26.5.1 Marketing: Campaign Automation ..................................... 761
26.5.2 Sales — Lead to Opportunity .............................................. 762

26.6 Sample Implementation of a Customer Workflow in SAP CRM ...... 764
26.6.1 Scenario and Requirements for the Custom Workflow ........ 765
26.6.2 Implementing the Workflow ............................................... 765
26.6.3 Creating a BOL Model for Your SAP CRM Workflows ....... 768
26.6.4 Implementation of the Workflow Application ...................... 771
26.6.5 Setting Up Dynamic Navigation ......................................... 779
26.6.6 Action to Automatically Set the Status “Accepted by Sales” .......................................................... 782
26.6.7 General Settings for Follow-Up Process ............................. 786
26.6.8 Executing the Workflow ..................................................... 788
26.6.9 Optional Enhancement ........................................................ 790
27 SAP ERP Human Capital Management — Processes and Forms 793

27.1 Business Overview ................................................................. 794
  27.1.1 SAP ERP HCM Processes ................................................. 794
  27.1.2 Form Submission ............................................................... 796
  27.1.3 Form Approval ................................................................. 798
  27.1.4 Process Form (Revision or Completion) ............................ 799
  27.1.5 Tracking Forms ............................................................... 801
  27.1.6 Other Features ................................................................. 801
  27.1.7 Limitations ................................................................. 802

27.2 Technical Overview of HCM Processes and Forms .................. 802
  27.2.1 Adobe Document Services ................................................. 803
  27.2.2 Business Function Set ....................................................... 804
  27.2.3 SAP ERP HCM Processes and Forms Design Time .............. 804
  27.2.4 Adobe LiveCycle Designer ................................................ 805
  27.2.5 Adobe Reader ................................................................. 807
  27.2.6 Workflow Template ........................................................ 807
  27.2.7 SAP Case Management .................................................... 808
  27.2.8 Web Dynpro ABAP Applications ....................................... 809

27.3 Standard Workflows in HCM Processes and Forms ............... 809

27.4 Workflow Techniques ........................................................... 811
  27.4.1 Calling Web-Based SAP Applications Using Transaction
          SWFVISU ................................................................. 811
  27.4.2 Program Exits ................................................................. 814
  27.4.3 XML File for Universal Worklist Configuration .................. 815

27.5 Creating Your Own Workflows ............................................ 816
  27.5.1 Interactive Components .................................................. 817
  27.5.2 Background Components ................................................. 819
  27.5.3 Troubleshooting ............................................................. 820

27.6 Universal Worklist Configuration ........................................ 820
  27.6.1 Subviews ................................................................. 821
  27.6.2 Buttons (Actions) ........................................................... 823

28 Setting Up an SAP-Provided SAP ERP Workflow ..................... 825

28.1 How Can You Find Workflows Delivered by SAP ................... 826
  28.1.1 Using SAP Help Portal to Find SAP Documented
          Workflows ................................................................. 826
  28.1.2 Finding Workflows Within Workflow Builder ..................... 827
## Contents

28.1.3 Technical Workflows .......................................................... 828  
28.2 What Is the Business Scenario ......................................................... 828  
28.3 Which SAP Workflows Are Involved ............................................... 829  
28.4 How Is the Workflow Started ............................................................ 830  
28.5 How Do I Activate This Scenario ..................................................... 831  
28.6 Commonly Used SAP ERP Workflows ............................................. 833  

29 ArchiveLink ...................................................................................... 835  
  29.1 What Is ArchiveLink? ...................................................................... 836  
  29.1.1 The Technical View of ArchiveLink ..................................... 836  
  29.1.2 The Business View of ArchiveLink ...................................... 837  
  29.2 ArchiveLink Standard Scenarios ...................................................... 838  
  29.2.1 How SAP Business Workflow Integrates ArchiveLink .......... 839  
  29.3 Business Object Types .................................................................... 842  

Appendices ........................................................................................... 843  
  A Tips and Tricks .......................................................................................... 845  
  A.1 Working with Wizards .................................................................... 845  
  A.2 Working with Email ........................................................................ 847  
  A.3 Showing the Decision Maker in a Follow-On Step ....................... 853  
  A.4 Creating Your Own User Decision Template ............................... 854  
  A.5 Using Secondary, Before, and After Methods ............................ 855  
  A.6 Looping Through a Multiline List .................................................... 857  
  A.7 Creating Object References Dynamically ..................................... 858  
  A.8 Deadlines Based on the Factory Calendar ..................................... 859  
  A.9 Making the Most of Modeled Deadlines .................................... 863  
  A.10 Ad-Hoc Anchor Step ....................................................................... 864  
  A.11 Review Workflows .......................................................................... 865  
  B Step-by-Step Troubleshooting Guide ......................................................... 867  
  B.1 A Workflow That Does Not Start .................................................... 867  
  B.2 A Workflow That Stops in Mid-Track .......................................... 872  
  B.3 The Most Likely Causes (and How to Avoid Them) .................... 873  
  B.4 Binding Problems with the Workflow Trace ............................... 877  
  B.5 Why Duplicate or Multiple Workflows Are Triggered .............. 878  
  B.6 Why an Agent Does Not Receive a Work Item ......................... 879  
  B.7 Why the Wrong Agent Receives the Work Item ....................... 881  
  B.8 Why the Work Item Follows the Wrong Route ............................ 882
Contents

C The Administrator's First Aid Guide ........................................................... 883
  C.1 Resolving Work Item Errors ............................................................ 883
  C.2 Resolving Workflow Instance Errors ................................................ 888
  C.3 Finding Workflows That Appear to Have Disappeared .................... 891
  C.4 Resolving Event Linkage Errors ....................................................... 892
D Workflow Macros ..................................................................................... 897
  D.1 Macros Specific to Object Type Programs ....................................... 897
  D.2 Macros for General Workflow Programming ................................... 898
E Preparation for Java Development ............................................................. 901
F Additional Information for SAP SRM ......................................................... 907
  F.1 Available Business Configuration Sets ............................................. 907
  F.2 BAdI Implementations for Agent Determination ............................. 908
  F.3 Process-Controlled Workflow Advanced Troubleshooting ............... 920
  F.4 Application-Controlled Workflow Advanced Troubleshooting ........ 924
G The Authors .............................................................................................. 927

Index ................................................................................................................ 933
Whether you are building a new workflow from scratch or using an SAP supplied workflow, it is important that you understand the Workflow Builder tool. This chapter gets you started by enabling you to create your first workflow, enhance your workflow, understand data flow, understand types of steps you can use when building a workflow, and get a workflow to production.

8 Creating a Workflow

The central tool for creating, displaying, and processing a workflow is the Workflow Builder. The Workflow Builder is accessed through Transaction SWDD. Alternatively, you can use the menu path Tools • Business Workflow • Development • Definition Tools • Workflow Builder • Workflow Builder. Within the Workflow Builder, you can create all components of a workflow, including the process flow, the details for each step, and the data flow between steps.

This chapter describes the main features of the Workflow Builder, giving a good foundation to start your own development. To introduce the Workflow Builder, we will explain how to create a simple workflow. We will build upon the simple workflow, enhancing it to show additional features. However, this is not an exhaustive description of all workflow features. When you need more information, the SAP Help Portal (http://help.sap.com) describes all of the Workflow Builder features in detail.

Most workflows are started by an event (e.g., when a sales order is created, when a quote is entered, when an email arrives, when an error occurs, when a document is printed) that happens in a business application. You define which data from this event needs to be passed to the workflow via binding. Events are described in Chapter 13, Using Events and Other Business Interfaces, and Chapter 14, Custom Programs. You can also start any workflow directly, for example, through a transaction code, user interface, or a concept called generic object services (refer to Chapter 13 as well). Because events are a major topic on their own and to keep the focus on the basics of the Workflow Builder, this chapter starts the workflow directly using test tools.
The workflow container is used to hold all of the data needed by the workflow. Each workflow has a number of steps that execute activities or control the workflow. Data may be passed from one step to another. The activities are handled within tasks. You can use the same task in several steps of a workflow (or even in the steps of several different workflows) if you wish. A task has a task container that holds all of the data necessary for that task. As described previously, binding is the term used to pass data from the workflow container to the task container or from the task container back to the workflow container. Every step has one or more possible outcomes depending on the step type, the task, and what the step is doing. For example, for an approval step, possible outcomes might be Approve or Reject.

Expressions are variables used in the workflow to control the workflow (e.g., branches) or to deliver a result (e.g., the agent ID for executing a step). Examples of expressions are simple container elements or the attributes of objects (objects are discussed in Chapter 10, Business Objects, and Chapter 11, ABAP Classes). Basic data controls global aspects of the workflow, such as constructor and destructor methods and defaults for the workflow steps. One part of this basic data is version-dependent; the other part applies to all versions. Lastly, the workflow will have one end point. There are no hidden exit points.

8.1 Workflow Builder Basics

This section helps you get familiar with the Workflow Builder tool.

8.1.1 Look and Feel of the Workflow Builder

The Workflow Builder provides a graphical view of the workflow definition. The Workflow Builder screen is divided into the following frames (see Figure 8.1 as well); each of the frames can be resized:

- **Workflow**
  Here you can insert new steps into the workflow definition and process existing ones. Double-clicking on a step displays the associated step definition.

- **Overview**
  The overview graphic shows all steps in a workflow. The part of the workflow graphic displayed in the Workflow frame is marked with a green rectangle.
Changing the size or position of the rectangle changes the display in the Workflow frame.

- **Step types**
  Step Type is the default view when you enter a workflow. It lists all of the types of steps you can insert into your process. To insert a new step into the workflow, drag the desired step to the workflow panel, and drop it on the location where you want the step. When dragging in new step types, you will see a plus icon (+) in the appropriate locations to add steps. In Figure 8.1, you can also see a limited list of step options. By resizing the frame, you can see more step options as shown in Figure 8.2.

![Figure 8.1 Major Elements of the Workflow Builder](image)

- **Information**
  The information frame (see Figure 8.3) displays which workflow is loaded, the status of the workflow, and the version number of the workflow in the original system. To load a different version, select the version. To load a different workflow, enter the workflow number in the format WS<number> and press [ ]. If you do not know the workflow number, select the arrow and you can search for the workflow.
Creating a Workflow

Navigation
The navigation frame contains a list of all of the steps in the workflow. You can jump directly to the relevant step definition from the list. As with all of the frames in the Workflow Builder, you can resize this frame to display the amount of information that you require. The step number corresponds to the number in the workflow technical log (logs are discussed in Chapter 6, Workflow Administration).

Messages
This area contains messages, including general messages and results from where-used lists, syntax checks, and searches.

Optional information to display
In addition to the frames you see in Figure 8.1, you can optionally switch the STEP TYPES to one of the items in Figure 8.4.
The workflow container holds all elements required during the life of the workflow. Container elements will be created automatically, but you can also create your own workflow container elements.

My Workflows and Tasks
This frame enables you to quickly see all workflows you have edited. Additionally, you can search for tasks to add to the list. Your choice also determines what is displayed in the Workflow Explorer, which is a separate transaction (SWDM).

Document Templates
Document templates add digital documents to a workflow. All of the workflow’s document templates that can be used in the step type DOCUMENT FROM TEMPLATE are displayed here. You can generate a where-used list to find the steps in which a document template is used.

Workflow Wizards
All Workflow wizards available for the definition of your workflow are displayed here.

Teamworking
Here you can search for steps by selected criteria such as who last edited the step in the definition or which steps are grouped together. The result is displayed graphically in the Workflow frame.

Workflows of this Definition (Outcome)
Your workflow outbox is displayed here, which displays all currently running workflows for this definition.

Note It!
You can create notes and documentation about the workflow in this space.
8.1.2 Building Your First Workflow

In this section, you will build a simple workflow, adding it step by step. In the end, you will have a workflow with different types of workflow steps:

- The first user interaction step asks the user to make a decision: “Do you want to display the business partner?”
- If the answer is yes, the business partner is displayed.
- If the answer is no, an email is sent to the user, telling the user that he did not choose to display a business partner.

This is a simple scenario that should demonstrate how easy it is to build and execute your first workflow process. Eventually, we will link this workflow to a business partner creation in the application that triggers the workflow, so someone will create a business partner, the workflow will notify that a new business partner has been created, and give the user the option to review the business partner.

In this chapter, we focus on creating the basic workflow.

We start by creating the workflow and creating a decision step. To keep it simple, you will be the agent. If you have a test system, you may want to build this process yourself. By following a simple example that becomes more sophisticated as the chapter progresses, you will get a good idea of what workflow can achieve.

Starting the Workflow Builder

When the Workflow Builder is called for the first time or you opt to create a new workflow, a newly created initial workflow definition appears (see Figure 8.5).

This initial workflow has the following parts:

- The start of the workflow definition is indicated by Workflow started ( ).
- The end of the workflow definition is indicated by Workflow completed ( ).
- The area in which you insert the new workflow definition is indicated by an undefined step with one outcome ( ). Steps are represented by symbols. The name of the outcome is displayed on the arrow leading to the next step in the standard view.
Create and Save Your First Workflow

Now you are ready to create your first workflow:

1. If you haven’t done so yet, navigate to the Workflow Builder by entering Transaction SWDD or using the menu path TOOLS • BUSINESS WORKFLOW • DEVELOPMENT • DEFINITION TOOLS • WORKFLOW DEFINITION • WORKFLOW BUILDER.

2. If you do not see an initial workflow similar to Figure 8.5, select WORKFLOW • NEW or click on the CREATE NEW WORKFLOW icon ( )

3. The workflow now has the title “Unnamed” and has a status, NEW, NOT SAVED.

4. Save your workflow by providing an abbreviation and a name. This is discussed in more detail in Section 8.1.3, Saving, Activating, and Testing. For now, enter a name you will remember later, such as “zFirstWorkfl”. You will also need to provide transport information. Assuming this work is being done on a sandbox, select LOCAL OBJECT.

5. Congratulations, you have just created and saved your first workflow.

Your first step illustrates how a user decision works. User decisions have their own step type and symbol that looks like this: . When a user decision executes, a question together with a predefined list of answers (the possible outcomes) is displayed to the recipients. User decisions are useful in the following situations:
Creating a Workflow

- Only one of several possible alternatives should be processed in the workflow at execution time. An agent needs to make a business decision about which alternative is appropriate.
- An instruction (e.g., a user decision with only one outcome) is required to continue the workflow.
- For approval, release, or status change steps, the recipient needs to choose whether to approve or reject.

On the Decision tab, you can make all of the entries required to define an executable user decision. At runtime, the user will see the Decision title as the Subject text of the work item in his inbox.

Add a User Decision Step to Your Workflow

In the next step of our example, you create a workflow that request a decision about displaying a business partner. The decision will let the user respond “Yes” or “No.”

1. In the Workflow Builder, locate the User Decision step type in the Steps That Can Be Inserted frame.
2. Drag the User decision icon ( ) to the Undefined step. The step definition of the user decision is now displayed.
3. Enter the title “Do you want to display the business partner?”
4. Enter the decision texts “Yes” and “No.” The outcome names default to the decision texts, but you can specify your own names if you prefer.
5. Select Expression in the Agents area of the screen. You will see a dropdown box. Set the agent to the expression to Workflow Initiator.
   The workflow initiator is always the person who started the workflow. There are many other options when determining an agent, as discussed in Chapter 5, Agents. However, to keep the first workflow simple, we will route all steps to the workflow initiator.
6. Complete the step by choosing the Transfer to Graphic button ( ).

You have now defined a workflow with a user decision step. However, it must be saved and activated before you can use it.
8.1.3 Saving, Activating, and Testing

When you choose **Save** ( ) for a new workflow, you must enter an abbreviation and a name for the workflow. You can change both at any time in the basic data of the workflow. You also have to choose a package for transporting the workflow to other systems. If you are in your sandbox environment, then you can select **Local Object**, which denotes it will not be moved to any other system. The status in the title bar of the Workflow Builder is always visible. After you save your workflow, notice your workflow has a **WS** name and a number. Workflow templates are saved on the database with a **WS** and a number. The number range is from the settings you made in Chapter 3, Configuring the System.

To execute your workflow, activate it by choosing **Activate** ( ), which compiles the definition so that the SAP Business Workflow Engine can interpret the workflow for execution. Before activating, the workflow definition is subjected to a syntax check. If you only want to check the syntax of the workflow definition, you can choose **Syntax Check** ( ). All recognized problems are classified as errors or warnings and are output in the message area, together with other useful information. You can process the step in which the error occurs by clicking on the message.

The workflow will only be activated if no syntax errors are found. The status of the workflow is now **Active, Saved**. You can now test your workflow by choosing **Test** ( ).

**Tip**

When you choose **Test**, the workflow is automatically saved, checked, and activated if it is in the **inactive** state and you are in change mode of the Workflow Builder. There is no need to check and activate separately.

**Test One**

In this example, you will save, activate, and test your workflow:

1. **Save** your new workflow.
2. **Activate** the workflow.
3. Test the workflow by choosing **Test** ( ).
4. In the test environment, choose **Execute** ( ) to start the workflow.
5. Execute the user decision. Notice the text “Do you want to display the business partner?” and the choices available. Choose Yes or No.

6. Now return to the Workflow Builder (by using the Back arrow in the Test screen). Toggle the Steps That Can Be Inserted to the Workflows of this definition frame.

7. You can double-click on the new entry to see the matching workflow log. Notice the status of the workflow is Completed, and the result of the decision step is displayed in the Result column.

**Test Two**

In the previous test, you executed the workflow immediately, without navigating to the inbox. In this example, you will test the workflow again but also use the inbox:

1. Test the workflow again, selecting Test and then Execute as you did in the previous test. The workflow executes immediately.

2. When the decision appears, notice you have three options: Yes, No, and Cancel and keep work item in inbox.

3. Select the option Cancel and keep work item in inbox.


5. Select Inbox • Workflow. You will see your work item. Double-click the work item, and select either Yes or No.

6. Use the Back arrow to return from the inbox to the workflow definition.

7. Notice both times when you execute the workflow, there is only one step, the step to make a decision. Later in this chapter, you will add the step to display a business partner if the choice is Yes and to send an email if the choice is No.

If you tried this example in a test system, you may be surprised that when testing the workflow, you are presented with the decision straight away without having to look in your workflow inbox first. This is because the step is configured as part of the synchronous dialog chain by default (described in Chapter 4, Work Item Delivery). Because the person starting the workflow (you) is identical to the person assigned to perform the first step in the workflow (you), you are presented with the task straight away. To change this behavior, follow these steps:
1. Double-click on the User Decision step in your workflow.
2. Select the Details tab.
3. Deselect the checkbox Advance with dialog.
4. Return to your workflow, and Activate and Test it.
5. This time when you test, you receive a message at the bottom of your screen that says Task started under work item ID ###### (current status: In Process). The work item number you receive is the process id. Your workflow has the status In Process and is in the inbox.
6. To execute the work item, select Business Workplace.

Congratulations on executing your very first workflow!

8.2 Enhancing Your Workflow

Now that you have created your first workflow, it is time to enhance it. This section covers many topics needed to create workflows. You will add a simple deadline to ensure work is performed on time according to process regulations. You will also add the step to display a business partner, which requires you to create new tasks and understand how objects are used in workflow, including how data is accessed and managed. You will also learn about ad-hoc activities for workflows and the use of review workflows so key or sensitive processes can be closely monitored.

8.2.1 Deadline Monitoring

A major advantage of workflow is the ability to monitor workflow steps according to a predefined schedule. This can be very useful if you want to monitor service level agreements or other process controls that ensure timeframes are enforced in the process. You can monitor a number of different date/time deadlines against each workflow step: requested start, latest start, requested end, and latest end:

- If a requested start deadline is active for a work item, then the work item only becomes visible to the recipients after the date/time specified. Background work items are started (executed) when the start deadline is reached.
- If a latest start, requested end, or latest end deadline is active, then the workflow reacts to the deadline when the specified date/time is reached.
Creating a Workflow

The standard reaction of the workflow system is to send an escalation email. However, you can perform more complex escalation procedures by specifying a deadline outcome name. This lets you add steps to your workflow, which are executed after the deadline fails. This is called a *modeled deadline*.

You define deadlines with respect to a *reference date/time*. The system offers the following reference date/times:

- **The creation date/time of the work item**
  For example, assume a workflow has 10 steps. Step 6 must be executed within three hours of its start time. The 3-hour clock starts when Step 6 is initiated.

- **The creation date/time of the workflow to which the monitored work item belongs**
  In this example, assume Step 6 of the 10-step workflow must be completed within 2 days of the workflow starting. The clock for the deadline starts from the moment the workflow was initiated, not from when Step 6 was initiated.

- **A date in the form of an expression, which is derived from the context of the application during execution of the workflow**
  In this example, assume the step must be completed according to a specific business guideline. Perhaps you have 2 days for a priority B service complaint but only 1 day for a priority A service complaint. Another example would be within 3 days of an invoice posting date. The work item must read the invoice posting date and start the deadline based on the date.

To see the deadline options, double-click on the User Decision task in your workflow, and notice the tabs: Latest End, Requested Start, Latest Start, and Requested End. You can activate monitoring of the relevant deadline by selecting one of the deadline tabs, selecting the reference date/time for the deadline, and providing the time details. Activated deadlines are marked with a ringing bell icon (△) in the tab index.

If you choose Expression, you must define the reference date/time by specifying expressions for the date or time. Use the value help (F4) for entering expressions. In the example mentioned previously, of a deadline within three days of a posting date, you need to have the posting date in the workflow container. You then use Expression to select the posting date variable from the container, and select three days for the time. We will discuss more about how to get the posting date (and other fields) in the container in Section 8.3, Basics of Containers and Bindings.
Specify the deadline by entering duration and an appropriate time unit (e.g., minutes, hours, days). Negative durations can only be used if you define the reference date/time via an expression.

When specifying the type of deadline, the date/time threshold, you can also specify who to notify and what text to send. The text is stored in the details of the task being monitored. For example, if the deadline is on a step to approve purchase requisitions, the task to approve the purchase requisitions holds the text that will be used in case of a deadline. Each task can have its own deadline text.

Add a Deadline to Your Process

In the following example, you add a deadline to your user decision step and test the deadline:

1. Return to your workflow definition in the Workflow Builder.
2. Double-click on the User Decision step. In your user decision step, choose the Latest End tab.
3. For the reference date and time, select Work Item Creation.
4. For the Time field, select Minutes and enter “2”. This means the user will have two minutes from the moment the work item is created to complete the work item.
5. For the Recipient of message when latest end missed, select Expression and then select Workflow Initiator from the dropdown menu.
6. Test your changed workflow (remember, saving and activating is performed automatically when you choose the Test option from the Workflow Builder). This time, do not execute the decision step (cancel out of it if you have not removed the Advance with dialog checkbox).


8. Wait for the deadline to be exceeded, and you will receive a deadline message in the Business Workplace: The Deadline messages folder contains a message that the deadline was missed. The Overdue entries folder displays all work items that have an overdue deadline.

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**Tip**

The background job for deadline monitoring must be scheduled so that the Workflow Engine can monitor and escalate deadlines. This job is explained in Chapter 3, Configuring the System. When the deadline job runs, all exceeded deadlines are escalated. If you are running this job periodically, then the actual time of escalation is delayed until the job next executes. Use Transaction SWWB to have the job run immediately.

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8.2.2 How to Create and Use Tasks

In this section, you add more tasks to our workflow. You will learn how to create a task to display a business partner and how to create a task to send an email. Most steps in your workflow will be tied to business functions: updating a business partner, posting an invoice, approving a purchasing document, updating employee data, and so on. To execute business functions, you use the Activity steps ( ).

Activity steps are related to tasks, which start with TS. Workflows are created with WS and a number. The number range is determined from the settings you made in Chapter 3, Configuring the System. Those same number ranges are used for TS steps within your workflow.

The user decision step you used earlier is based on a generic decision task (TS00008267) as standard. If you double-click on the user decision step in your workflow, select the Control tab, and you will see the task number. After a TS task is created, it can be reused in multiple workflows.

In this section, you create tasks from within the workflow. However, you can also create tasks independent of the Workflow Builder using Transaction PFTC.
Regardless of how you call the task definition, the same screen for editing the task definition is displayed.

**Explanation of Standard Task (TS): Create Screen**

Before creating a task to display a business partner, a discussion of the options available when creating a task is needed. Figure 8.6 shows the fields available when creating a new task.

![Figure 8.6 Create a New Standard Task (TS Task)](image)

Every task must answer two major questions:

- **What** should the task do (*display* a business partner, *update* a business partner, *approve* employee leave)?
- **Who** can do the task?
As the options in Figure 8.6 are discussed, keep in mind that the task must always be able to address the "what" and "who" questions:

- **ABBR.** is the abbreviated name of the task. You use this name when searching for the task. You should have a naming convention for creating both **TS** tasks and **WS** tasks.

**Tip**

It is a good idea to decide on a naming convention for task abbreviations to make tasks easier to find, such as a specific prefix for all tasks in the project. Customers normally define their own naming conventions. Some customers may start all of their workflows with a Z. Others may use the first two letters as functional area, then an underscore, and nine characters of text. An example might be HR_DispPern for display personnel workflow that is part of the HR area, or ZHR_DispPern if you want to start all workflows with a Z to indicate they are custom built.

- **NAME** is the full name of the task.
- **WORK ITEM TEXT** is the description that will appear in the inbox at runtime. The work item text is very important because it is the first thing the user will see, and it should describe the task for the user. You can pass variables (such as business partner number, invoice amount, etc.) into the work item text to give the item more meaning. Keep in mind that users may have hundreds of work items in their inbox, so the text should be meaningful. During your design phase, you should work with the business users to determine brief but meaningful text to use.
- **OBJECT CATEGORY** describes how you link this task to actual business data. The options available are Business Object Repository (BOR) objects and ABAP classes. BOR objects are discussed in detail in Chapter 10, Business Objects; ABAP Classes are discussed in Chapter 11.
- **OBJECT TYPE** is where you enter the actual object name. The trick to this field is you need to know which object to use. Over time, you will become familiar with the objects provided by SAP, and you will become very familiar with the ones you create yourself. Common BOR objects include: **BUS1006** (Business Partner), **BUS2032** (Sales Order), and **PERSDATA** (Employee Personal Data).
- **METHOD** is the action you want to execute for the task. Examples of methods include create, display, update, block, remove block, approve, and release.
The combination of the **Object** and **Method** fields answers the “what” question. You need both an object type and method to know what the task can do. When you insert the method, the system takes the following from the definition of the object method, as applicable:

- Synchronous or asynchronous object method
- Object method with or without dialog

You cannot change these. If method parameters are defined for the object method, the system gives you the option of creating matching container elements automatically in the task container. The names of these container elements are then identical in the task container and the method container.

**Tip**

Methods that you execute with a task may be synchronous or asynchronous methods. Section 8.2.3, Using Asynchronous Tasks, explains the differences and their effect on modeling.

- To answer the “who” question, from Figure 8.6, follow the menu path **Additional Data** - **Agent assignment** - **Maintain**. You are assigning all of the agents who could ever possibly do this task. (Agents are discussed in detail in Chapter 5, Agents, and Chapter 12, Agent Determination Rules.) For example, if the task is displaying a business partner, who are all of the people who would ever need to display a business partner, or approve a purchase requisition, or enter an expense report. The “who” assigned here is who in the broadest sense of the term. In our examples, we will normally make the task a **General** task, which means everyone is a possible agent. To make a task a general task, select **Attributes** - **General task**.

In addition to the fields in Figure 8.6, also notice the following tabs:

- The **Description** tab enables you to add a longer task description. This **task description** appears in the users’ inbox at runtime. The **work item text** is the one liner that appears in the inbox, and the task description is the long description the user will see after selecting the work item. The **task description** can also have variables to better describe to the user what the task is and what is required for the task.

The **Description** tab also enables you to add texts for the deadlines. This is the text the user will see when a deadline has passed. For example, if a user has
two days to update a business partner, after the deadline has passed, a note is sent to the manager that the deadline has passed. The note sent to the manager contains the text entered in the deadline task description. There is text for each type of deadline: LATEST END TEXT, REQUESTED END TEXT, and LATEST START TEXT. Additionally, there is also COMPLETION TEXT, which is used for notifications (discussed in Section 8.2.5, Notifications).

- The CONTAINER tab contains data in the task container. The task container holds all required runtime data. The container always contains what object is used and who is executing the task.
- The TRIGGERING EVENTS and TERMINATING EVENTS tabs contain events that can be used to stop and start this specific task. This topic is a bit more advanced and is discussed in Chapter 13, Using Events and Other Business Interfaces.
- The DEFAULT RULES tab is used when the task will execute outside of the workflow template (WS task).

An example is a task that starts due to an inbound IDoc (Intermediate Document). Inbound IDocs normally execute a single TS task, not a full WS workflow. In that case, you must know who should get this task at runtime. For example, if an inbound sales order IDoc fails, you may want to route it to the sales area manager for the sales organization. You would use a rule to find the correct sales area manager as discussed in Chapter 12, Agent Determination Rules.

**Creating a Task to Display the Business Partner**

Now you will create the task to display the business partner. In this example, you add a step to display a business partner if the result from the user decision step is YES.

1. Return to your workflow in the Workflow Builder.
2. Drag an ACTIVITY step ( ) to the Yes branch of your user decision.
3. Select the CREATE TASK option from the button list on the button next to TASK as shown in Figure 8.7.
4. Enter appropriate texts for the abbreviation and name. For example:
   - ABBR: zbp_display
   - NAME: Display business partner
5. Enter the following for the business object fields:
6. If you see a message *Transfer missing elements from the object method?*, answer *Yes* (the system is helping you set up the task container; more on this later in Section 8.3, Basics of Containers and Bindings).

7. Provide a work item text. Remember, this is the text the user will see at runtime. To give the text more meaning, we will pass in variables from the business object. Enter the text "Review business partner".

8. Select the *Insert variables* icon. Select *BUS1006 *BUSINESS PARTNER NUMBER*. Notice your work item text now has the following variable: &_WI_OBJECT_ID.BUSINESSPARTNER&. Place your cursor at the end of the text, and select the description for the business partner by inserting the variable *BUS1006 *DESCRIPTION*.

9. Your work item text should now read *Review business partner &_WI_OBJECT_ID.BUSINESSPARTNER& &_WI_OBJECT_ID.DESCRIPTION&.*

10. Save the task. (You need to select LOCAL OBJECT or a development class.)

11. Set up the security for this task by selecting *ADDITIONAL DATA *AGENT ASSIGNMENT *MAINTAIN*. Normally you would assign the appropriate security role or organizational objects here, but for simplicity, make this a general task by selecting *ATTRIBUTES *GENERAL TASK*.

12. Return to the workflow. The workflow suggests a binding between the workflow and the task. Accept the binding by choosing *Enter* (✔). Set the agent of
the activity step to the workflow initiator expression using the dropdown help.

13. When you return to your workflow, you should see your new task as part of the Yes branch from the user decision task. Now when the workflow executes, you can display a business partner.

14. For testing purposes, you need to provide this business partner number when the workflow starts. To do this, toggle the STEPS THAT CAN BE INSERTED frame to WORKFLOW CONTAINER, and double-click on the workflow container element BUS1D06.

15. Select the PROPERTIES tab, and select the IMPORT parameter setting. This means the business partner can be imported when the workflow starts. Normally, this is set so that the application can pass the business partner to the workflow container. If the flag is not set, then the business partner is solely contained in the context of the workflow.

16. Test your workflow. To do so, you must enter an object instance of your business partner object type. Select BUS1D06. At the bottom of the screen, you see the OBJECT TYPE and a KEY. Select the dropdown in the KEY field, and enter a valid business partner number. (If you do not have a business partner and are on a sandbox system, you can use Transaction BP to create a business partner. When creating a business partner, it is easiest if you create a person and just provide first name and last name.)

17. After you enter a valid business partner number, select SAVE in the TEST DATA area of the screen. This enables you to select LOAD in subsequent tests to use the same business partner number, instead of entering the business partner number for each test.

18. After you start your workflow, you should execute two tests. In the first test, select Yes to the user decision. When you select Yes, a business partner should display. In the other test, select No to the user decision, and the workflow should end.

19. Remember, you can see each execution in the WORKFLOWS OF THIS DEFINITION (OUTCOME) frame.

**Hint**

When testing the workflow, the first step may or may not start automatically depending on the setting of the ADVANCE WITH DIALOG flag in the DETAILS tab of the task.
You must specify a package when saving the task in the same way that you specified a package when saving the workflow definition. The transport object in this case is PDTS. If you use LOCAL_OBJECT, this means the workflow cannot be transported to another system.

Tip
The basic data is used to identify a task. Each task is identified by the object identifier TS (for standard task) and an eight-digit task number automatically allocated by the system during creation.

Tip
If you also assign your tasks and workflows to a task group, you can use the task group as a logical package for the complete scenario. This is not only useful for documenting which workflows are the active valid workflows (as opposed to test workflows or scrapped versions) but also makes navigation in the Workflow Builder and Workflow Explorer easier.

Remember the importance of the work item text for your task. The work item text is displayed in the inbox, in the work item selection reports, and in the workflow log. If a work item text is not specified, the name of the task is used instead. You can use expressions within the work item text. They are replaced at execution time with the current values from the task container.

Note that container elements used in the work item text must be filled using a binding. To use expressions in the work item text, position the cursor at the relevant point in the text, and choose EXPRESSION (Expression).

Tip
If you are looking at an SAP task or a task imported from another system in display mode, you can redefine the task description (which appears in the inbox as the work item text). Choose the REDEFINE WORK ITEM TEXT icon (Redefine), and enter a new text to replace the original text. Using the REDEFINE option overlays your version over the original task description as an extension rather than as a modification.

8.2.3 Using Asynchronous Tasks
A full description of the reasons for using asynchronous methods and the consequences is given in Chapter 10, Business Objects, but for the time being, just
think of them as methods that are not completed until the application itself confirms completion by sending an event to the workflow. For an example, think of a step that deletes something: An employee requests vacation and then later decides he does not want the vacation. The original request is deleted.

Deleting is a natively asynchronous activity. You do not want the task completed until the deletion is completed, so a delete task is normally an asynchronous task. From the Workflow Builder point of view, an asynchronous task requires the terminating events to be activated as outcomes of your step. When modeling an activity step, you can bind the results of a synchronous method to a workflow when the method is completed. However, the asynchronous method cannot return information to the workflow via the bindings from method to task, task to workflow. Instead, you define at least one terminating event. You can bind data from the terminating event to the task.

The terminating events of a task express the possible end statuses of the task. A terminating event always refers to the specific object for which the event must be triggered. For example, if the work item deletes document 123456, then the work item should only be completed when the event "document 123456 is deleted" occurs and not when any other document is deleted.

When the work item is created, the Workflow Engine automatically registers that this specific work item is waiting for a terminating event for the specific object involved. This is called an event instance linkage (refer to Chapter 13, Using Events and Other Business Interfaces, for more details). You define the object for which the event must be triggered in the terminating event definition using a container element, referenced to the event’s object type, in the task container.

**Example**

For example, the event \texttt{DELETED} of object type \texttt{BUS2032} (Sales Order) is defined as a terminating event for a task. At runtime, the sales order 123456 is passed via the task container. The work item is now only terminated if the sales order 123456 is deleted and the event \texttt{BUS2032.DELETED} is triggered for that sales order. If another sales order is deleted, the work item is not terminated.

If a work item is terminated by an event, the execution of the workflow is continued by a matching outcome. You must activate this outcome, or the terminating event will be ignored. The method does not necessarily have to have been executed before the event occurs. If a work item is aborted, or undefined processing
statuses arise, the work item is not terminated because no event is created. Only when the terminating event is received will the work item finish and the workflow continue.

Within a TS task, you maintain the terminating events on the TERMINATING EVENTS tab. You specify a container element of the task container that at runtime will contain a reference to the relevant object. This is generally the task container element _WI_Object_ID. The fields OBJECT TYPE CATEGORY and OBJECT TYPE are filled automatically.

You identify the event by specifying its event name. The event must be defined for this object type. The workflow system creates the event instance linkage required at runtime and activates it. To check the properties of the terminating event, choose the SETTINGS icon ( ). The properties of the instance linkage are displayed and can be changed.

### 8.2.4 How to Access Data and Activities

To access data, activities, and events within your workflows, they need to be defined as parts of an object. The object could be part of the Business Object Repository (BOR) (discussed in Chapter 10, Business Objects) or an ABAP class (discussed in Chapter 11, ABAP Classes). Objects can be used in many different workflows, tasks, and rules. SAP components contain many predefined business object types and ABAP classes. These predefined data, activities, or events can be used as is, or you can create your own:

- Objects describe, for a particular business entity, the data (attributes), functions (methods), and events used in a workflow. In our example, we used business object type BUS1006, representing a business partner.

- Data relating to a business entity needs to be defined as an attribute of a business object type before it can be used in a workflow. Attributes are defined as part of the object type to which they are most closely related. For example, the attributes Material name and Material number are defined within the Material object type, but Order number and Order value are defined as part of the Order object type. In other words, the attributes describe data related to the business object.

- Activities to be performed on or by using a business entity are defined as methods of a business object type before they can be used in a workflow. Every
object has methods that define activities that can be executed on that object or its data (e.g., “create business partner” or “update business partner”). Within the method, you can call SAP functions, your own functions, or other external applications.

Events are another important component of an object. The events describe the status changes that an object can undergo (e.g., “business partner deleted” or “business partner changed”). A workflow can be started, canceled, or resumed (wait step) when an event of this kind is raised. Just like attributes and methods, events need to be defined as part of a business object before they can be used in a workflow. Events are discussed in Chapter 13, Using Events and Other Business Interfaces.

If you want to use workflow to implement a business process, this is a rough picture of what is involved in accessing the relevant data and functions:

1. Identify all business entities involved in your business process. You sort out which business functions and events you want to map in your scenario and which data you want to access.

2. Check whether the relevant business object types with their methods, attributes, and events are defined in the BOR or as an ABAP class. The grouping of object types in the application component hierarchy, and the option of searching generically for parts of a name, help when looking for existing object types:
   - If you find an object type whose definition meets your requirements, you can use it without making any modifications.
   - If you find an object type whose definition does not quite meet your requirements, you can extend its definition.
   - If you do not find a suitable object type, you can define your own object type.

3. Use the methods, attributes, and events of the object type in the relevant parts of your workflow.

Further information on how to create your own object types or extend existing object types can be found in Chapter 10, Business Objects, and Chapter 11, ABAP Classes.
Adding an Attribute of a Business Partner Object to a User Decision Step

In this example, you add an attribute of the business partner object `BUS1006` to your user decision step:

1. Return to your workflow, and double-click on the user decision step.
2. Add a variable in your user decision title, for example, `Do you want to display business partner &I?`, and set `PARAMETER 1` to the description of your business partner (`&BUS1006.Description&`) using the input help.
3. Test your workflow. If you saved the data from a previous test, select `Load`. Otherwise, you must enter an object key of your business object type before executing the workflow test. You can reuse your test data for each execution by selecting `Save` in the `Test Data` area after you select a business partner from the dropdown. On subsequent tests, select `Load` from the `Test Data` area to load your business partner number.

Now that you have tested the workflow a couple of times, you know that after you start the test, you can go to the Business Workplace to see the work item. This time, notice the parameters in the work item text for the user decision task.

### 8.2.5 Notifications

You have the option to notify someone when a step is completed. It is a simple notification that sends a text note (not a work item) to a specified user when a step completes. Normally it is used to inform someone when a critical step has completed.

Adding a Notification to the Business Partner Display Step

Follow these steps to add a notification so someone will be notified when the business partner display step is completed:

1. Return to your workflow in the Workflow Builder.
2. Double-click on your step to display the business partner (in the Yes branch of the user decision step).
3. Select the `Notification` tab. Notice in this tab you update `who` to send the notification to and `what` the notification text should say.
4. Currently there is no specific `Notification (completion)` text. Double-click on the link to add a notification text.
5. Ensure you are in change mode for the task (using the Display – Change icon to toggle between change and display mode).

6. Select the Description tab. For the Text type, select Completion text. Select the Change text icon so you can update the text.

7. After you have added a Completion text, save your task, and use the Back arrow to return to the workflow.

8. Update the Message recipient for completion to be the Workflow initiator.

9. Test the workflow again. Be sure to follow the path to display the business partner. After the workflow completes, go to the Business Workplace. You will see the notification text in the Documents folder of the inbox.

### 8.3 Basics of Containers and Bindings

Containers and bindings are a bit tricky when first learning workflow, but as you understand the stability, flexibility, and scalability they provide, you will soon come to appreciate the powerful use of binding between containers. Here are a few of the advantages:

- You can reuse elements in your workflow.
- You can make major changes to activities within the process without jeopardizing the process as a whole (or vice versa).
- Even when the applications that trigger the workflows are changed from release to release, your workflow is sheltered from these changes.
- You can use parallel activities within the workflow without worrying about data reconciliation problems or interference between the activities.

Containers and bindings are explained in more detail in Chapter 9, Advanced Workflow Design Techniques. This section provides an introduction to how they are used by first focusing on the task container and then focusing on the workflow container.

All of the data needed to execute the method or to display in the task text must be available in the task container. Container elements for the task container are generated automatically when you enter a method in the task. The container elements needed for the execution are recognized by the workflow system, and the workflow system prompts you to automatically insert these container elements in
the task container. In addition to what is automatically provided in the containers, you may want to create your own container elements in the task container and define a binding between the task and the workflow so that these container elements are filled at runtime.

### 8.3.1 How to Create Containers and Bindings for Tasks

The task container is edited on the Container tab page (refer to Figure 8.6 as well). To enable the method to process the data, you may (optionally) define a binding from the task container to the method container. The task object itself is automatically bound to the method container. For other method parameters, the system makes a proposal for the binding that can be reviewed on the Basic Data tab of the task by selecting the Binding Object Method icon.

However, not defining any binding between task and method is simpler and offers a performance gain, provided the container element names are the same in both containers. In this case, the contents of the task container are matched by element name and automatically copied to the method container (for all elements defined in the method). The same applies to the reverse binding.

Variables used in your work item texts and descriptions are also bound from the task container. In the "Creating a Task to Display the Business Partner" example in Section 8.2.2, How to Create and Use Tasks, you added a task to your workflow and bound the business partner number and description to the work item text. As a reminder, to add variables while editing your description, choose Insert Expression to choose a variable from the task container. You can add as many variables to the text as you want (up to the limit of the text field).

### 8.3.2 Creating Container Elements in the Workflow Container

The work item text of the user decision can display current runtime values from the workflow. You can integrate these values by including variables relevant to the decision directly in the work item text. The variables are replaced at runtime with values from the matching workflow container elements.

Of course, this is just one example of how container elements are used in the workflow, but it is very easy for you to try yourself. (Using the workflow container to link variables for the user decision work item text was done in an example provided in Section 8.2.4, How to Access Data and Activities.)
1. Create container elements by selecting the Workflow container frame and double-clicking on the <DOUBLE-CANCEL TO CREATE> line in the workflow container tray.

2. Enter the technical name of the container element in the Element field.

3. Give each container element a technical name (minimum of two characters) that can be used to identify it uniquely. The technical name is not case sensitive and must begin with a letter, but it can be followed by letters, underscores, or digits. Because the technical name is not translated, it is conventional to use English words in multilanguage environments.

4. Under Texts, maintain the Name and the Description (optional). Both of these can be translated in multilanguage environments.

5. According to the data type reference of the container element, make the following entries on the Data type tab: First check whether your container element is modeled on one of the predefined types. Choose the Selection of Pre-defined Types icon ( ), and double-click to choose the predefined type. The system carries out the necessary entries for the data type. If you want to create a container element that is not predefined, make the following entries, depending on the data type:

   ▶ **Object type**
   Choose OBJECT TYPE, select an object type category, and enter the name of the object type. Examples include a specific BOR object (such as BUS1006) or a specific ABAP class.

   ▶ **ABAP Dictionary Reference**
   Choose STRUCTURE and FIELD. In this case, you enter a table/structure and field that the container data should be based on. This reserves space in the container equivalent to the field you enter. It works as a "like" statement.

   ▶ **ABAP Dictionary Data Type**
   Choose ABAP Dictionary Reference, and enter the table or structure in the field TYPE NAME. Use this to provide a data type to describe the field in the workflow container.

---

**Tip**
The specification of an object type is not mandatory. If no object type is specified, the container element can be assigned a reference to any object type at runtime. However, binding restrictions may limit its use later in the workflow.
On the **Properties** tab, select whether the new element is to be an **Import** and/or an **Export** element. Mark an import element as **Mandatory** if applicable. Import means this field will be passed from the application to the workflow. For example, a document is created, triggering an event that starts a workflow. For workflow to receive the document information from the application, the receiving element in the workflow container must be marked as **Import**.

### 8.3.3 Changing Container Elements

For any workflow container element you add, it is your responsibility to bind data to the workflow element; otherwise, the element will be empty. There are several ways to get data into your custom workflow container elements:

- **By initial values**
  
  You can assign an initial constant value to a container element. When the workflow is executed, the container element is initially filled with this value. Any changes made to the contents of the container element will overwrite this value.

- **By a container operation step**
  
  A container operation step lets you fill a container element with a constant or another container element.

- **By bindings in a workflow step**
  
  From any workflow step that can output data to the workflow (such as activity steps, user decision steps, document from template steps, etc.), you can transfer data from the task container of the workflow step to the workflow container (or vice versa) via container bindings. Think of bindings as the rules for parameter passing within your workflow.

- **By bindings from an event**
  
  Whenever your workflow responds to an event — for example when it is started by a triggering event — data can be passed from the event container to the workflow container. If you want to pass data from a triggering event to
Creating a Workflow

start your workflow, the workflow container elements to be filled from the event container need the Import flag turned on before the bindings can be defined. Refer to Chapter 13, Using Events and Other Business Interfaces, for more details.

**Adding a Custom Workflow Container Element and Binding Data to the Element**

In this example, you experiment with adding workflow container elements and manipulating them. This example shows how to add and use your own container elements. In this example, you add a container element to represent a date, add another date to this date, and use the new date in the user decision. (Normally you do not add two dates together, so this is not something you would probably use in production, but it will get you familiar with working with container elements.)

1. Toggle to the Workflow Container frame, and create a new container element by double-clicking on the <DOUBLE-CLICK TO CREATE> line. Provide the following information:
   - **ELEMENT**: NewDate
   - **NAME**: MyNewDate
   - **SHORT DESCRIPTION**: My first try with containers

2. Select the ABAP Dictionary Reference:
   - **STRUCTURE**: SYST
   - **FIELD**: DATLO

   You can now see the new field in your workflow container.

3. Switch from the Workflow Container frame to the Steps that can be inserted frame. Drag the step type Container Operation to the line before the User Decision step, and enter the following information:
   - **STEP NAME**: AddDates
   - **OUTCOME NAME**: two dates added
   - **RESULT ELEMENT**: Use the dropdown to select NewDate.
   - **EXPRESSION**: Use the dropdown to see all of the options in the workflow container. Select the object BUS1006, and select CreatedOn.
   - **OPERATOR**: Use the dropdown to select Add.
   - **EXPRESSION**: Use the dropdown to select System Fields. Then select TIMLO.
4. In your Workflow Builder, you now have an ADDDATES step before the user decision step. You will display the result of the container operation step in the user decision step.

5. Double-click on the user decision step. Set PARAMETER 2 to your NewDate container element. Use the dropdown help to do this.

6. Use the variable in your work item text by writing &1 in the text where you want the value to appear, for example, *Do you want to display the business partner &1 &2?*

   **Tip**

   The &2 declares this to be a reference to parameter 2 of this step definition. It is optional — you can just use &. However, in a multilingual environment, specifying the number is very useful because the variables often appear in a different order in the translation.

7. **SAVE**, **ACTIVATE**, and **TEST** your workflow. Notice the date you see in the work item text. It should be a date far in the future. (Keep in mind the only point for this example was to show how to add a workflow container element and use the container operation step type.)

**A Word About the Task Description on the User Decision Step**

Although the short text in the generic decision is part of the step definition (to make things simpler), the long text is part of the task. To create your own long text, you can copy task TS00008267 to a new task and write a suitable task description for this new task. You may select your own variables and add these to the task container. After you have created your task, substitute it into the step’s CONTROL tab in place of task TS00008267. Do not forget that you need to assign possible agents to your new task.

**8.4 Steps**

As well as the step types USER DECISION, CONTAINER OPERATION, and ACTIVITY shown earlier, there are other step types available for modeling a workflow. Although ACTIVITY is the main step type to link the workflow to the application, there are many other step types needed to control the workflow process.
8.4.1 What Other Step Types Exist

Table 8.1 shows all step types available in SAP NetWeaver 7.0. The step types cover all of the functions you need to control the workflow process, from what business functions to call, to looping, conditions, container manipulation, using multiple branches, and many other functions.

<table>
<thead>
<tr>
<th>Step Type</th>
<th>Icon</th>
<th>Runtime Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td>![Activity Icon]</td>
<td>Execution of a task or subworkflow. At runtime, data is passed from the task or subworkflow to the workflow container on creation of the matching work item, and vice versa on work item completion.</td>
</tr>
<tr>
<td>Ad hoc anchor</td>
<td>![Ad hoc Anchor Icon]</td>
<td>In the definition, you specify workflows that can replace this step. At runtime, an authorized user can select one of the specified workflows. The steps of this workflow then dynamically replace the Ad hoc anchor.</td>
</tr>
<tr>
<td>Condition</td>
<td>![Condition Icon]</td>
<td>Depending on the result of the Condition, either the true or the false path is followed. In the condition editor, you can simulate the results of the condition to make the testing of complex conditions easier.</td>
</tr>
<tr>
<td>Container operation</td>
<td>![Container Operation Icon]</td>
<td>The Container operation is used to perform arithmetic operations or value assignments to workflow container elements using constants and data in the workflow container. This includes operations on multiline container elements, for example, appending to a list.</td>
</tr>
<tr>
<td>Document from template</td>
<td>![Document From Template Icon]</td>
<td>A digital document is created from a document template using variables in the text that are filled during workflow execution using the workflow container elements. The workflow container receives a new container element that contains the document ID.</td>
</tr>
<tr>
<td>Event creator</td>
<td>![Event Creator Icon]</td>
<td>An event is raised. You fill the event container from the workflow container.</td>
</tr>
<tr>
<td>Fork</td>
<td>![Fork Icon]</td>
<td>A Fork is used for parallel processing. You can define how many parallel branches exist and how many branches must be completed for the fork to terminate and the workflow to continue. Alternatively, simply define an end condition.</td>
</tr>
</tbody>
</table>

Table 8.1 Step Types
Table 8.1 Step Types (cont.)

<table>
<thead>
<tr>
<th>Step Type</th>
<th>Icon</th>
<th>Runtime Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORM</td>
<td>![icon]</td>
<td>A structure-based container element can be displayed, processed, or approved as a FORM. The data is transferred directly from the workflow container and back again.</td>
</tr>
<tr>
<td>LOOP (UNTIL)</td>
<td>![icon]</td>
<td>A sequence of steps is processed at least once and then repeatedly until the defined termination condition occurs.</td>
</tr>
<tr>
<td>MULTIPLE condition</td>
<td>![icon]</td>
<td>Based on the value of a workflow container element, one of several branches defined in the workflow definition is processed. Any value not specifically assigned to a branch can be processed in an OTHER VALUES branch.</td>
</tr>
<tr>
<td>PROCESS CONTROL</td>
<td>![icon]</td>
<td>This can be used to cancel the execution of a work item or workflow or set a work item to obsolete, so that alternative steps can be taken in the PROCESSING OBSOLETE branch.</td>
</tr>
<tr>
<td>SEND MAIL</td>
<td>![icon]</td>
<td>The text entered in this step type is sent as an email. The task required and the necessary bindings are automatically created by the workflow system.</td>
</tr>
<tr>
<td>BLOCK</td>
<td>![icon]</td>
<td>A BLOCK is a modeling construct that enables you to model a group of steps together. The block has a data interface. Additionally, you can add deadlines to a block, ensuring the entire block must be completed in a certain timeframe. Blocks are discussed in more detail in Chapter 9, Advanced Workflow Design Techniques.</td>
</tr>
<tr>
<td>LOCAL WORKFLOW</td>
<td>![icon]</td>
<td>A LOCAL WORKFLOW is a “free-floating” block that is not connected to the main workflow. Local workflows are triggered by events and enable a design element to be incorporated into the workflow. They may need to execute multiple times during a workflow execution, or may not be executed at all during a workflow execution. Local workflows are discussed in more detail in Chapter 9, Advanced Workflow Design Techniques.</td>
</tr>
<tr>
<td>UNDEFINED step</td>
<td>![icon]</td>
<td>An UNDEFINED step can be used as a placeholder during development. These steps are ignored at runtime.</td>
</tr>
<tr>
<td>USER decision</td>
<td>![icon]</td>
<td>The agent is asked a question and given a predefined list of answers. Each predefined answer is a separate branch in the workflow.</td>
</tr>
</tbody>
</table>
When inserting new steps, you drag and drop the step type to the location where you want the step. You can insert steps before or after an existing step. Table 8.2 provides an overview of how to insert steps into a workflow.

<table>
<thead>
<tr>
<th>Where Do You Want to Insert the Step?</th>
<th>What Do You Have to Select?</th>
</tr>
</thead>
<tbody>
<tr>
<td>After a step</td>
<td>Drag and drop on the outcome of the preceding step.</td>
</tr>
<tr>
<td>Before a step</td>
<td>Drag and drop on a step to insert before the step.</td>
</tr>
<tr>
<td>As a new branch of a fork</td>
<td>Drag and drop on the Fork symbol at the start of the fork.</td>
</tr>
</tbody>
</table>

### 8.4.2 How to Insert New Steps

The system waits for a specific event. The work item is only completed if the expected event occurs. Data from the event container can be sent to the workflow container using a binding.

The selected container elements are posted using HTTP in an XML or SOAP message. This step can also wait for a message reply.

<table>
<thead>
<tr>
<th>Step Type</th>
<th>Icon</th>
<th>Runtime Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wait for event</td>
<td></td>
<td>The system waits for a specific event. The work item is only completed if the expected event occurs. Data from the event container can be sent to the workflow container using a binding.</td>
</tr>
<tr>
<td>Web activity</td>
<td></td>
<td>The selected container elements are posted using HTTP in an XML or SOAP message. This step can also wait for a message reply.</td>
</tr>
</tbody>
</table>

Table 8.1 Step Types (cont.)

The My workflows and tasks frame provides an efficient way of inserting tasks as activities in your workflow. My workflows and tasks displays tasks and workflows that you have selected or previously edited. The selection is made using a search area that provides diverse selection criteria. If you frequently need a group of tasks to define your workflows, you can put these tasks together in a task group and insert the group into your search area.

Display the contents of the task group in the tray, select the position in your workflow where you want to insert the task, and choose the task by double-clicking on it. An activity step is then automatically created in your workflow that refers to this task.
Insert a Send Mail Step

In this example, you insert a send mail step if the user decides not to display the material:

1. Return to your workflow, and drag the Send Mail step to the No branch of the User Decision step.

2. Enter the following information:
   - **Send express**: Select the checkbox
   - **Subject**:
     - Part 1: You chose not to display business partner.
     - Part 2: Select the INSERT EXPRESSION icon, and select BUS1006 • BUSINESS PARTNER.

3. In the large text box, enter text for the email.

4. Select the green checkmark (TRANSFER AND TO GRAPHIC). You are asked for an abbreviation and name, which creates a new task. Enter appropriate values for the name and the description. You also need to provide a development class or have the task be a LOCAL OBJECT.

At this point, your process should look like Figure 8.8. The user decision step is followed by two steps: review of the business partner and send email.

![Diagram](image.png)

**Figure 8.8** Example Process Built in This Section
8.4.3 What Kinds of Outcomes Exist

Outcomes are what the calling step/function can return. Certain outcomes appear in the workflow modeler by default. Outcomes are important because the workflow process branches are based on outcomes. There are different outcomes available according to the step type chosen. To see the possible outcomes of a step, follow these steps:

1. Double-click on a step, and select the Outcomes tab.
2. In the workflow from Figure 8.8, if you double-click on the User Decision step (Do you want to display the business partner?) and select the Outcomes tab, you will see three outcomes: Yes, No, and Processing obsolete.
3. If you double-click on the Activity step (Review business partner) and select the Outcomes tab, you see two outcomes: Step executed and Processing obsolete.

Notice in the User decision step, the outcome Processing obsolete does not appear in the workflow modeler. Normally, the only outcomes that are displayed are ones that require the workflow to react. Some outcomes are optional, and others are only displayed by the system if they are necessary as a result of specific settings. Table 8.3 shows all possible outcomes.

<table>
<thead>
<tr>
<th>The Outcome Is ...</th>
<th>The Outcome Exists If ...</th>
<th>Notes and Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event name (terminating event of task)</td>
<td>The task was defined with terminating events.</td>
<td>If the underlying method is an asynchronous method, you must activate at least one event as an outcome.</td>
</tr>
<tr>
<td>Value name (possible value of method result)</td>
<td>The synchronous object method is defined with a result for which fixed values are maintained in the ABAP Dictionary.</td>
<td>If you deactivate all values of the results, the system activates the Step executed outcome instead.</td>
</tr>
<tr>
<td>Exception name (method exception)</td>
<td>The object method is defined with exceptions.</td>
<td>Refer to Chapter 10, Business Objects.</td>
</tr>
<tr>
<td>System outcome: Document could not be created</td>
<td>The step is a document from template step.</td>
<td>This outcome is triggered if document creation fails.</td>
</tr>
</tbody>
</table>

Table 8.3 Step Outcomes
The Outcome Exists If ...

Notes and Comments

<table>
<thead>
<tr>
<th>System outcome:</th>
<th>The step is a document from template step.</th>
<th>Normal completion of a document from template step.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task executed synchronously</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System outcome:</th>
<th>The activity refers to a synchronous object method without result.</th>
<th>Normal completion of a step.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step executed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System outcome:</th>
<th>The indicator PROCESSING CAN BE REJECTED is set.</th>
<th>If processing of the relevant work item is rejected at runtime (e.g., using REJECT EXECUTION in the Business Workplace), the steps defined after this outcome are executed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processing rejected</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System outcome:</th>
<th>The work item can be set to obsolete using a PROCESS CONTROL step.</th>
<th>The steps defined after this outcome are executed. This outcome is used to skip steps when modeled deadlines are missed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processing obsolete</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System outcome:</th>
<th>The relevant deadline monitoring is activated and a modeled reaction required. This applies to the workflow wizard MODEL DEADLINE MONITORING.</th>
<th>Within these branches, you model steps to be executed when the deadline is missed. For example, you can model a PROCESS CONTROL step that sets the work item of this step to obsolete. You cannot deactivate these outcomes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requested end, latest end, latest start</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 8.3 Step Outcomes (cont.)
8.4.4 Which Task and Step Attributes Impact Work Item Execution

When setting up a task, there are certain options that impact how the task behaves at runtime. Attributes that influence the execution of work items can be found in both the task definition (when creating the TS task) and the step definition (when inserting the task into a workflow). The following settings reside in the task definition (refer to Figure 8.6):

- **Background processing**
  Set this checkbox if you want the workflow system (i.e., user WF-BATCH) to execute the work item automatically in the background without user involvement. This flag is only available if the underlying method is non-dialog, meaning that it does not require user involvement. The work item will not appear in any inbox, but you can view it via the work item reports or workflow logs.

- **Confirm end of processing**
  Set this checkbox if you want the user to decide when the work item is complete. As long as this confirmation has not taken place, the relevant work item remains in the inbox of the agent even if the work item has already been executed. The agent can execute the work item again or forward it. You cannot assign this indicator for tasks that are to be executed in the background.

The following settings are allowed in the step definition (in the Workflow Builder, double-click on a task, and select the Details tab):

- **Processing can be rejected**
  Set this checkbox if the user can opt to skip this step. You can model alternative steps to be taken against the matching REJECTED outcome.

- **Step not in workflow log**
  Work items for this step do not appear in the standard logs, but they are always displayed in the technical workflow log. The graphical log filters out not only these steps but also the outcomes. If a step with several outcomes is filtered out, all of the outcome branches and the steps included in these branches are...
filtered out of the graphical log, until the point is reached where the paths merge together again.

- **Advance with dialog (Synchronous dialog chain)**
  If the agent of the previous step is also an agent of this step, this step is executed immediately on completion of the previous step as described in Chapter 4, Work Item Delivery.

### 8.5 Documenting, Translating, Transporting, and Team Development

This section covers topics that should be included in your workflow design, including documenting your workflows, translation, moving your workflow from development to production, and options for collaborative team workflow development.

#### 8.5.1 Documenting Workflow Definitions

Your project should have certain guidelines and expectations around workflow documentation. A workflow definition can be documented in several parts. First of all, you can describe the purpose of the workflow, how it is started, and which subworkflows it calls in the description of the workflow definition. This documentation is found in the Workflow Builder by selecting Goto • Basic data. Then select the Description tab. You can document using the Note it! link. Additionally, at the task level, you can provide detailed task descriptions that will be available at runtime. Objects can be documented at the object level.

**Note**

The task description for dialog steps is displayed in the work item preview, so for dialog steps, only instructions to the user should be entered here. Only add technical documentation to the task description if the step is to be executed in the background.

Obviously, there is a lot more needed to document a workflow project than simply the workflow definition. Checklists can be downloaded from http://www.sappress.com to help you with this.
8.5.2 Translating a Workflow into Other Languages

You can translate all language-dependent texts that appear in the workflow definition. This applies to:

- The names of steps and outcomes
- Decision texts and titles
- Container element names

A user can use personal settings to specify whether work item texts and the work item preview are to be displayed in the original language of the workflow or in the logon language (if the text is available in this language).

To get a complete translation, you have to translate the steps in the Workflow Builder and also translate all of the tasks used in the workflow in the translation transaction (SE63). Finally use the compare translation function in the Workflow Builder to import the changes into the current workflow version; otherwise, the changes will only be visible when the workflow is imported into the next system downstream.

8.5.3 Transporting New Versions of a Workflow

A new workflow always has one version with the number 0000. This version is overwritten by default every time you save your workflow. If you do not want the system to do this, you can generate a new version by choosing Workflow • Generate version. The workflow definition is set to status New, Saved.

To avoid increasing the disk space requirements for workflow definitions excessively, only generate a new version under the following circumstances:

- If you have made incompatible changes
- If there are production workflows running that refer to the current version

The system manages several versions of a workflow definition. Only one of the versions of a workflow is the active version. Select the active version by activating the appropriate version.

**Tip**

The import and export parameters of the workflow container are not subject to any versioning.
The information tray displays the version you are processing and whether an active version is involved. To display an overview of all versions, choose the Basic Data symbol ( ) in the Workflow Builder. The version number is displayed on the Version overview tab in the version-independent basic data. An overview of all versions of the workflow definition can be found on the Versions tab in the version-dependent basic data.

**Tip**
A running workflow always refers to the version of the workflow active at the time it started. Even if subsequently a new version of the workflow becomes the active version, workflows still running continue to refer to the version active when they were started. If you overwrite this version while there are still active workflows, for example, by making changes directly in the production system, unexpected errors can occur.

If a workflow definition is transported into another system, only the active version is transported. If the workflow definition exists in the target system with the same version number, it is overwritten by the transported version if it has no workflows running. Otherwise, the transported workflow definition is saved with a new, free version number. The transported workflow definition becomes the active workflow definition in the target system.

### 8.5.4 How Do You Share Workflow Development Within a Team

The Workflow Builder offers teamwork functions that support workflow development by a team of developers. It also offers the option to assign a self-defined grouping characteristic to each step. In the optionally displayable Teamworking frame, you can search for steps that have a particular grouping characteristic or particular change data. The Workflow Builder options can also graphically highlight the steps according to the grouping characteristics or according to the last user to make a change. The last user can be seen on the Change data tab of the step definition. You define the grouping characteristic of each step on the Change data tab page in the step definition.

A grouping name can be assigned to every step. Using this grouping name, you can structure the graphical representation of the workflow. The selection field displays all of the group descriptions previously defined. One of the group descriptions just entered is automatically entered in the selection field and is also
available as a selection for all other steps. You can use this to mark steps that need rework or that are to be transferred to a subworkflow, or you can use this to demarcate the different logical parts of a large workflow.
Index

_INDEX: EVT_CREATOR 447, 459, 461
_INDEX: EVT_OBJECT 447, 459, 461
_INDEX: WI_Group_ID 177
_INDEX: WI_Object_ID 177, 280

A

ABAP class 236, 290, 353, 444, 451, 679, 741, 743, 751, 754
_INDEX: BI_PERSISTENT–LPOR 377
Business class 374
_INDEX: CL_CRM_MKTPL_APPL_BASE 747
_INDEX: CL_HRASR00_PROCESS_OBJECT 807
_INDEX: CL_SRVF_FORMABSENCE 354, 404
_CONSTANT: 360
Exception class 387
_INDEX: FIND_BY_LP0R 379
Functional method 371
_GUID: 379
Instance management 382, 406
_Private: 364
_Protected: 364
_Public: 364
_Public static constant 403
_INDEX: SAPSRM/CL_WF_PDO_PO 680
_Static: 360
_Structured key 378
_Utility class 361, 366, 371
ABAP Debugger 543
ABAP Dictionary
_INDEX: Data type 248
_INDEX: Reference 248
ABAP expression 371
_INDEX: AC_CONTAINER 430
Access sequence 454
_Action: 823
Action handler 609
Action pane 661
Activation 168
_Event: 831
Linkages 86
_INDEX: SAP-provided workflow 825
_Active version 87, 260
_Activity: 252
_Step: 234
_ACTOR_TAB: 430
_Actual agent 141
Adaptive RFC model 901
Ad-hoc
_AGENT: 421, 703, 717
Agent assignment 286, 415
Anchor 252, 718, 864
_Anchor step: 287
_Approver 703
_Features 286
_Process: 681
_Process extension 685
_Workflow 53, 109, 184, 286, 471
_Workflow extension 287
Administration 883
Administrative standard workflow 760
AdminController 74, 152, 161, 472
_Default: 89
_Skills 199
_Adobe 798, 802, 806
_Designer 642
_Document Services 803, 804
_LiveCycle Designer 803, 805
_Reader 803, 806, 807
Advance
_With dialog 231, 240, 259
After method 856
Agent 56, 57, 65, 68, 69, 72, 73, 164, 167, 172, 197, 207, 268, 536, 879, 880
_Choose: 846
_Excluded 879, 881, 925
_Possible 92, 93, 471, 485
_Responsible 699, 725
_Selected: 682
Agent assignment 92, 142, 766
Agent determination 64, 72, 74, 141, 178, 188, 550, 698, 716, 726, 745, 747, 816, 878, 879, 881
_Error: 169
_Error handling 188
Agent determination rule 291, 413, 414, 415, 747
Container 430, 436
Defining 415
Exception 431
Expression 437
Function module 429
Manual selection 421
Result 421, 422
Using 420
Alert 112, 215
Alloy 97, 568, 645, 652, 655
Decision body 660
Sidebar 646, 659
Anchor
  Ad-hoc 252
  Step 865
Annotate PDF document 803
API 484
Application Programming Interface → API
Application-controlled workflow 688, 710
Approval framework 681
Approval level 685
Approval Procedure wizard 845
Approval process 40
Overview 923
Approver
  Multiple 668
Archive Development Kit 838
ArchiveLink 835, 838, 839, 857
Archiving 81, 208, 838
Workflow 556
Association 295, 296
Asynchronous 303, 320, 464
  Method 237, 303, 320, 323, 324, 340, 466
  Task 105, 241, 875
Attachment 69, 98, 101, 102, 103, 115, 795, 804, 850
  SAP Business Object 101
Attribute 178, 292, 293, 301, 310, 315, 360, 368, 385
  Buffer 333
  Definition 301
Audit trail 108
Auditor 75
Authorization 88, 90, 136, 188, 189, 553
HR structural 874, 880
Problem 207
Role 90
Structural 91, 149
Automate task 662
Automatic forwarding 171
Automatic workflow customizing 83, 87, 88, 539

B

Backend service
  SAP_PA 805
  SAP_PD 805
  SAP_PT 805
Background
  Method 327, 340, 872, 873
  Processing 258, 551, 883
  Step 536, 819
  Task 89, 174, 476, 544, 847
  Work item 175, 478, 884
Background job
  Missed deadline 89
  SWWDHEX 885
BAdI 448, 490, 492, 692, 699, 700, 712, 715, 720, 726, 747, 783, 884, 908, 925
  BBP_WFL_APPROVE_BADI 712, 717, 720, 723, 724
  BBP_WFL_SECURE_BADI 712
  SAPSRM/BD_WF_DEADLINES 729
  SAPSRM/BD_WF_RESP_RESOLVER 908
  SAPSRM/BD_WF_REVIEWER_F4 704
  SAPSRM/BD_WF_REVIEWER_RULE 704
  WF_CORE_RESP_RESOLVER 700
BAPI 292, 319, 321, 515, 654, 673
Basic data 222
Batch job 489
  Cleaning up 208
  Customizing 94
  Monitoring deadline 89
BC Set 705, 706, 733, 907
Before method 856
Benefit 95
BI → SAP NetWeaver Business Warehouse
Index

Binding 56, 173, 221, 222, 246, 249, 263, 277, 279, 315, 420, 459, 460, 479, 480, 545, 546, 549, 556, 560, 570, 602, 607, 634, 807, 850, 874, 877, 884, 886, 888

Definition 246

Detailed explanation 276

Error 889

Problem 895

BOL 737, 742

Framework 751, 752

BOR 178, 236, 289, 353, 354, 358, 386, 444, 450, 451, 544, 717, 739, 741, 743, 751, 842

Browser 297

BUS1006 236, 239, 444

BUS2032 236

IFARCH21 842

Object method 753

SOFM 643

WF_DOC 642

BOR object 123

BUS2000108 762

BUS2000111 762

BUS2000116 755

BUS2012 123

BPEL 507

BPM → SAP NetWeaver Business Process Management

Branch 252

Breakpoint

External 545

BRF 689, 690, 697

Evaluation ID 708, 710

Event 698

Expression 698

BSP 568, 582, 613, 614, 625, 626, 628, 633, 636

Application 613, 617, 619, 622, 625, 629, 632, 634

Buffering 192, 194, 436

Error 169, 192

Problem 427

Business Object

SYSTEM 846

Business Add-In → BAdI

Business Application Programming Interface → BAPI

Business Communications Services 500, 727

Business Configuration Set → BC Set

Business driver 59

Business function set 803, 804

Business Intelligence → SAP NetWeaver Business Warehouse

Business Object 66, 69, 70, 222, 543, 659

ASBPURLIST 725

Attribute 293

BUS1001 310

BUS20001 738, 739

BUS2010022 761

BUS2012 405

BUS2032 271

BUS2121 347, 348, 349, 679, 707, 714, 715, 910

BUS2200 919

BUS2201 911

BUS2202 918

BUS2203 914

BUS2205 916

BUS4101 712

Encapsulation 292

Event 294

FORMARENC 346, 864

Inheritance 292

Interface 296, 842

Key 293

LFA1 310

Method 294

Overview 291

Polymorphism 292

SelfItem 847, 848

SOFM 850

Status 310

SYSTEM 346, 767, 857, 858

SYSTEM.GenericInstantiate 858

USR01 346, 354, 374, 401, 853

WEBSERVICE 629, 631

Business Object Browser 298

Business Object Builder 297, 299, 313, 329, 339, 450

Business Object Layer → BOL

Business Object Repository → BOR

Business object type 294, 295, 329, 459, 466

Business process 59, 66, 201, 441, 667
Index

Business Process Execution Language → BPEL
Business process owner 201
Business Rules Framework 923
Business Server Pages → BSP
Business transaction 737
Business transaction event 393, 448, 455
Business user 236
Business Workplace 86, 96, 97, 98, 100, 128, 230, 234, 592, 625, 656, 670, 728, 880, 922
BW → SAP NetWeaver Business Warehouse

Complex data type 279
Composition 295, 296
Condition 252, 454, 464, 493, 547, 552, 888
Multiple 264
Record 454
Simulation 552
Start 541
Start condition 462
Confirm
End of processing 258, 363, 367, 754
Consistency check 554, 870
Constant attribute 369
CONSTRUCTOR 369, 375
Container 56, 222, 276, 277, 479, 480, 484, 487, 495, 556, 570, 886
_AGENT_OBJECTS 850
Agent determination rule 416
Data 673
Definition 246, 247
Detailed explanation 276
Displaying 181
Element 249, 279, 424, 430
Event 277
Method 277, 856
Modifying 182
Operation 252, 476, 559
Operation step 249
Persistent 899
Purpose 246
Rule 277, 278
Runtime 899
Task 277, 278
Type 277
Workflow 277
Container element 185, 466, 633, 848, 851
AGENTBJECTS 850
WI_Group_ID 177
WI_Object_ID 177, 280
Change 249
Multiline 268, 269, 271
Content server 839
Contract 913
Controller layer 603
Core Component Technical Specification → CCTS
Cost saving 47

Calendar 647
Entry 651
Item 650
Callback
Dialog 621
Handler 621
URL 618, 625, 629, 630, 631, 632
Canceled status 482
Change document 393, 450
CDHDR 451
Characteristics 216
Check function module 291, 462, 492, 493, 494, 495, 542, 553, 868, 879, 894, 895
Choose agent 846
Cinderella effect 193
Circular Distribution wizard 846
CLASS_CONSTRUCTOR 369
Clearing task 208
Client copy 92
Commit 490
COMMIT WORK 485, 868
Complete manually 175
Complete workflow 488
Completion text 238
Create event 553
Create task 235, 238
Crisis response 203
CRM → SAP CRM
cross-component Business Process Management → ccBPM
Custom code 561
Custom relationship 435
Customer handler
   Inbound 676
Customer Relationship Management → SAP CRM
Customizing 83, 539, 559
   Activities 94
   Automatic 83, 85, 539, 559
   SAP-provided workflow 825
   Task-specific 91
Deadline 53, 61, 165, 180, 233, 554, 563, 647, 885
   Agent 143
   Customizing 89
   Data 215
   Defining 231
   Job 886
   Latest end 231
   Latest start 231
   Message 234
   Modeled 232, 274, 863
   Monitoring 165, 166, 231, 728
   Monitoring for work item 195
   Notification 207
   Object 859
   Reporting 166
Deadline (cont.)
   Requested end 231
   Requested start 180, 231
   Work item 143, 174, 478
Debugger
   ABAP 543
   Debugging 550
   Decision 648
      By type view 649
   Decision set 688, 917
   Default agent-determination rule 138
   Default rule 238
   Default workflow administrator 89
   Defining event 447
   Delegation 295, 312, 583
   Delete
      Work item history 209
      Workflow 209
Delta pull 114
Design
   Phase 236
   Process-oriented 508
   Sanity check 78
Destination
   Logical 87
Diagnosis
   Buffer synchronization 192
   Transaction 538
   Utility 151
Diagnostics 535
   Log 537
   Tool 535
Dialog
   Decision 654
   Work item 174, 479, 481, 482, 884
Dialog chain
   Synchronous 105, 471, 489
Dictionary type
   WFSYST-AGENT 853
Digital personnel file 809
Display work item 187
DMR 665
Document 835, 838
   Finder 836
   From template 252, 638
   Scanning 836

D

Data Dictionary 560
Data quality 64
Data source
   Model 674
Data Store Object (DSO) 213, 215
Data type 521
   Complex 279
Database
   Attribute 317, 335, 337
   Reorganization 208
Deadline 53, 61, 165, 180, 233, 554, 563, 647, 885
   Agent 143
   Customizing 89
   Data 215
   Defining 231
   Job 886
   Latest end 231
   Latest start 231
   Message 234
   Modeled 232, 274, 863
   Monitoring 165, 166, 231, 728
   Monitoring for work item 195
   Notification 207
   Object 859
   Reporting 166
Index

Document (cont.)
  Storage 836
  Template 225, 641
  Viewer 836
  Documentation 259, 303, 536, 830
    Workflow definition 259
  Document-based workflow 840
  Domino Designer 654, 659
  Duet 97, 568, 661, 667
    Action 663
    Action Pane 664
    Approval workflow 670, 671
    Client 666, 671
    Client add-on 669
    Server 669
    Template 674
    Toolbar 663
    Workflow approval 661, 663, 667, 669
  Dynamic contextual message 666
  Dynamic link 663
  Dynamic loop 268
  Dynamic Messages Region → DMR
  Dynamic parallel processing 145, 267, 268, 857
  Dynamic parameter 609
  Dynamic validation 801

E

  ECL 836
  Edit form 800
  Electronic image 838
  Email 98, 275, 473, 499, 666, 847, 884
    Header 663
    Notification 663
  Employee
    Hiring 804
    Employee Self-Service → ESS
  Encapsulation 292
  End date/time
    Latest 729
    Requested 729
  End of processing
    Confirm 258
  Engineering Client Viewer → ECL
  Enhancement Package 804
  Enhancement Spot
    HRASR00GENERIC_SERVICES 805
  Enterprise JavaBeans 804
  Enterprise Service
    Bundle 510
    Bus 509
  Enterprise Services Builder 523
  Enterprise Services Repository 511, 520, 529
  Enterprise SOA → SOA
  Error
    Administration 168, 171
    Agent determination 169
    Buffering 169
    Event linkage 170
    Monitoring 171
    Resolution 168
    Status 169
    Work item 170
  Escalation 53, 67, 69, 81, 232
  ESS 796
  Evaluation path 415, 418, 420, 434
  Event 92, 221, 294, 328, 340, 361, 441, 442, 481, 488, 632, 634, 635
    Activation 92
    Binding 870, 894
    Business partner workflow 460
    Business transaction event 455
  Change document 449
  Container 277, 450
  Container element 450
  Create 553
  Creation 448
  Creator 252, 323, 442, 457
  Definition 303, 328, 442, 447
  Event container element 459
  Handler 394
  Initiator 442, 459, 894
  Local 468
  Manager 495
  Master data change 454
  Material change 450
  Message control 453
  Name 442, 466
  Parameter 442, 450
  READY_FOR_RELEASE 705
  READY_FOR_WORKFLOW 693
Index

Event (cont.)
  Receiver  394, 443, 459, 465
  Simulation  552, 870, 878
  Start  460
  Start condition  458, 462
  Status change  451
  Terminating  457, 464, 466, 492
  Trace  446, 451, 470, 539, 540, 541, 553, 869
  Triggering  268, 457, 458, 828
  Triggering step  252
  Type linkage  466
  User event  801
  Waiting for  254
  Work item  478
  Workflow API  457
Event linkage  86, 291, 443, 459, 460, 465, 466, 467, 469, 494, 745, 760, 804, 807, 831, 868, 870, 878, 892, 893, 894, 895, 920
  Error  170
  Table  444, 559
Event queue  467, 469, 470, 488, 539, 540, 870, 875, 892
Event raising  447
  Business transaction event  455
  Change document  448, 449
  Financials  455
  Human Resources  454
  Message control  448, 453
  Status change  451
  Status management  448
Exception  324, 325, 342, 716
Exception class
  CX_BO_ABORT  388
  CX_BO_ERROR  388
  CX_BO_TEMPORARY  388
Exception handling  273
Exchange Infrastructure → SAP NetWeaver Process Integration
Excluded agent  134, 139, 879, 881, 925
Execute
  Rule for work item  191
  Without agent check  136
  Work item without agent check  192
Expense approval  653
Export parameter  325
Expression  100, 222, 232
  Agent determination  139
Extended notification  97, 125, 127, 128, 671
Extended organizational plan  148
External breakpoint  545
External user  130

F
Factory calendar  373, 859, 860
Fax  841
Flowchart  78
Fork  252, 267, 272
Form  253, 640
  Approval  798, 799
  Edit  800
  Electronic  637
  PC document  641
  Simple  638
  Submission process  798
  Tracking  801
  Transfer  800
Forum  82
Forward task  756
Forwarding  98, 106, 134
  Work item  106
Function module  320, 343, 415, 675
  Check  462, 492, 493, 494, 495, 542, 553, 868, 879
  Receiver type  462, 494, 495, 496, 497
  RH_GET_ACTORS  851
  Rule  429
  SAP_WAPI_READ_CONTAINER  480
  SWE_CREATE_EVENT  869
  SWE_EVENT_CREATE_FOR_UPD_TASK  495
  SWE_EVENT_CREATE_IN_UPD_TASK  491
  SWE_EVENT_MAIL  871
Functional method  370, 371, 385, 615

G
General task  136, 141, 150, 237, 239, 624, 767, 831, 880, 922
Generic decision task  672

939
Index

Generic Interaction Layer → GenIL
Generic Object Services → GOS
GenIL 742, 768
GET_PROPERTY 897
Globally Unique ID → GUID
Going live 80
GOS 221, 405, 441, 470, 471, 497
Graphical workflow log 109, 184
Groupware 54
GUID 359, 796, 814
  Format 163

H

Help desk 196, 200
Hide task 162
Hiring
  Employee 804
  Process 798
History region 666
HR administrative service 793, 804
HR infotype 454
HR structural authorization 874, 880
HRASROGGeneric_SERVICES 805
Human factor 40
Human involvement 44
Human resources
  Event 394
  Human role 206
  Human-centric process 40

I

IFDISPLAY 314
IMG 84, 90, 91, 171, 656, 658, 689, 694, 700, 730, 738, 742, 752, 753, 754, 757, 760, 762, 764, 780, 825, 921
Implementation guide → IMG
Import
  Adaptive RFC model 605
  Parameter 324
In process 482
Inbound customer handler 676
Inbox 98, 236, 648, 726
  Log 108
Include
  330, 330, 330
  InfoCube 213, 215, 216
  InfoObject 212
    Characteristics 213, 216
    Key figure 213, 216
  InfoProvider 213
  InfoSet 213
  Infotype 149, 455, 805, 819
    105 149
Inheritance 292, 295, 312
Instance linkage 180
Instance-dependent 320
Instance-independent 316, 320, 360
Instantiate 382
Object 383
Interface 294, 295, 296, 313, 358, 428, 614
  BI_OUTPUT 362
  BI_PERSISTENT 359, 362, 363, 376
  IF_WORKFLOW 362, 365, 374
  IFAPPROVE 359
  IFDISPLAY 314
  IFOBJECT 358
Invoice 908, 916
Item type 823
iView 603

J

Java class 605
Java EE 5 595
JCo destination 605, 901, 902
Job 144, 147
  SWWCOND 265
  SWWDTHEX 165
  SWWERRE 873
Job role 684

K

Key 293
Key field 300, 314
Key figure 216
Index

L

Latest end 231, 232, 233, 373
Latest end date/time 729
Latest end text 238
Latest start 231
Latest start date/time 729
Latest start text 238
Launch handler 621
Leave request 663
Link
  Dynamic 663
Local event 468
Local object 229
Local Persistent Object Reference → LPOR
Locking 561, 562
Log 85
  Technical 224, 537
Logical destination 87
Logical expression 462
Logical unit of work 490
Logically deleted 272
Loop
  Until 253
Lotus 647, 648, 650, 651
  Client 656
  Notes 53, 54, 97, 645, 646, 654
LPOR 359, 376, 380, 401
  Persistent 376
  Transient 376

M

Macro 329
  898
  BEGIN_METHOD 897
  SWC_CALL_METHOD 344, 405, 900
  SWC_CONTAINER 898
  SWC_CREATE_CONTAINER 898
  SWC_CREATE_OBJECT 332, 336, 899
  SWC_GET_ELEMENT 340, 430, 899
  SWC_GET_PROPERTY 331, 333, 339, 405, 900
  SWC_GET_TABLE 340, 430
  SWC_GET_TABLE_PROPERTY 331
  SWC_REFRESH_OBJECT 900
Macro (cont.)
  SWC_SET_ELEMENT 332, 344
  SWC_SET_TABLE 334, 899
Mail
  inbox 646, 647
  Sending 276
Manager Self-Service → MSS
Mass deletion 192
Message
  Control 453
  Dynamic contextual 666
  Type 521, 526
Method 236, 292, 294, 303, 310, 319, 321,
  339, 341, 365, 544, 550
  After 856
  Asynchronous 237, 320, 323, 466
  Attribute 332
  Before 856
  Container 277, 278, 856, 878
  Creation 319
  Default 178, 321
  Exception 303, 324
  Instance-independent 320
  Key 330
  Parameter 303, 320, 324
  Result 320
  Secondary 855, 856
  Synchronous 237, 322
  Testing 550
  Virtual 327
  WF_DOC_CREATE_SOFM 642
  Without dialog 237
Metrics 62
Microsoft Office 54, 642, 661
  Outlook 53, 97, 661, 663, 667, 673
  Suite 669
  Visual Studio 669, 671, 672, 674
Midnight magic 193
Model data source 674
Model deadline monitoring 846
Model layer 603
Modeled deadline 232, 274, 863
Monitoring 257
Modeling Support wizard 845
MSS 796
## Index

<table>
<thead>
<tr>
<th>Multiline</th>
<th>71, 301</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attribute</td>
<td>334, 337</td>
</tr>
<tr>
<td>Container element</td>
<td>268, 269, 271</td>
</tr>
<tr>
<td>List</td>
<td>857</td>
</tr>
<tr>
<td>Multilingual environment</td>
<td>260</td>
</tr>
<tr>
<td>Multiple approver</td>
<td>668</td>
</tr>
<tr>
<td>Multiple condition</td>
<td>264</td>
</tr>
<tr>
<td>Multiple line items</td>
<td>267</td>
</tr>
<tr>
<td>MVC</td>
<td>613</td>
</tr>
<tr>
<td>My Workflows and Tasks</td>
<td>225</td>
</tr>
</tbody>
</table>

### N

| Naming convention | 236 |
| NOBODY_FOUND     | 430 |
| Notification     | 112, 131, 238, 245, 864 |
| Agent           | 143 |
| Extended        | 671 |
| NWDI            | 120, 903 |
| NWDS            | 120, 901, 905, 906 |

### O

| OAGI           | 506 |
| OASIS          | 506 |
| Object         | 58 |
| Category       | 236 |
| Identification region | 665 |
| Instance       | 293, 319, 618 |
| Key            | 170 |
| Local          | 229 |
| Organizational | 139, 715 |
| Reference      | 182, 293, 858 |
| SBOOK          | 299 |
| Selection      | 796 |
| Visualization  | 813 |
| WI_OBJECT_ID   | 278 |
| Object type    | 236, 248, 293, 314, 442 |
| Attribute      | 315 |
| Example        | 346 |
| Key            | 314 |
| Method         | 319 |
| SELFITEM       | 345 |
| Status         | 312 |
| User           | 346 |
| WF_TASK        | 346 |
| Object-based navigation | 753, 759 |
| Object-oriented | 55, 354, 375, 394 |
| Data model     | 69 |
| Obsolete processing | 276, 863 |
| OCR            | 839 |
| Offline        | 672 |
| Offline scenario | 803 |
| Open Applications Group | OAGI |
| Open process   | 801 |
| Opportunity and lead management | 735 |
| Optical Character Recognition | OCR |
| Organization for the Advancement of Structured Information Standards | OASIS |
| Organizational data | 416, 428 |
| Organizational Management | 52, 144, 745, 796, 804, 805, 809, 880 |
| Organizational model | 198, 416 |
| Organizational object | 139, 415, 419, 427, 431, 436, 715 |
| Organizational plan | 91, 144 |
| Avoiding       | 150 |
| Buffer         | 157 |
| Extended       | 148 |
| Maintenance strategy | 151 |
| Relationship   | 146 |
| Transport      | 153 |
| Validity period | 145 |
| Organizational unit | 89, 144, 146 |
| Outbox         | 96, 98, 110, 891 |
| Outcome        | 222 |
| Overdue entry  | 234 |

### P

| Parallel        | 667 |
| Parallel processing | 267 |
| Dynamic         | 143, 857 |
| Table-driven dynamic | 267 |
| Parameter       | 324 |
| Export          | 325 |
| FORM_SCENARIO_STAGE | 800 |
| Import          | 324 |
| INITIATOR_ROLE  | 797 |
| PROCESS_GROUP   | 797 |
| Result          | 303, 320, 324 |
| WI_ID           | 812 |

942
Index

Parameter (cont.)
  WLC 177
  Parked event 468
  Participant 56
  Partner channel management 756
  Partner determination procedure 747
  Partner processing 747
  Pattern 81
  PC document 641
  PDF 803
  Pending view 649
  Perform auto-customizing 83
  Performance 164, 167
  Persistent container 899
  Person 149
  Personnel administration 795, 805
  Personnel number 149
  PI → SAP NetWeaver Process Integration
  Plan version 87, 148
  Polymorphism 292
  Position 145, 147
  Possible agent 92, 93, 106, 134, 135, 413, 471, 485, 831, 879, 880
  Assignment 137
  Post processing framework 746
  Prefix number 90
  Presentation layer 603
  Print list 838
  Priority
    Work item 107
  Private
    Attribute 385
    Method 365
  Procedures manual 63, 66
  Process
    Consistency 61
    Control 863
    Control step 253
    Form 800
    Human-centric 40
    Level 917
    Object 796, 798, 808, 820
    Quality 61
    Reference number 798
    Schema 695, 733
    Selection 797
  Process (cont.)
    Speed 61
    Transfer 801
    Process form 799
    Process-controlled workflow 688, 689, 729
    Processing
      Can be rejected 258
      Duration 165
      Obsolete 276, 863
      Parallel 267
      Time 166
    Process-oriented design 508
    Project management 59
    Proof of concept 556
    Proxy 520, 528
    Implementation 530
    Publish and subscribe 443
    Purchase order 907, 911
    Purchasing specialist 682
  Query 214
  Queue
    WORKFLOW_LOCAL_xxx 542
  Quote 908, 917
  Reader rights 803
  Ready status 481
  Receiver
    Function 459
    Function module 291, 460, 462, 467, 494, 495, 496, 497, 553
  Recipient 134, 140
  Reduce costs 61
  Refresh
    Buffer 193
    Organizational environment 194
  Rejecting
    Work item 110
  Repetition 44
  Replace 98, 481
  Manually 175
Index

Report
Standard 162
Reporting 54, 82, 162, 211, 487
Agent workload 166
Deadline target 166
Diagnosis of workflow with error 164, 172
Orphaned work item 422
Processing duration 165
Queued workload 167
Work Item by processing duration 165
Work item by task 165, 175
Work item selection 173
Work item with monitored deadline 165, 166
Workflow for object 163
Workflow performance 164
Workload analysis 166
Request view 648
Requested end 231
Requested end date/time 729
Requested end text 238
Requested start 231, 232, 481
Requested start deadline 362, 876
Requirements gathering 44, 57
Agent determination 72, 74
Data 66
Future enhancement 81
Suitability 60
Reserve 98, 482
Work item 102, 113
Responsibility 416, 424, 425, 686
Responsibility rule 76, 191, 415, 423, 427
Priority 425
Responsible agent 134, 138, 699, 725, 910, 919
Restart
After error 175
Workflow 488
Resubmission 103, 107
Result parameter 303, 320, 324
Return on investment 46, 62, 289
Reusability 291
Review workflow 287, 719, 865
Reviewer 287, 684, 703, 719
RFC 488, 541, 542
Error 549
Model 605, 607

RFC (cont.)
Monitor 893
Queue 488, 541, 868, 877
RFC workflow destination
Configuring 87
Workflow Local 87, 542
RFx 919
RH_GET_ACTORS 421, 851
RH_SAP_ORG_OBJEC_RELATE 428
Role 90, 795
SAP_BC_BMT_WFM_ADMIN 91
SAP_BC_BMT_WFM_CONTROLLER 91
SAP_BC_BMT_WFM_DEVELOPER 91
SAP_BC_BMT_WFM_PROCESS 91
SAP_BC_BMT_WFM_SERV_USER 89
SAP_BC_BMT_WFM_UWL/Admin 91
SAP_BC_BMT_WFM_UWL_END_USER 91
SAP_BC_SRV_USER 91
Role resolution → Rule resolution
Roll-out 80, 158
Routing 52
RSS feed 646
RSWLEOGD 540
RSWUWFML2 171
RSWWWIDE 558
RSWWWIDE_DEP 558
Rule 413, 816
AC00000168 437
AC30000012 437
Container 419
Resolution failure 421
Rule container 277, 278
Rule determination 191
Rule resolution 414, 420, 544, 879, 881
Runtime buffer 194
Runtime container 899
Runtime table 558
RVNSWE01 454

S

SAP Application 647
SAP Business Explorer 212
SAP Business Suite 43, 654, 669, 673
SAP Business Workflow 39, 42, 45, 53, 74, 645, 653, 660, 661, 839

944
Index

SAP NetWeaver Portal (cont.)
SAP NetWeaver Process Integration 215, 502, 513, 522, 804
SAP Records Management 814
SAP Smart Forms 747
SAP SRM 545, 558, 679
Add Approver 718
Ad-hoc process level 698
Application-controlled workflow 713, 724, 729, 731
Approval depth 683
Approval framework 686, 688
Approval process overview 690, 695, 697
Approver 684
Combined completion and approval 683
Complex approval process 682
Decision set 699
Dynamic process 719
Inbox 97
Line item-based BAdI 713
n-step 711, 719
Offline functionality 727
One step approval 710
Process level 690, 695
Process schema 690, 693, 698, 705, 708
Process-controlled workflow 704, 730
Requester 684
Responsibility determination strategy 692
Responsible resolver name 696
Rule-based reviewer 704
Shared responsibility 687
Shopping cart 701, 714, 723
Single responsibility 687
Specialist 684
Split responsibility 687, 722
Two-step approval 710
SAP Supplier Relationship Management → SAP SRM
SAP_ALL 88
SAP_BC_BMT_WFM_ADMIN 91
SAP_BC_BMT_WFM_CONTROLLER 91
SAP_BC_BMT_WFM_DEVELOPER 91
SAP_BC_BMT_WFM_PROCESS 91
SAP_BC_BMT_WFM_SERV_USER 89
SAP_BC_BMT_WFM_UWL_ADMIN 91
SAP_BC_BMT_WFM_UWL_END_USER 91
SAP_BC_SRV_USER 91
SAP_PA 805
SAP_PD 805
SAP_PT 805
SAP_WAPI_CREATE_EVENT 485, 490
SAP_WAPI_DECISION_READ 579, 588
SAP_WAPI_GET_HEADER 572, 583, 584
SAP_WAPI_LAUNCH_URL_GET 626
SAP_WAPI_READ_CONTAINER 480, 487, 572, 583, 584, 595, 598
SAP_WAPI_RESERVE_WORK_ITEM 572, 583, 584
SAP_WAPI_START_WORKFLOW 485, 488, 512, 595, 598
SAP_WAPI_WORKITEM_COMPLETE 573, 583, 595, 600, 632
SAP_WAPI_WORKITEM_RECIPIENTS 630
SAP_WAPI_WORKITEMS_TO_OBJECT 487
SAPconnect 728
SAPoffice 848, 871
SAPoffice Notification Connector → SONiC
SAPscript 386
SAPWebDynproLauncher 608
SBOOK 299
Scanning 839
Scenario
Offline 803
Secondary method 855, 856
Secondary priority 423
Security 189
Role 135, 150
Segregation of duties 60, 61
Selected agent 134, 140, 413, 682
SELFITEM 345
Send mail 234, 276, 864
Send mail step 847
Service
ID 622
Interface 520, 526
Registry 518
WSHANDLER 625, 626, 628, 630
Service-Oriented Architecture → SOA
Shopping cart 907
Sidebar 648, 673
Simple form 638
Simplified workflow definition 846
Simulate event 552, 870
Simulate rule resolution 417
SLD 523, 902
SO_DOCUMENT_READ_API1 500
SO_NEW_DOCUMENT_ATT_SEND_API1 500
SO_NEW_DOCUMENT_SEND_API1 500
SO_OLD_DOCUMENT_SEND_API1 500
SOA 502, 503, 507
Middleware 502, 509
SOAP 505, 526
Software component 904
SONIC 121
Connector 112, 728
Source system 213
Standard BOR object 753
Standard report 162
Standard task 93, 174, 234, 236, 241, 700, 760, 766
Start
Form 641
Latest 729
Requested 481
Task 551
Start condition 458, 462, 541, 716, 745, 746, 879, 893
Workflow 463
Static attribute 369
Status
Canceled 482
Ready 481
Status management 394, 451, 746
Status notification 648
Step 222
Anchor 865
Background 536
Outcome 256
Send mail 847
Type 223
Workflow log 258
Step condition 263
Complete work item 263, 265
Completion execution 263, 266
Create work item 263, 265
Step condition (cont.)
Evaluate preconditions and postconditions 266
Storage
Document 838
Structural authorization 91
Profile 90
Structure
WESTST 68
Substitute 155, 168, 188, 726, 756
Active 156
HR-based 155
Passive 156
Task classification 155
User-based 156
Substitution 111, 113, 668
Subtype 295
Subworkflow 273, 287, 476, 479, 857
Supertype 295, 300, 318
Support package 559
Support tool
Finding erroneous workflow 172
Restarting a workflow 195
Rule monitoring 195
SWC_CALL_METHOD 344, 405
SWC_CREATE_OBJECT 332, 336
SWC_GET_ELEMENT 340
SWC_GET_PROPERTY 331, 333, 339, 405
SWC_GET_TABLE 340
SWC_GET_TABLE_PROPERTY 331
SWC_OBJECT 332, 336
SWC_SET_ELEMENT 332, 343, 344
SWC_SET_OBJECTKEY 344
SWC_SET_TABLE 334, 343
SWE_EVENT_CREATE 869, 899
SWE_EVENT_CREATE_FOR_UPD_TASK 492, 495
SWE_EVENT_CREATE_IN_UPD_TASK 491
SWE_EVENT_MAIL 871
SWHACTOR 421
SWU_OBUF 158
SWU3 83, 88
SWW_CONT 480, 560, 561
SWW_CONTOB 480, 560, 561
SWWCOND 265
SWWDHEX 165, 885
Index

SWWERRE  562, 873
Synchronize  492
Synchronous  303, 320
  Dialog chain  105, 230, 259, 471, 489
  Method  237, 322, 324, 339
Syntax check  229
System
  Workflow_Local  206
System administrator  475
System crash
  Recovery  195
System Landscape Directory → SLD

T

Table
  SWW_CONT  480, 560
  SWW_CONTOB  480, 560
Table-driven dynamic parallel processing  267
Task  56, 58, 64, 65, 90, 222
  Asynchronous  241
  Automate  662
  Background  544
  Container  222, 238, 246, 277, 278
  Create  235, 238
  Description  100, 237, 251
  Group  150, 241, 807, 816
  Hide  162
  ID  174
  Prefix number  90
  Start  551
  TS00008267  234, 578, 581
  Update  875
  Visualization  627, 811
Task-specific customizing  91
Teamworking  225, 261
Technical workflow log  224, 537, 880
Terminating event  180, 242, 243, 457, 459, 464, 466, 467, 492, 633, 745
Terminology  55
Test  170, 550
  Authorization  553
  Business object  550
  Condition  552
  Environment  539
  Error scenario  553
Test (cont.)
  Event linkage  552
  Method  550
  Triggering event  553
  Utility  550
Text
  Variable  247
Third-party software  837
Time characteristics  217
Time data  795
Tracking
  Form  801
Training  69, 158, 168
Transaction  292
  BF01  456
  BF24  456
  BF34  456
  BP  446, 461, 624
  BSP_WD_CMPWB  743, 771
  BSVW  452, 746
  BSVX  452
  GENIL_MODEL_BROWSER  770
  HRASR_DT  804, 806, 807
  HRASR_TEST_PROCESS  820
  MM02  450
  NACE  453
  PFAC  415, 417, 425, 550, 552
  PFCG  713
  PFOM  427, 428
  PFOS  428
  PFTC  234, 366
  PFTC_COP  578
  RSA1  217
  RSOR  217
  RSWWCOND  888
  SARA  478
  SBF_WP  461, 563, 625, 626, 636, 728
  SCASE  809, 820
  SCPR20  705
  SE16  623
  SE24  363, 394, 408, 447, 531, 922
  SE37  924
  SE38  329
  SE63  260
  SE80  329, 513, 516, 590, 617
  SFP_ZCI_UPDATE  806
Transaction (cont.)

SLG1  707, 923
SM37  206
SM58  165, 206, 541
SO16  848
SO28  841
SOAManager  516, 518, 533
SPRO  84
SPROxy  528
ST22  206, 921
SU01  177, 713, 852
SWB_COND  463, 714, 893, 894
SWDD  221, 227, 366, 460, 767, 827
SWDD_CONFIG  833
SWDM  225, 809
SWE2  444, 460, 473, 705, 706, 738, 892
SWEC  449, 451
SWEHR1  454
SWEHR2  454
SWEHR3  454
SWEINST  467
SWEL  446, 451, 461, 496, 715, 924
SWELS  446, 496, 924
SWEQADM  469, 488, 494, 892
SWEQBROWSER  470
SWETYPV  444, 469, 494, 871
SWF_AMD_SUSPEND  890
SWF_AMD_SWWWIDTH  890
SWFVISU  118, 119, 569, 571, 573, 590, 591, 627, 759, 793, 808, 811, 813, 817, 821
SWFVMD1  569
SWI1  173, 174, 478, 867, 876, 878
SWI1_RULE  191
SWI14  163
SWI2_AMD1  192, 422
SWI2_DEAD  165, 166, 887
SWI2_DIAG  164, 172, 205, 206, 887
SWI2_DURA  165
SWI2_FREQ  165
SWI5  166
SWI6  163, 724, 921
SWIA  136, 192
SWN_SELEN  127
SWNADMIN  128
SWNCONFIG  127

Transaction (cont.)

SWO_ASYNC  563
SWO1  297, 299, 311, 312, 444, 447, 490, 550, 563, 765, 874
SWO3  298
SWPA  184
SWPC  195, 890
SWPR  176, 195, 483, 887, 890
SWU_EWBTE  455
SWU_OBUF  158, 193, 194, 427, 880
SWU0  460, 714, 893
SWU2  895
SWU3  83, 88, 195, 831, 885
SWU9  545, 547
SWUD  538, 541, 542, 545, 551, 830, 867
SWUE  714, 889, 892, 893, 894, 924
SWUI  472
SWUI_DEMO  103
SWUI_VERIFY  87
SWUS  193, 375, 472, 544, 626, 636, 894
SWUY  474
SWWA  195
SWWB  234
SXMB_IFR  522
WF_EXTSRV  622, 625
WF_HANDCUST  621
WSADMIN  516
Transactional RFC → tRFC

Transfer
Form  800
Process  801
Translation  260
Transport  84, 92, 153, 194, 229, 260
Log  889
New workflow version  260
Setting  93
Travel approval  653
tRFC  165, 895
Triggering event  268, 458, 459, 828, 867, 868
Troubleshooting  537, 867
TS → Standard task
Type
Sub  295
Super  295, 300, 318
Index

U

UDDI 504
UN/CEFACT 506
Union 66
Unit
   Organizational 144, 146
United Nations Centre for Trade Facilitation and Electronic Business → UN/CEFACT
Universal Description, Discovery, and Integration → UDDI
Universal Worklist → UWL
Update rule 215
Update task 875
Upgrade 82, 555, 730
   Archiving 556
   Planning 555
User 84
   Decision step 602
   Event 801
   Exit 673, 675
   Relocation 154
   Substitute 155
   Type 96
   WF_INITIATOR 278
WF-BATCH 88, 89, 94, 165, 206, 258, 478, 852
User decision 227, 228, 231, 232, 233, 234, 575, 580, 582, 671, 672, 675, 865
   TSO008267 854
   UserDecisionMemo 579
   With note 577, 581
User ID 145, 147
   WF-BATCH 133
UWL 96, 111, 114, 120, 127, 130, 482, 489, 569, 575, 576, 577, 580, 590, 592, 593, 594, 598, 600, 603, 608, 610, 625, 626, 627, 630, 631, 632, 656, 659, 670, 676, 726, 728, 759, 793, 798, 799, 801, 806, 808, 809, 811, 813, 817, 820, 821, 822, 823, 922
   Action handler 117, 608
   Add memo 577
   Administrator 114
   API 111, 120
   Cache administration 579

UWL (cont.)
   Configuration wizard 118, 119, 573
   Custom column 117, 122
   Customizing 116
   Delta pull mechanism 114
   FunctionModuleActionHandler 118
   HRAdmin 815
   Integration 759
   Mandatory rejection memo 125
   Memo 117
   Personalization 115
   SAPBSPLauncher 118
   SAPWebDynproABAPLauncher 117
   SAPWebDynproLauncher 117
   SONiC connector 120
   Sorting work item 115
   System alias 114
   UpdatingContainerHandler 118
   URLLauncher 118
   UserDecisionHandler 118

V

Validation
   Dynamic 801
Variable 100
   _Attach_Objects 102
   _WI_OBJECT_ID 280
Verification workflow 85, 86
Version
   Active 260
   Number 223
   Overview 261
Versioning 260
View
   Pending 649
   Request 648
Virtual 316
   Attribute 301, 318, 327, 332, 335
   Method 327
Visual Administrator 803

W

W3C 504
Wait for event 274, 457, 466
Index

Wait status 481
Wait time 166
WAPI 899
SAP_WAPI_CREATE_EVENT 485, 490, 747
SAP_WAPI_DECISION_READ 579, 588
SAP_WAPI_GET_HEADER 572, 583, 584
SAP_WAPI_LAUNCH_URL_GET 626
SAP_WAPI_READ_CONTAINER 487, 572, 583, 584, 595, 598
SAP_WAPI_RESERVE_WORKITEM 572, 583, 584
SAP_WAPI_START_WORKFLOW 485, 488, 512, 595, 598
SAP_WAPI_WORKITEM_COMPLETE 573, 583, 595, 600, 632
SAP_WAPI_WORKITEM_RECVIENS 630
SAP_WAPI_WORKITEMS_TO_OBJECT 487
Web Dynpro 117, 608, 803, 808, 813, 901, 902
Application 609
Form 638
Model 901
Template wizard 607
Web Dynpro ABAP 129, 568, 575, 809, 817
ASR_FORM_DISPLAY 809
ASR_PD_PROCESS_EXECUTE 809
ASR_PROCESS_EXECUTE 809, 814
ASR_PROCESSES_DISPLAY 809
PAOC_ASR_WD 809
Web Dynpro Java 568, 593, 600, 603, 605, 607, 608, 610, 903, 904
Web service 502, 503, 623, 624, 627
Handler 621
Standards 506
Task 625
Work item 625
Web Service Navigator 517
Web Services Description Language → WSDL
WebDynproApplication 608
WebDynproDeployableObject 608
WF_DOC_CREATE_SOFM 642
WF_INITIATOR 278
WF_TASK 346
WF-BATCH 88, 89, 94, 133, 165, 206, 258, 478, 852, 874, 920
WFSYST 68
WFSYST-AGENT 853
WI_ID 572, 812
WI_OBJECT_ID 278
Widget framework 646
Wizard 82, 225, 276, 346, 449, 623, 845
Agent selection 421
Approval procedure 845
Circular distribution 846
Form creation 641
Modeling support 845
WLC parameter 177
Background 478
Container 181, 570, 674
Container element 676
Creation 233
Creation date 180
Deadline 174, 478
Deleting 209
Delivery 77, 86, 95
Description 99, 207, 313
Dialog 174, 479, 481, 482
Display 176, 187, 891
End date/time 180
Error 170
Executing 103
Execution with agent check 136
Forwarding 106, 141
Frequency 175
Hierarchy 477
History 215, 476
ID 179, 213, 479, 489, 561, 562, 598, 603, 609, 610, 618, 630, 812
Locating 173
Processing 133
Recipient 134
Rejecting processing 258
Rejection 110
Replacing in queue 102
Requested start 180
Rule monitoring 195
Short text 99
Index

Work item (cont.)
  Start date/time  180
  Task description  100
  Technical view  179
  Text  236, 247, 817, 848
  Timestamp  180
  Type  174, 479
  WI_ID  583
  Without agent  192, 422
Work item status  162, 481, 483
  Committed  163
  Completed  163
  Ready  163
  Selected  163
Work queue  477
Workbook  214
Workers council  66, 80, 184
Workflow  40, 56, 59, 66, 67, 69, 72, 74, 78, 79, 81, 82, 535, 659, 798, 799, 800, 839
  Ad-hoc  53, 109, 184
  Administration  74, 80, 161, 169, 211, 745
  Administrator  136, 168, 171, 175, 198, 483, 535, 922, 925
  Agent  184
  API  571
  Application-controlled  688, 710
  Archive  556, 558
  Binding  542
  Chronicle  183
  Complete  488
  Container  117, 123, 124, 222, 225, 232, 249, 277, 278, 459, 460, 570, 628, 657, 669, 672, 674, 819, 862, 876
  Continue after system crash  195
  Decision  672
  Design  78, 170
  Developer  98, 200
  Document-based  840
  Engine  475
  Error  889
  Header event  467
  ID  476, 539
  Inbox  755
  Initiator  68, 73, 228, 437, 624
  Instance  56, 164, 182, 476, 545, 557
  Item  478
Workflow (cont.)
  Macro  330, 897
  Object  184
  Outbox  110, 225
  Prefix number  90
  Process-controlled  688, 689, 729
  Report  82, 211
  Restart  488
  Restart After Error  195
  Review  287, 719
  Role  91
  Runtime system  87
  Start condition  463, 745
  Starting  441, 471, 474
  Subworkflow  273, 287, 476, 479
  Test plan  557
  Toolbox  103, 498
  Trace  545, 546, 547, 924
  Training  167
  Version number  82, 476
  WF_VERIFY  828
  Wizard  225, 276, 286
  WS10001011  762
Workflow Builder  78, 221, 222, 226, 238, 245, 420, 560, 761, 827, 871, 877
  Container definition  225
  Frame  222
Workflow customizing  745
  Automatic  87, 88
Workflow definition  56, 93, 131, 225, 240, 539, 870
  Activating  229
  Basic data  222
  Binding  249
  Branch  252
  Conditional branch  252
  Container  247
  Deadline  231
  Documenting  259
  Form  253
  Saving  229
  Syntax check  229
  Testing  229
Workflow log  98, 103, 108, 176, 182, 292, 471, 473, 537, 872, 880, 891, 925
  Agent view  184
Workflow log (cont.)
  Chronicle view 183
  Filtering 258
  Graphical view 184
  Object view 184
  Technical view 185
Workflow step 222
  Activity 252
  Ad-hoc anchor 252
  Advance with dialog 259
  Branch 252
  Case 253
  Condition 253
  Conditional branch 252
  Container operation 249, 252
  Event creation 252
  Fork 252
  Loop 253
  Manual confirmation 258
  Outcome 256
  Process control 253
  Result 256
  Send mail 253
  Simple form 253
  Type 252
  User decision 227, 253
  Waiting for event 254
  Web activity 254

Workflow step (cont.)
  WF-XML 254
Workflow template 93, 174, 234, 236, 238, 803, 804, 807, 810, 821
  WS10000031 725
  WS10000060 710, 724
  WS10000129 710
  WS14500015 723
  WS17900260 818
Workflow_Local 206, 542
Working time
  Change 801
Workload analysis 155, 166
World Wide Web Consortium → W3C
WS → Workflow template
WS-BPEL 507
WSDL 503
WSHANDLER 625, 626, 628, 630
WS-Policy 507
WS-ReliableMessaging 507
WS-Security 506

X

XI → SAP NetWeaver Process Integration
XML 123, 479, 480, 526, 547, 577, 593, 608, 609, 627, 657, 796, 806, 809, 813, 814, 821, 923
  Persistence 560