





## Reading Sample

*This chapter introduces you to using business rules in SAP Invoice Management by OpenText. You'll start by learning how business rules are used for vetting an invoice, including their triggers and dependencies. Then, you'll learn about process type determination and assigning business rules to process types. Next, you'll create your own custom business rules based on your individual needs. See how business rules can be used to audit invoices, and explore the duplicate check business rule and how it works. Finally, you'll learn how to leverage the Business Rules Framework (BRF) to optimize your invoice management process.*

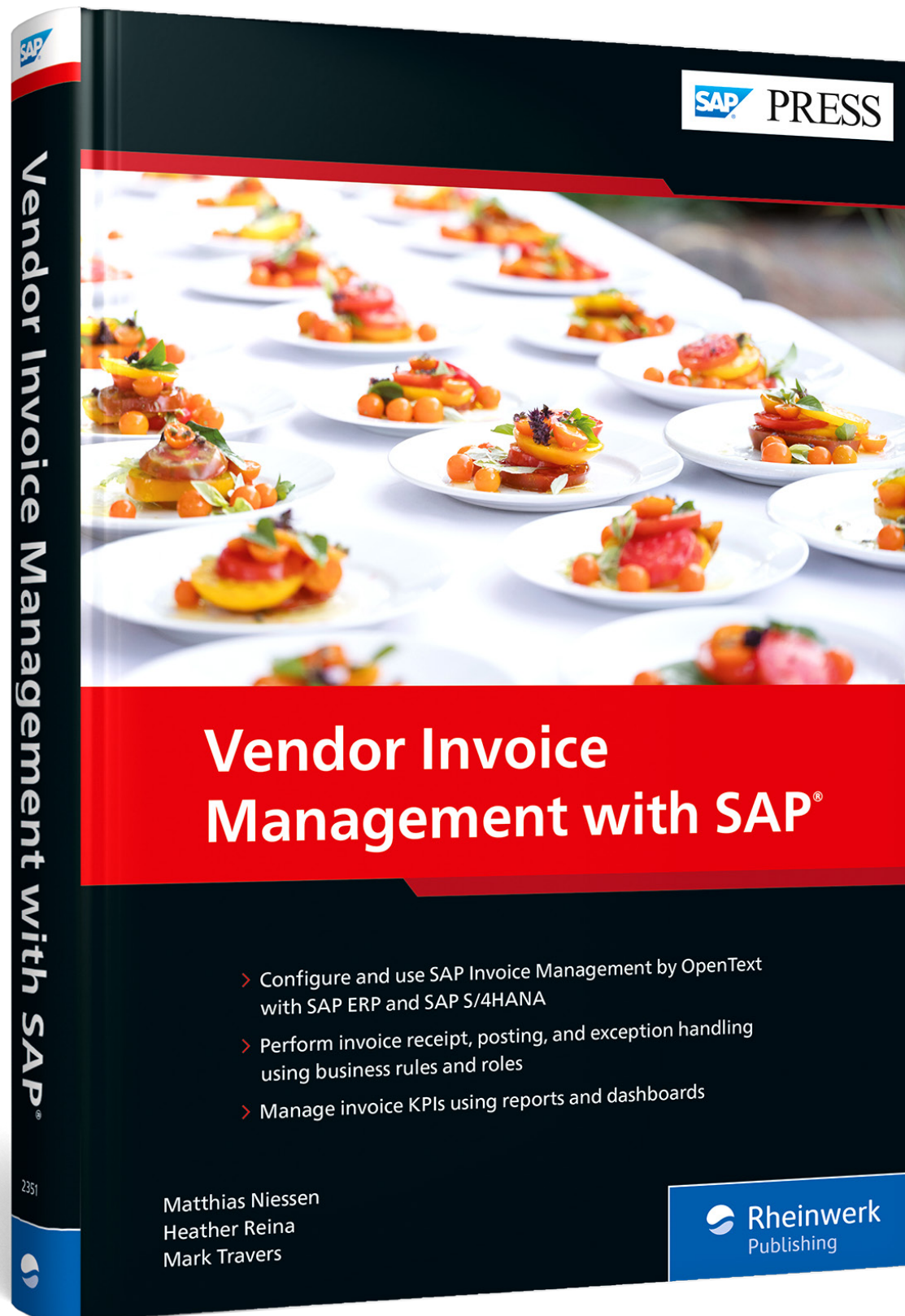
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### Vendor Invoice Management with SAP

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## Chapter 4

# Checking Invoices with Business Rules

*The verification of all invoice details can be fully automated by preconfigured business rules. Business rules come in three flavors: checking against a fixed value, checking against a field in an associated table, or dynamically using a function module. In this chapter, you'll learn how to set up each kind of rule, how to decide which business rules to run and when, and how to create your own custom rules.*

Automated invoice management systems can be quite impactful for speeding up invoice processing handling as well as reducing accounts payables (AP) expenditures. These document-centric business processes for ingesting supplier invoices require complex business rules for managing exceptions to ensure the integrity of incoming invoices that eventually are posted to SAP systems. The goal of AP departments when processing vendor invoices is generally for no exceptions to arise and for an experience of *straight-through-processing (STP)*. With the STP model, the average cost per invoice for the AP department will be much lower because no human intervention is required. However, in reality, when processing invoices, business exceptions will impact the efficiency of the process, and SAP Invoice Management by OpenText must be configured to address various invoice exceptions that inevitably arise.

As described in Chapter 1, you'll follow five basic steps when processing invoices. After an invoice is received and its data is interpreted (Chapter 2), and the data is enriched intelligently (Chapter 3). Then, we can leverage our *business rules* to validate the invoice's information in a systematic and repeatable manner. These rules will address situations such as missing information, invalid data, or duplicate data. These issues can be thought of as SAP Invoice Management document processing (DP) exceptions; have self-explanatory names such as "Invalid Vendor," "Invalid PO Number," or "Suspected Duplicate"; and can be used to detect any exceptions before posting the invoice.

The SAP Invoice Management baseline configuration provides over 140 such business rules that are ready out of the box to handle both purchase order (PO) and non-PO exceptions. As you can see, business rules are critical to ensure the integrity of the supplier invoice so that ultimately the vendor is paid correctly. Examples of baseline business rules are Missing Invoice Date, Invalid Requestor ID, and Payment Terms Mismatch, all reflecting typical scenarios where an AP processor would want to review, change, or fix a data issue. Moreover, business rules can be country specific. For example, for Brazil, an exception named Brazil – Missing NF Data (PO) will be raised if an

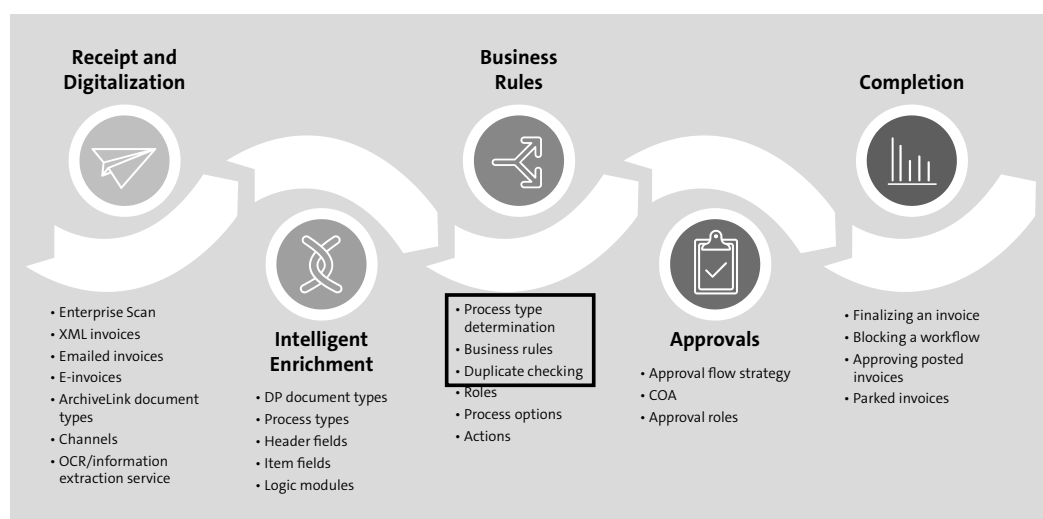
incoming invoice in Brazil is missing nota fiscal data, which is required for the country-specific tax document.

With SAP Invoice Management, not only can you access standard, country-specific business rules, but you also have the flexibility to create your own custom business rules. An example custom rule might check if the incoming PO invoice total gross amount exceeds the actual PO amount in your SAP system. Another example, discussed in Chapter 1, could check if the sum of item amounts balances out to the net amount on the header level. A third example rule might check whether tax rates on an invoice match with tax codes on its line items. In this chapter, we'll show how to build your own custom rules.

Let's first look, in Section 4.1, at how these business rules work, when they are called, what they affect, and how you can choose among them in your invoice processing. Then, you'll learn how to create custom rules, how to leverage audit-specific rules, how to ensure you're not processing duplicates, and finally how to leverage the Business Rule Framework (BRF) if required.

## 4.1 Aspects of Business Rules

Essentially, business rules are used for vetting an invoice before it becomes an SAP document. In this section, you'll learn when rules might be triggered and the downstream effects of a business rule that fails. Figure 4.1 shows the five steps of efficient invoice processing, which includes process type determination, business rules, and duplicate checking, which are all key aspects of business rule checking.



**Figure 4.1** The Five Steps of Efficient Invoice Processing: Business Rules, Process Type Determination, and Duplicate Checking

When a business rule check fails, the exception is routed via a workflow to the relevant user or group of users, such as a requestor or AP processor group. These users are determined via SAP Invoice Management roles, which we'll cover in Chapter 5 (process options and actions will be covered in Chapter 6). The combination of business rules and user roles in SAP Invoice Management provides a structured and dynamic manner for quickly and efficiently handling supplier invoice exceptions as they occur.

### 4.1.1 Triggers

SAP Invoice Management uses business rules as the screening method to validate and eradicate data errors and/or duplicates from incoming invoices. Therefore, business rules are always executed, regardless of whether the invoices come in through the email, as a scan, in an XML file, or via an IDoc channel. Recall our example in Chapter 2 where, if a supplier invoice is ingested via SAP Business Network and the invoice comes in as an IDoc invoice, that invoice has excellent data quality without any ambiguities and does not require the OCR layer. However, even this high-quality data still requires checking by business rules.

So, if the rules must always be run, when are they triggered? And by what?

SAP Invoice Management business rules are executed when a SAP Invoice Management workflow starts and during or after any user action on an invoice.

Business rules can also be run in the background according to custom configuration settings. For example, if a PO invoice arrives and the goods receipt has not been posted, SAP Invoice Management can be configured to wait. An associated work item will be created. When the goods receipt is posted, in the background, a check of the business rules will render that work item obsolete, and processing will continue.

### 4.1.2 Dependencies

As we just saw, all incoming invoices must pass successfully through the business rules, but which rules? Not all invoices should be checked by the exact same set of criteria. Non-PO invoices and PO invoices require different checks. Remember that DP document types are dictated by the type of incoming invoice. Since the DP document type then describes the type of invoice, which we are processing, business rules will also depend on the DP document type.

Let's look at an example. Figure 4.2 shows an example of a failed business rule that we can dissect step by step.

First, the DP document type is determined to be PO\_S4 since the incoming invoice is PO based. Second, the set of business rules for PO\_S4 are triggered when the SAP Invoice Management workflow begins. If the business rule for checking currency fails (the currency is not valid or not found), then the currency mismatch process type is called.

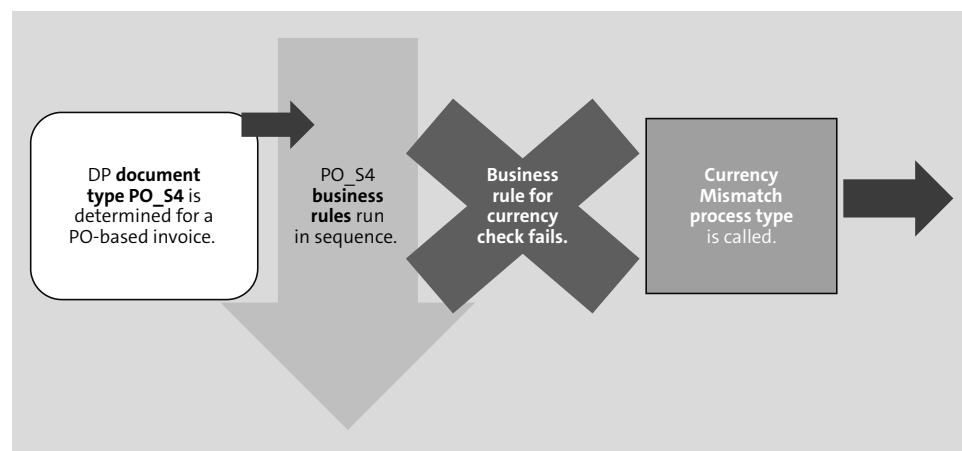


Figure 4.2 The Relationship of Document Type, Business Rules, and Process Types

As shown in Figure 4.2, document types drive the business rules that are checked, and failed business rules determine which process types are called. The arrow to the right indicates that the system will then determine to whom to send this exception and what they can do with it. The available paths for resolution are referred to as *process options* and *actions*, which we'll cover in Chapter 6. But in this chapter, we'll focus on how invoices of each DP document type flow through business rules. The key to the flow is the sequence of process types. So, we'll look more closely at process types and their definition in SAP Invoice Management next.

## 4.2 Determining Process Types

DP documents hold invoice data in SAP Invoice Management as this data is prepared for posting. Recall that process types control the flow of a DP document through an SAP Invoice Management process, representing the stops an invoice makes along the way to becoming an SAP document.

But how do you know which process types will be used? In other words, how does the system determine that? This analysis is known as *process type determination*, which depends explicitly on business rules.

### Note

Because business rules determine the flow of process types, they are sometimes also referred to as *process type determination rules*, but we'll continue calling them simply *process types*.

Business rules are set up in a sequence in SAP Invoice Management. According to this sequence, the system runs through all the rules. If any given rule fails, then a corresponding process type is triggered. In this way, business rules determine process types.

To access the process type configuration settings, open the document type configuration in the SAP Invoice Management-specific menu by navigating to the SAP Easy Access menu (the initial screen after logon). From this screen, run Transaction `/OPT/SPRO`.

From the **OpenText Vendor Invoice Management Invoice Solution Configuration** screen, navigate to **Document Processing Configuration • Document Type Configuration • Maintain Document Types**, as shown in Figure 4.3.

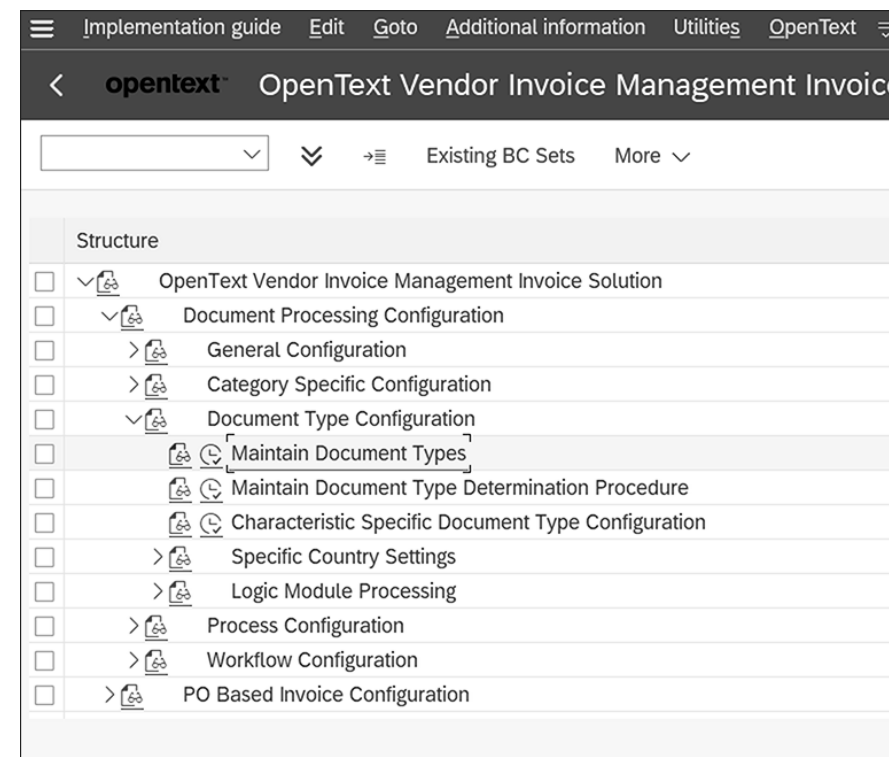


Figure 4.3 Accessing the Maintain Document Types Task in the SAP Invoice Management Configuration Menu

Because process type determination depends on document type, you must first select the relevant DP document type. Let's look at a particular DP document type provided with the SAP Invoice Management baseline configuration. DP document type PO\_S4 is provided for processing PO-based invoices and is highlighted in the pane on the right shown in Figure 4.4.

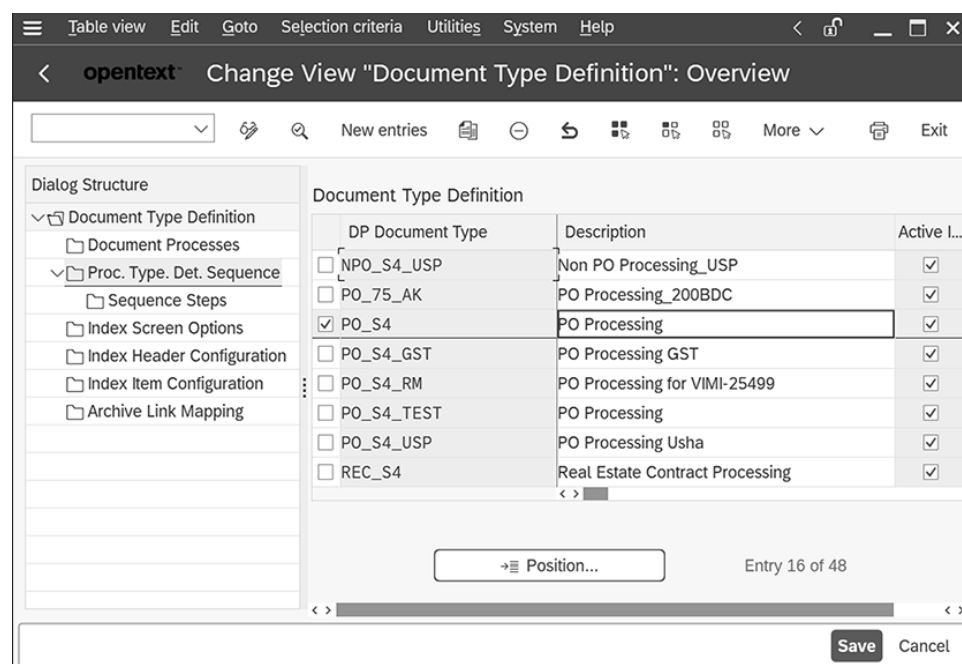


Figure 4.4 Document Type PO\_S4 with Process Type Determination Sequence

Double-clicking on **Proc. Type. Det. Sequence** (process type determination sequence) in the **Dialog Structure** pane displays all the business rules that have been delivered in the baseline configuration for this DP document type, as shown in Figure 4.5.

Note the following fields when you look at the list of business rules:

- **Step ID:** This value is a numerical ID that dictates the order in which business rules are executed. These values can be changed as needed.
- **Proc. Type:** This value is the ID of the process type that will be called if the business rule raises an exception.
- **Process Description:** This field describes the invoice issue or processing scenario.

Our example sequence kicks off with a business rule to check the data after restart (process type 142), followed by checking data added to the PO by the best-practice framework (BPF) configuration (process type 405), before moving through other business rules.

Step Id	Proc. Type	Process Description
<input type="checkbox"/> 1	142	Check Data After Restart
<input type="checkbox"/> 2	405	Check BPF added data (PO)
<input type="checkbox"/> 3	406	Tolerance exceeded (PO)
<input type="checkbox"/> 5	430	Missing Company Code (PO)
<input type="checkbox"/> 6	432	Missing Gross Amount (PO)
<input type="checkbox"/> 7	125	Missing Invoice Date (PO)
<input type="checkbox"/> 8	133	Vendor Invoice Reference Missing (PO)
<input type="checkbox"/> 10	101	Invalid PO Number (PO)
<input type="checkbox"/> 11	102	Invalid Vendor (PO)
<input type="checkbox"/> 12	163	GR Not Done - Simple Check (PO)
<input type="checkbox"/> 15	104	Invalid Currency (PO)
<input type="checkbox"/> 16	138	Missing Mandatory Information (PO)
<input type="checkbox"/> 17	426	Supplier self service: self registration rule
<input type="checkbox"/> 18	439	Maximum exchange rate difference exceeded
<input type="checkbox"/> 30	105	Suspected Duplicate (PO)

Figure 4.5 Business Rules for DP Document Type PO\_S4

Additional fields describe how users can interact with process types; we'll look at these fields next.

### 4.3 Assigning Business Rules to Process Types

You've now seen where the sequence of process types is defined, but where is the actual data validation taking place? This validation happens within the business rule itself. Let's pull back the curtain and see how the system is working behind the scenes.

To look at a business rule in detail, let's return to our example using PO currency mismatch process type. (We illustrated this process type earlier in the swim-lane diagram in Chapter 1.) If you were to scroll down the list, as shown in Figure 4.5, you would find a **Currency Mismatch (PO)** process type with the step ID 62 and with process type 155.

To access the business rule associated with this process step, double-click on the **Sequence Steps** folder in the **Dialog Structure**. This step brings you to the definition of the business rule, which checks whether the currency between the invoice and the PO matched, as shown in Figure 4.6.

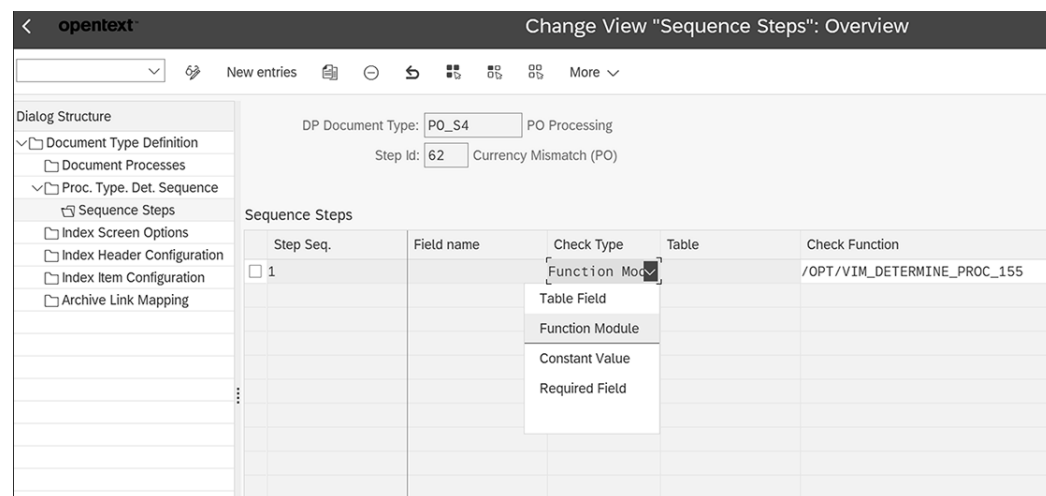


Figure 4.6 Checking the Business Rule for the Currency Mismatch Process Type

Notice how multiple ways exist for checking the data in a business rule. These methods are known as *check types* and are displayed in the **Check Type** column. The check type used for our example is **Function Module**. Some other potential check types include the following:

- **Table Field:** This check type checks a named field (for example, field WAERS, which holds the currency of the invoice) against the SAP master data table for currency (namely, table TCURC). This table has the key field WAERS, which is how SAP Invoice Management performs the check for valid currencies.
- **Function Module:** This check type checks a document field with coded logic.
- **Constant Value:** This check type checks a document field against a constant value.
- **Required Field:** This check type checks whether a document field is null.

In our example, if the code of function module `/OPT/VIM_DETERMINE_PROC_155` was to determine that the currency did not match, then the business rule triggers the currency mismatch (PO) process type. Similarly, if a business rule of the **Table Field** check type did *not* find the document data in the check table, then it would call the corresponding process type.

Now that you've seen how the baseline set of business rules are defined and how their sequence is set, let's start creating your own business rules. This task might be necessary if the predefined library lacks the checks you require. Alternatively, if you've added your own field to the list of fields that should be captured and processed, then you might want to create a custom rule to handle this field explicitly.

## 4.4 Creating Custom Rules

Let's return to our example from Chapter 2 where we added a custom field for handling instructions to the incoming profile for the information extraction service. In that example, we created a new field within the information extraction service profile.

The idea behind this field is to capture freeform text that a supplier or an employee might add to an invoice to raise an alert about something happening in the relationship. Some example freeform texts include the following:

- "New banking information; please check."
- "Last payment not received; please remit!"
- "Our payment address is changing next month, so please be on the lookout."
- "Please use tax code V3.2."

This kind of carry-over behavior is common for companies not processing invoices with automation. These messages might be handwritten (for invoices being scanned into a system), or they might be added as freeform text, typed in as a memo. In any case, we don't want to lose this information, and so, we created a field for the information extraction service to capture this data.

Once this text is captured, however, what will we do with this data? Perhaps we'll create a custom business rule to detect whether this field is populated. If so, then we might want an AP processor to review this text and take some action. Therefore, we'll alert them. Earlier, we configured that this field should show up in the validation client, and we also added it to the data model. This step assumes we've also appended field ZHANDLINGINSTRUCTIONS to table `/OPT/VIM_1HEAD` so that this data can be mapped from the information extraction service to the DP document type (Recall that the mapping is created via mapping IDs for the inbound channel.) We then made sure that this field was added to the data model configuration.

Now, we are ready to explore the mechanics for creating a new business rule to alert our AP processor.

### 4.4.1 Creating a New Process Type

A new business rule means a new process type. So, let's begin by creating a new process type. Run Transaction `/OPT/SPRO` to access the SAP Invoice Management-specific menu. Then, navigate to **Document Processing • Process Configuration • Maintain Process Types**. Execute this task and then choose **New Entries**.

Only four fields are required for your input:

- **Proc. Type:** This value is the numerical ID.
- **Process Type:** Enter a descriptive text to alert the user quickly as they scan their inboxes.
- **Initial Role:** Specify to whom this invoice should be sent if the check condition is true.

- **Is Exception:** If this checkbox is selected, the process type is not relevant for automatic background document posting.
- **Charact. Check:** Although we do not select this checkbox in our example, this indicator gives you an extra layer of flexibility for determining whether this rule should be run or not. If this checkbox is selected, the system will look at the configuration of characteristics, which are commonly used, for instance, to check the country. Characteristics are a great way to differentiate processing by country. For multinational companies, characteristics are the best way to ensure that only country-specific rules are processed.

Our new example process type is shown in Figure 4.7. Notice we have **901** in the **Proc. Type** field, and we have entered “Alert AP – Free Form Text on Invoice” in the **Process Type** field. In the **Initial Role** field, we entered “AP\_PROCESSOR,” and the **Is Exception** checkbox has been activated.

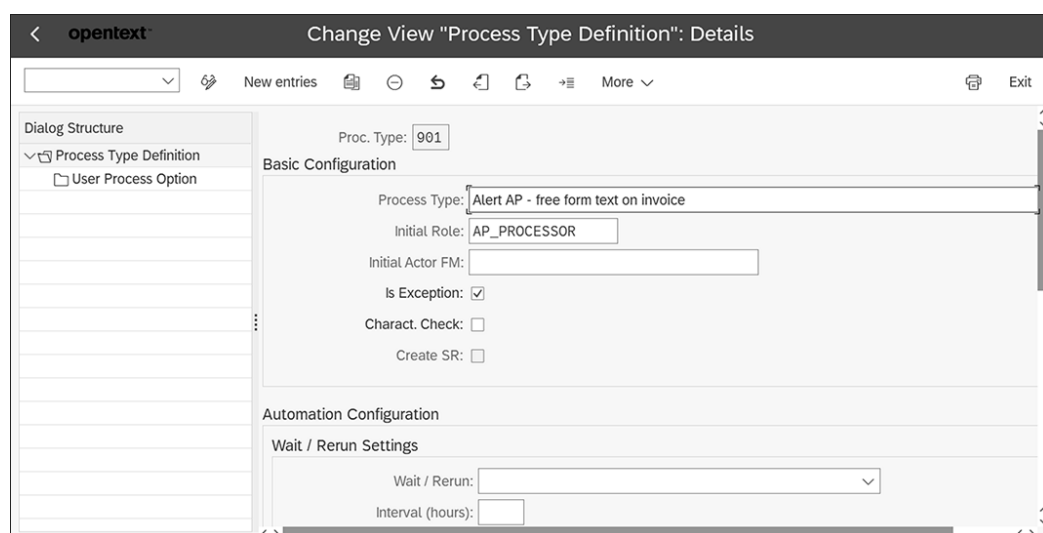


Figure 4.7 Creating a New Custom Process Type

#### Note

We recommend that you keep new custom process types in the 800 or 900 range to prevent them from being overwritten by future baseline process types when upgrading to newer SAP Invoice Management releases.

#### 4.4.2 Adding the Step ID

Now that we’ve created our custom process type **901 Alert AP – Free Form Text on Invoice**, let’s insert it into our process type determination sequence.

From the root level of the SAP Invoice Management menu, navigate to **Document Type Configuration • Maintain Document Types**. Highlight **PO\_S4**. Double-click on **Proc. Type. Det. Sequence** in the **Dialog Structure**.

We’ll choose to run this rule last. Therefore, give it the next available step ID. In our case, this ID is 618, as shown in Figure 4.8.

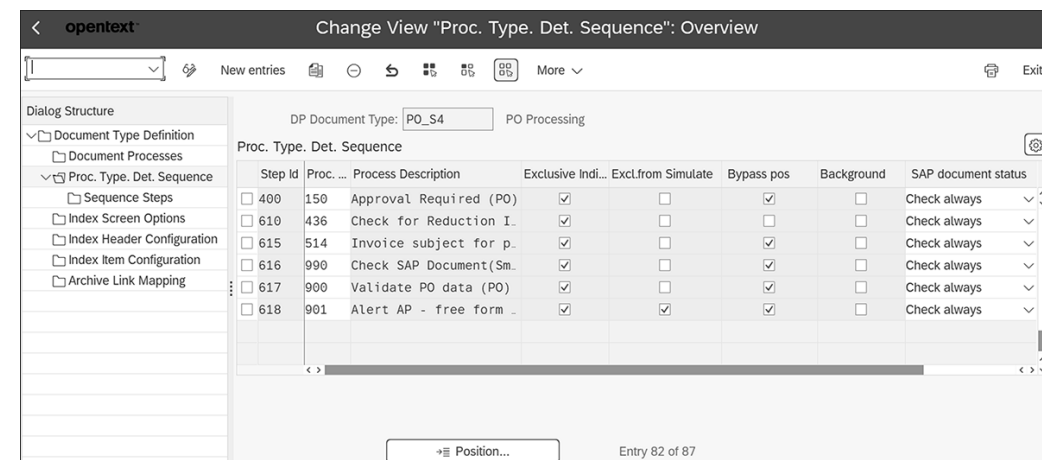


Figure 4.8 Creating a New Step ID in the Process Type Determination Sequence

Some fields that are newly introduced on this screen include the following:

- **Exclusive Indicator:** This field indicates that the system should stop checking the subsequent rules if the current rule raises an exception.
- **Exclude from Simulate:** If a user chooses to simulate the business rules, this rule will not be run.
- **Bypass Possible:** If a user chooses to simulate the business rules, this rule can be skipped.
- **Background:** This rule will always run in the background if the user chooses to apply the rules.
- **SAP Document Status:** This column allows you to activate or deactivate business rules depending on the SAP document status when processing the DP workflow for withheld or parked documents (more on this topic in Chapter 7).

#### Note

The user might also execute business rules by choosing a process option called **Apply Rules**. To bypass this trigger point, you must select the **Bypass Possible** checkbox as well as set the value of Z constant 005/ENABLE\_BYPASS\_POPUP to “X” in table /PTGWFI/Z\_CONST.

### 4.4.3 Creating a Sequence Step

Now that we know when our business rule will run, let's define what will happen when the rule is called. For this task, you'll highlight your new step ID (in our case 618) and double-click on **Sequence Steps** in the **Dialog Structure**.

As described earlier, the check type tells the system how to check the field in question (i.e., ZHANDLINGINSTRUCTIONS). In our example shown in Figure 4.9, we'll assign check type **Function Module** and assign a custom function module to perform a check for any text that the information extraction service was able to find. The code in this function module is quite straightforward. The code takes the field ZHANDLINGINSTRUCTIONS from the DP document header table and evaluates whether the field is empty or not.

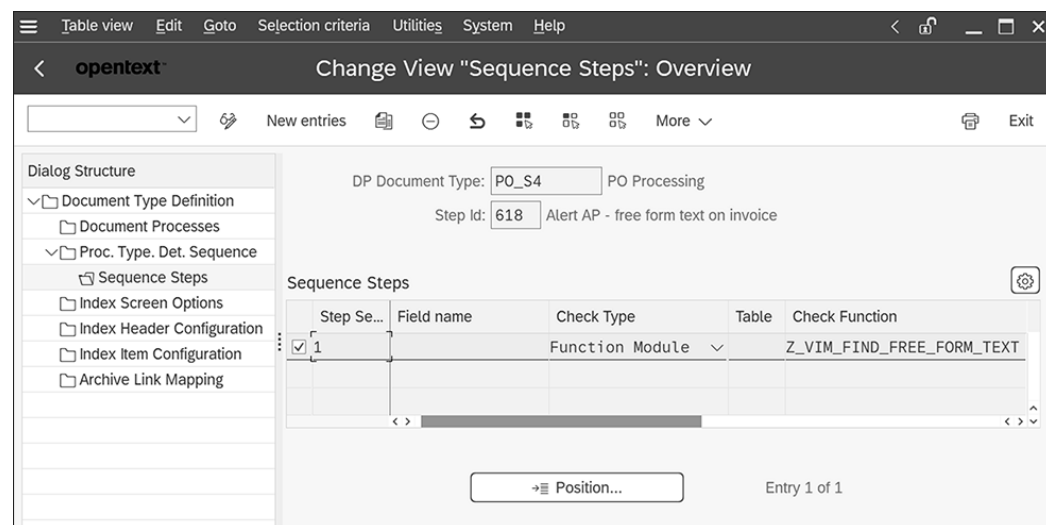


Figure 4.9 New Sequence Step for Running the Custom Business Rule

Let's look at the function module parameters. Under the **Changing** tab when defining a function module, you would define a parameter called **INDEX\_DATA**, as shown in Figure 4.10.

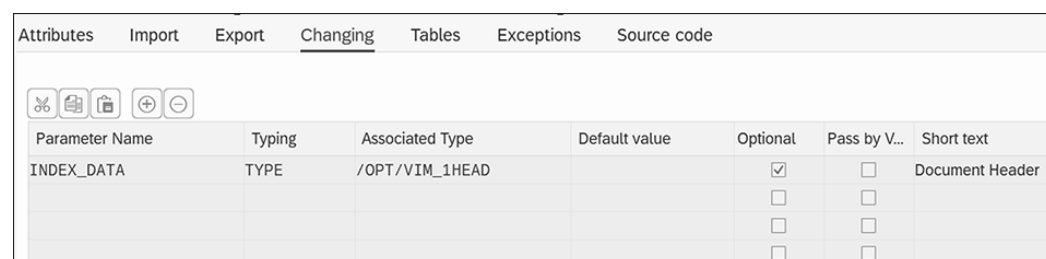


Figure 4.10 Changing Parameter for Passing the DP Fields to Your Custom Function Module

Then, under the **Exceptions** tab, you would define an exception, as shown in Figure 4.11.

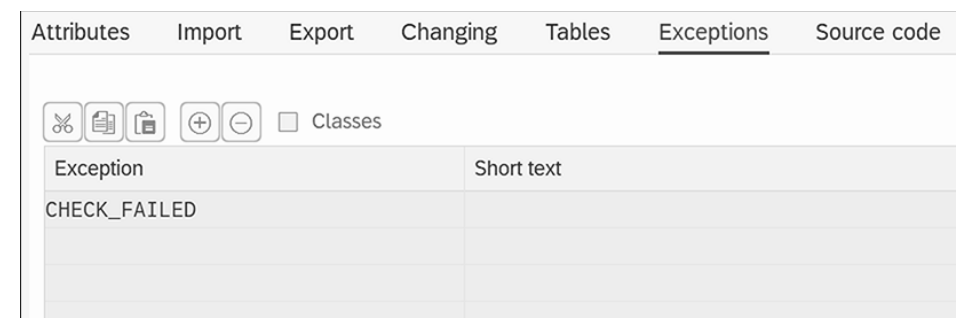


Figure 4.11 Exception to Raise If the Business Rule Check Fails

An excerpt of the essential source code is shown in Listing 4.1.

```
*Declare the local variable
Data: LV_ZHANDLINGINSTRUCTIONS TYPE C LENGTH 100.
*Assign the Index_data parameter field for handling instructions to the local
variable
LV_ZHANDLINGINSTRUCTIONS = INDEX_DATA-ZHANDLINGINSTRUCTIONS
*Check the local variable is not null
IF NOT LV_ZHANDLINGINSTRUCTIONS IS INITIAL.
*If it is not null (there are instructions), then the Business Rule indicates
that the Process Type should be called
RAISE CHECK_FAILED.
```

Listing 4.1 Source Code Excerpt to Detect If Handling Instructions Are Present

Recall that this check means the business rule will trigger the process type. Although seemingly counterintuitive, in our example, if a check fails, the data is incorrect, and therefore, something needs to be fixed. In our case, if the **CHECK\_FAILED** exception is raised, freeform text *does exist* in the field, and we want to alert an AP processor.

### 4.4.4 Adding Multiple Sequence Steps

In our example, we called a function module to check a rule. This module took us one step. But process determination can involve multiple steps, which is a powerful way to keep checks transparent and to encapsulate the logic for each distinct check.

A good example is process type 434 Check Vendor/Company Address. As shown in Figure 4.12, a sequence of steps is associated with this process type: First, a function module checks the company code to find the address in SAP and then checks it against the ship-to address fields (street number, city, postal code, region, and country). Then, a separate function module checks that vendor address on the invoice matches the address found in table LFA1.



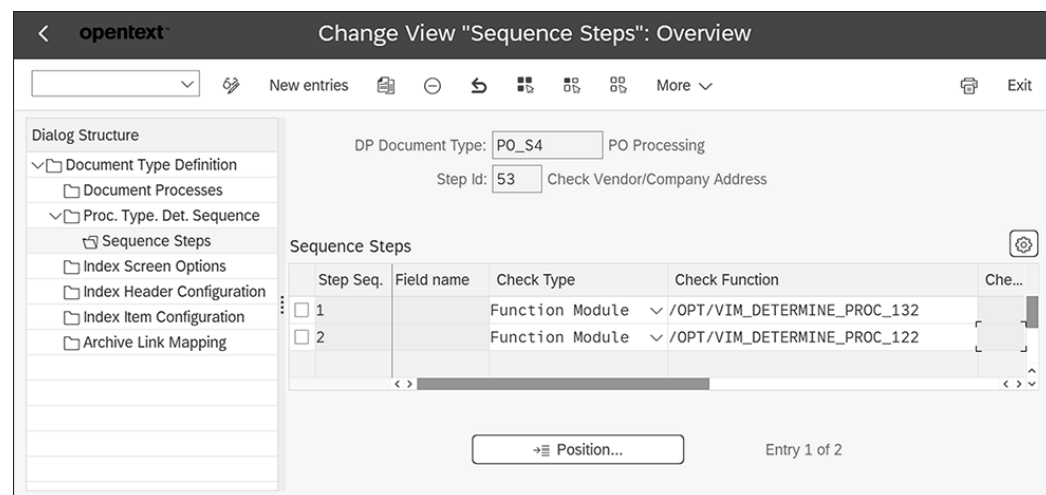


Figure 4.12 Sequence Steps for Process Type 434 Check Vendor/Company Address

Now that you know how custom business rules are defined, let's look at some special business rules: The vendor audit required, tax audit required, and duplicate checking business rules all require some additional configuration. Let's look at the needs they meet and the minimal configuration needed to use these rules.

## 4.5 Auditing Invoices

Let's now look at two special rules that pertain to auditing invoices. To fully achieve STP by using auto-posting (more on this topic in Chapter 7), sometimes, you'll still require incoming invoices to be audited.

For this task, SAP Invoice Management provides out-of-the-box business rules. For PO invoices, the relevant process types are 151 Vendor Audit Required (PO) and 158 Tax Audit Required (PO). Simply choose the vendors for which you want to run the audit. Let's look at each of these options briefly.

### 4.5.1 Vendor Audit Required

Perhaps in the early stages of going live with SAP Invoice Management you want to stop all invoices in AP prior to posting. You can achieve this capability by adding all vendors to the vendor audit table /OPT/VIM\_BL\_VAUD using Transaction /OPT/VIM\_BL\_VAUD. A wildcard entry (\*) in the **Vendor From** field will be the shortest route to achieving this goal, as shown in Figure 4.13.

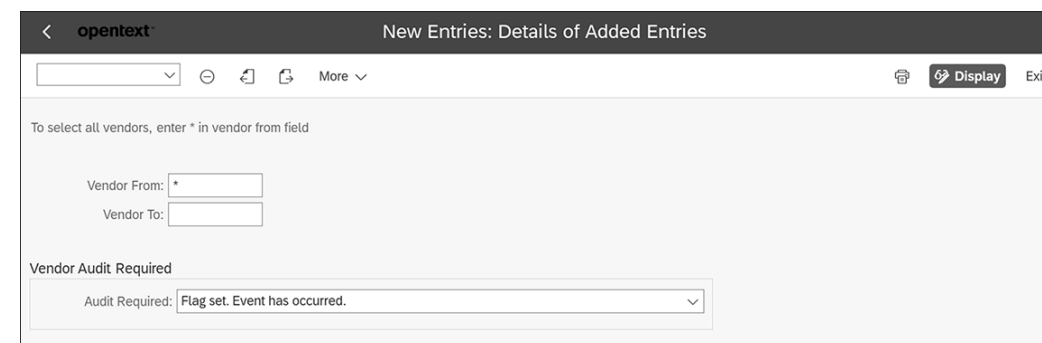


Figure 4.13 Wildcard Entry to Trigger the Vendor Audit Business Rule for All Vendors

Then, once your confidence increases with a particular vendor (perhaps because none of the last 25 invoices have required any intervention by AP), then you might decide to take them off this list. For this task, you'd add them to the table explicitly and choose the **Flag is Not Set** option from the **Audit Required** dropdown list.

### 4.5.2 Tax Audit Required

Similarly, you can decide to route each invoice to your tax department for a tax audit prior to posting. To activate this rule, choose a combination of the following fields as criteria: **Company Code**, **Material Group**, and **Vendor Master**. According to these criteria, you can set the flag to indicate an audit is required via Transaction /OPT/VIM\_BL\_PTX, which will populate table /OPT/VIM\_BL\_TAX.

In our example shown in Figure 4.14, you see that all invoices being processed for **Company Code 1000** and **Material Group 0001** will be stopped for a tax audit (**Active Flag Set. Event has occurred**).

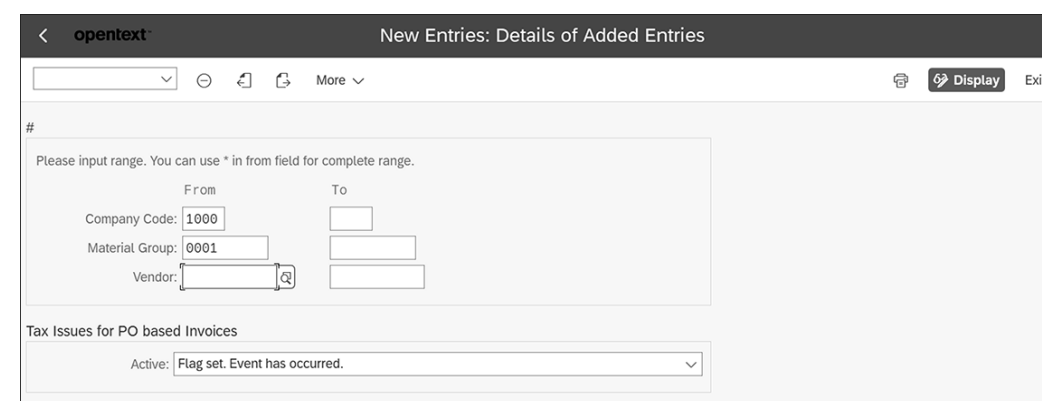


Figure 4.14 Activating the Tax Audit Rule

Now that we've covered the business rules used for auditing invoices, let's look at how you can use business rules to avoid processing duplicate invoices.

## 4.6 Duplicate Checking

Duplicate checks are performed in the SAP system at posting time but can occur much earlier in your SAP Invoice Management system. SAP Invoice Management checks are configurable and can be much more extensive than the standard SAP checks. Therefore, we recommend that you make the SAP checks as lenient as possible and instead leverage SAP Invoice Management checks, which are more strict.

If the duplicate check business rule in SAP Invoice Management fails, the system will alert a user of the suspected duplicate. This activity then allows the user to retrieve the archive invoice image to enable a visual confirmation and to serve as a reference for the relevant information. If the user decides the invoice is not a duplicate, the SAP Invoice Management process can continue. If the user decides the invoice is a duplicate, no further action is necessary. Thus, this workflow streamlines duplicate check handling in advance of posting.

Although duplicate checks are implemented to run with business rules, they also require an additional layer of configuration, which is why we cover them separately. The configuration for checking duplicates is DP document type specific, just like business rules. Let's explore how you can set up your own *duplicate check group* and then assign it to a DP document type.

### 4.6.1 Maintaining Duplicate Check Procedures

To define how your company checks for suspected duplicate invoices, launch Transaction /OPT/SPRO and navigate to **Document Processing Configuration • General Configuration • Maintain Duplicate Check Procedures**. Once you execute this task, you can view or create duplicate check groups.

An example check group is shown in Figure 4.15. In duplicate check group 4, the following fields on an incoming invoice are checked:

- **BLDAT**: Document date
- **LIFNR**: Vendor number
- **XBLNR**: Reference document number

Now, select **Group Fields** in the **Dialog Structure**, and you'll see that these three fields will all be checked in the same step (step 1), as shown in Figure 4.16.

Note also that duplicate check groups can be defined according to the value in the **Duplicate Check Type** field. In our example, the duplicate check type option is **Index Data Fields**; therefore, the system will take the combination of these three fields on

incoming invoices and check them against all existing DP documents. If a match exists, the invoice will be flagged as a suspected duplicate.

However, in our example, note that the **Ext. Dup. Check Func.** field is also populated. Populating the function module in this context indicates to the system that you *also* want to check against all posted SAP documents. Again, a match will flag the incoming invoice as a suspected duplicate.

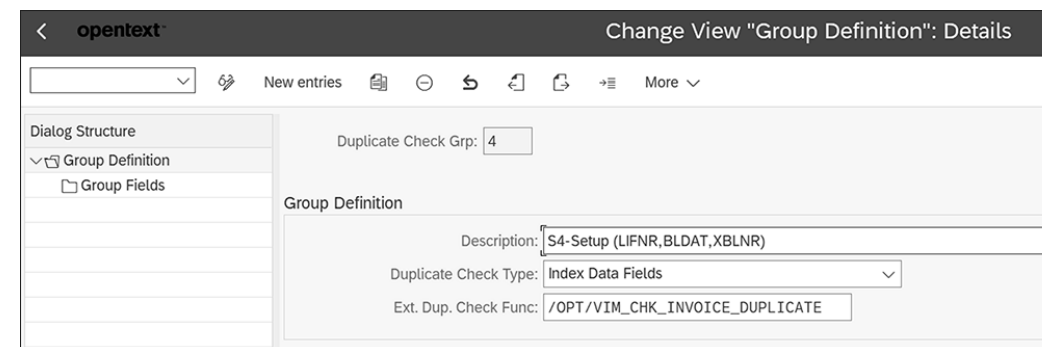


Figure 4.15 Example Duplicate Check Group for Index Data Fields

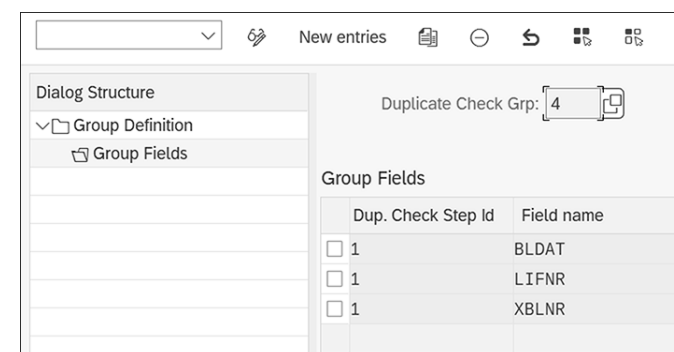


Figure 4.16 Fields Checked in Duplicate Check Step ID 1

#### Note

This example duplicate check group is delivered with the baseline configuration, but you can choose your own fields for checking. You can even define multiple steps for checking different combinations of fields.

However, when you choose your index data fields, consider whether database indices exist for these fields. For the typical fields in financial accounting and materials management tables, it is likely that indices will already exist. If you use less common fields, consider creating an index for each of these fields.

### 4.6.2 Assigning Duplicate Check Groups

Once you've created the necessary duplicate check groups, you can now assign them to your DP document type via Transaction /OPT/SPRO. Navigate to **Document Processing Configuration • Document Type Configuration • Maintain Document Types**. Then, choose the DP document type to which you wish to assign your duplicate check procedures.

In our example, we've selected PO\_S4. To access the document type configuration settings, click on **Details**. Navigate to the **Process Configuration** section, which is where a duplicate check group can be assigned, as shown in Figure 4.17.

The screenshot shows the 'Process Configuration' screen for document type PO\_S4. The 'Duplicate Check Data' section is highlighted with a red box. It contains the following fields:

- Duplicate Check Grp: 4 (S4-Setup (LIFNR,BLDAT,XBLNR))
- Duplicate Check Role: AP\_PROCESSOR

Figure 4.17 Assigning the Duplicate Check Group to Document Type PO\_S4

As shown in Figure 4.17, notice that, for PO-based invoices, duplicate checks will be performed against **Duplicate Check Grp 4**, and if the rule fails, the work item will be routed to the **AP\_PROCESSOR**. The other sections on this screen are not specific to the duplicate checking functionality, so we won't cover them here. The default values shown are delivered with the baseline configuration.

### 4.6.3 Locating the Duplicate Check Business Rule

Now that we've assigned duplicate check group 4 to your incoming PO invoices, let's see where in the sequence of business rules it will run. Double-click on **Proc. Type Det. Sequence** in the **Dialog Structure**.

The baseline SAP Invoice Management configuration delivers this rule as **Step ID 30**, with a potential call to process type **105 Suspected Duplicate (PO)**, as shown in Figure 4.18.

You're now familiar with all aspects of configuring your own duplicate checking process in SAP Invoice Management. In the next section, we'll look at the BRF, an optional framework for checking your business rules in a dynamic fashion.

Step Id	Proc. ...	Process Description	Exclusive Indi...	Excl.from Simula...	Bypass pos	Background	SAP document sta...
12	163	GR Not Done - Simple	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Check always
15	104	Invalid Currency (PO)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Check always
16	138	Missing Mandatory Inf.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Check always
17	426	Supplier self service.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Check if no SAP
18	439	Maximum exchange rate.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check if no SAP
30	105	Suspected Duplicate (PO)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Check always
40	115	Invalid PO Item Numbe.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Check always
41	113	Manual Check Needed /.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check if no SAP
42	160	PO Credit Memo Proces.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check if no SAP
43	121	Incomplete Credit Mem.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check always

Figure 4.18 The Suspected Duplicate (PO) Business Rule

## 4.7 Leveraging the Business Rules Framework

The advantage of preparing an invoice for processing is obvious. As described in previous sections, business rules can mean fewer errors during the posting process and higher visibility into typical data errors. Both these aspects are invaluable in streamlining your payments to suppliers.

However, what happens when the system starts getting smart? What can you do when your invoices are achieving STP at a high rate and you have trustworthy suppliers who consistently provide you with well-formed invoices? In this case, should you still check every single field on every single invoice?

The answer is likely "no." Particularly for companies processing large volumes who want to optimize throughput, at some point, all this checking is redundant. The good news is that SAP Invoice Management can help you settle into a level of checking that is most comfortable for you. Perhaps one supplier is a superstar with perfect invoices, and you feel little need to run their invoices through the entire rigmarole each time. Maybe you want to just carry out a random check on these incoming invoices and leave the rest to your high confidence in them.

This example is rather simple. As we walk you through the SAP Invoice Management BRF, you'll see how easily you can handle this example scenario, and you'll see how BRF is powerful enough to handle more complex scenarios as well.

In this section, we'll introduce you to BRF and each of the configuration objects that affect its functionality including BRF vendor groups, BRF vendor group assignments, BRF check types, BRF check IDs, and BRF schemata assignments.

To begin, let's navigate to the area of the SAP Invoice Management configuration where the BRF is set up. Launch Transaction /OPT/SPRO and navigate to **Document Processing Configuration • Process Configuration • Business Rules Framework (BRF)**, as shown in Figure 4.19.

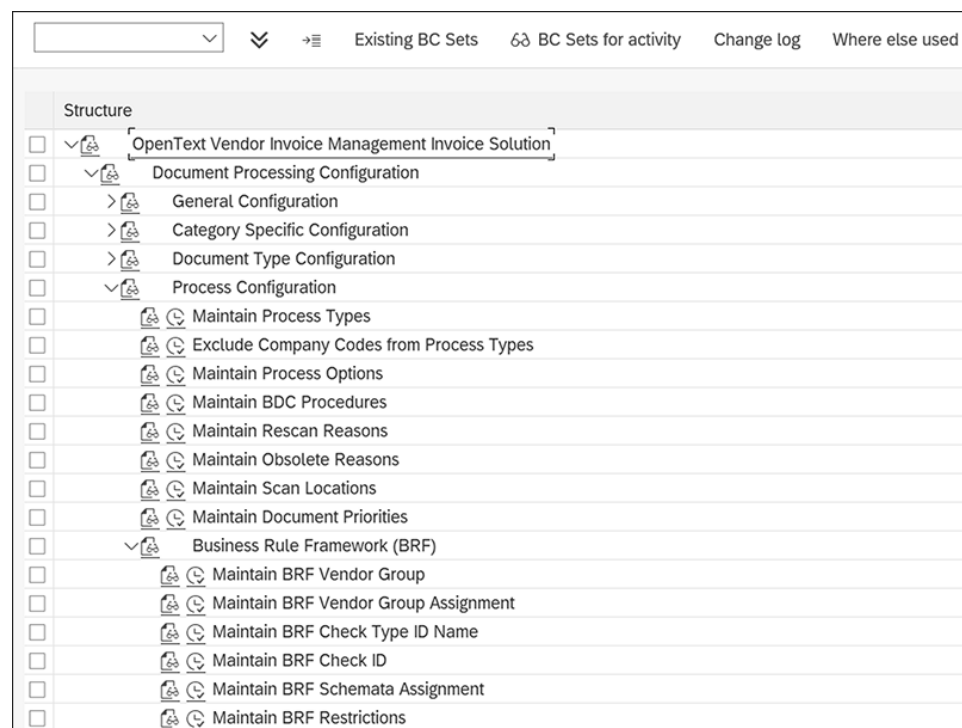


Figure 4.19 Configuring the BRF

When you expand the **Business Rules Framework (BRF)** node, you see the six subtasks, which allow you to run business rules in a dynamic fashion. We'll cover these in the following sections.

#### 4.7.1 Maintaining the Vendor Group

The ideal scenario for many organizations is to work with vendors that consistently provide well-formed, predictable invoices. SAP Invoice Management gives you a mechanism for sorting your vendors according to these criteria, into what are called *BRF vendor groups*.

Let's look at the vendor groups that come with the baseline configuration, as shown in Figure 4.20:

- **TRUSTED:** This group is the most lenient grouping of vendors and would be fitting for vendors who invoice consistently and predictably.
- **KNOWN:** This group is for vendors in the middle of the curve; you're still learning about their invoicing patterns, and they may still be learning what you expect.
- **NEW:** This group is for vendors who are new and/or whose invoices are the most problematic and thus require the most stringent checks.
- **NETWORK:** This group is for invoices coming in via OCR, SAP Ariba, e-invoices, etc.

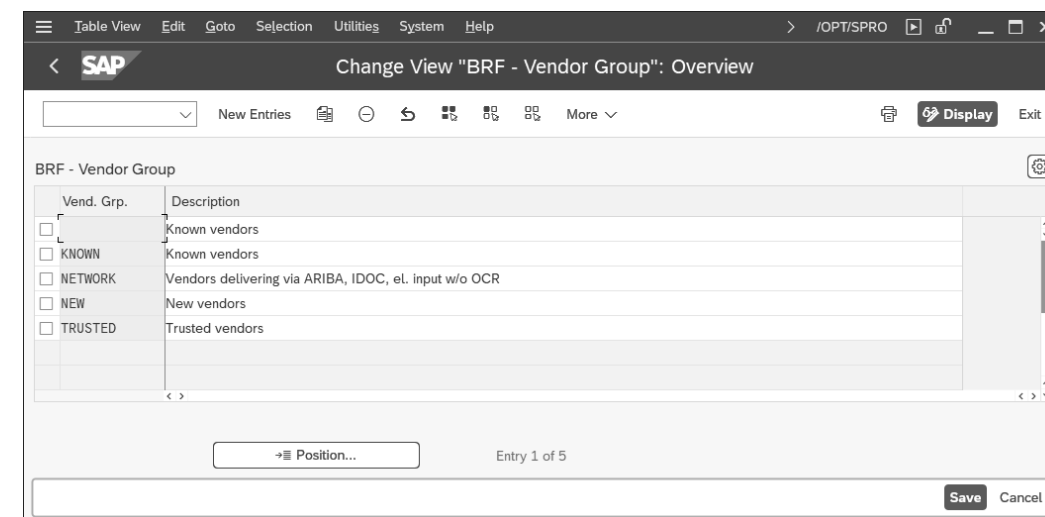


Figure 4.20 BRF Vendor Groups Delivered with Baseline

The next step is to assign these groups to your vendors, which we'll explore next.

#### 4.7.2 Maintaining the Vendor Group Assignment

The BRF vendor group assignment task is located just below the vendor group task in SAP Invoice Management. Navigate to this task to assign certain vendors or groupings of vendors to the categories in vendor group.

The following fields, shown in Figure 4.21, provide a flexible framework for assignments:

- **CC From:** If you have a range of company codes, the first company code is populated in this field; if you have a single company code to assign, enter that value into this field.
- **CC To:** If you have a range of company codes, the top of the range is populated in this field.

- **Vendor:** If assigning a single vendor, enter the vendor into this field.
- **Vend. Grp.:** This field specifies the vendor group the evaluated vendors should belong to.

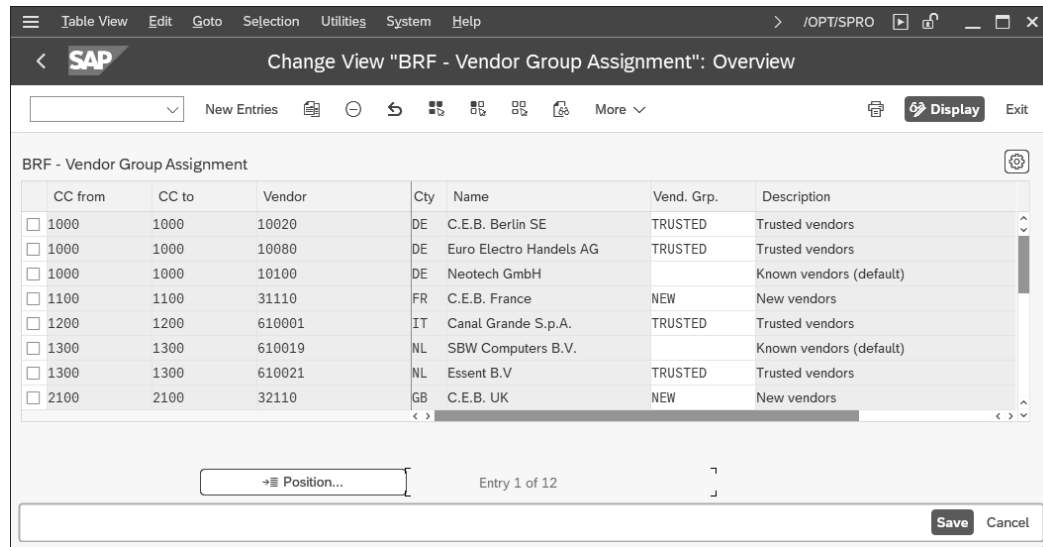


Figure 4.21 Assigning Vendors to Vendor Groups

**Note**

If you have vendors who are not assigned a vendor group, they will be treated like vendors in the new vendor group.  
 Keep in mind that you can also choose to not use the BRF if you want all rules to run for all vendors.

Once this assignment is completed, you’ve essentially categorized your vendors according to their history of invoice quality and predictability.

Now, let’s fine-tune your strategy by specifying how the checking should occur, which is defined in your *BRF check types*.

**4.7.3 Maintaining the Check Type ID Name**

A number of check types are provided with the baseline SAP Invoice Management configuration. These standard check types give you the flexibility to monitor how often business rules are run at a rather granular level.

Let’s start with what the system already provides, as shown in Figure 4.22, which enables a wide range of options. Let’s look at each option next:

- **RANDOM:** As the name suggests, this check type would use an algorithm to randomly decide whether to run the business rule.
- **CONDITION:** This option allows you to write your own custom logic in a function module to decide whether to run the business rule and provides the maximum flexibility.
- **COUNT:** If you set the counter variable to “325,” for example, this business rule will run every 325th time it is called.
- **BLIND:** The business rule will run even if an exception arises.
- **OFF:** The business rule is essentially deactivated.
- **CHECK:** The business rule will always run.
- **PERIODIC:** The business rule will run on a predefined schedule, for instance, once a month.
- **ONCE:** As the name suggests, this business rule will run once per vendor.

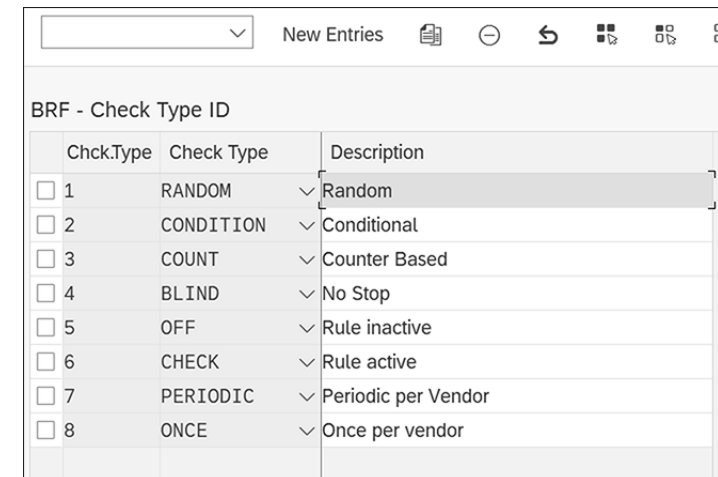


Figure 4.22 Different Strategies for Checking Business Rules

These check types form the first layer of decisions you’ll make about when to run particular rules. Now, let’s look at some additional criteria for grouping invoices, such as invoice amounts. For instance, invoices over a prescribed amount are probably much more important to get correct. To provide you the opportunity to always check these invoices, SAP Invoice Management provides you with the *BRF check ID* capability.

**4.7.4 Maintaining the Check ID**

You can configure the BRF check ID to run in two ways:

- For certain amounts
- According to custom logic

For example, let's say you wanted to check every invoice with gross amounts over 1,000 EUR; you would set up a check ID, as shown in Figure 4.23.

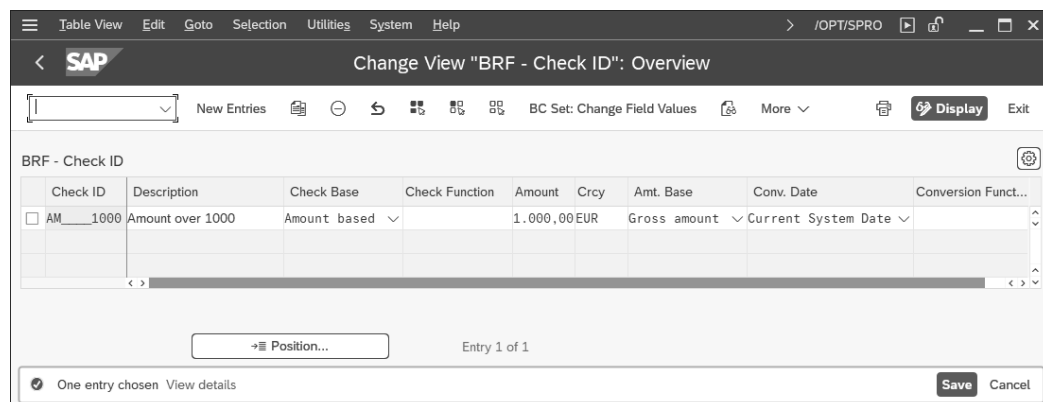


Figure 4.23 Check ID for Invoices over 1,000 Euros

As shown in Figure 4.23, notice how the **Amount**, **CrCY**, **Amt. Base**, and **Conv. Date** fields are required because we've selected the **Amount based** option from the **Check Base** dropdown list. If instead, you wanted to use custom logic to perform this checking, you would set the **Check Base** dropdown list to **Function Module**, and the **Check Function** field (not shown) would have the name of the function module doing the checking.

You now have multiple criteria set up to tell the system when you want to check certain rules and when you do not. Now, let's explore how to create the final mapping.

#### 4.7.5 Maintaining the Schemata Assignment

The BRF schemata assignment is where the magic happens. In this assignment, you'll specify which invoices should go through which checks. As mentioned earlier, you can differentiate among incoming invoices by their type (DP document type), by their receiving legal entity (company code), and by newly defined vendor group criteria. These three criteria together will give you a unique set of invoices.

In our example shown in Figure 4.24, we've mapped the following scenarios:

- For any non-PO invoices that originate from suppliers on the **GREY** list, the business rule for checking the combination of vendor and company code will run randomly.
- For any PO invoices that originate from suppliers on the **GREY** list, the business rule for checking the combination of vendor and company code will run randomly.
- For any PO invoices that originate from suppliers on the **BLACK** list, the business rule for checking that the currency is invalid will run every time.

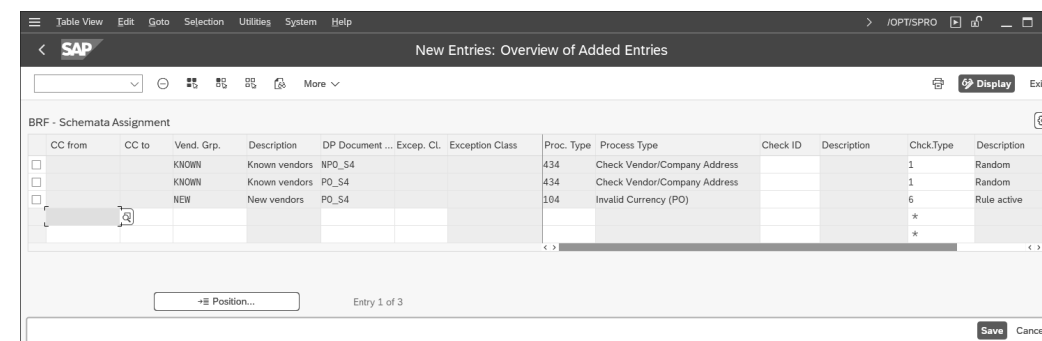


Figure 4.24 Example Entries in the BRF Schemata Assignment

#### 4.7.6 Maintaining the Restrictions

The final configuration task available in the BRF is maintaining BRF restrictions. This capability allows you to exempt certain documents in a relaxed rule run. For instance, if all credit memos must run through the rules, no matter the conditions, you would configure these settings here. An example configuration is shown in Figure 4.25.

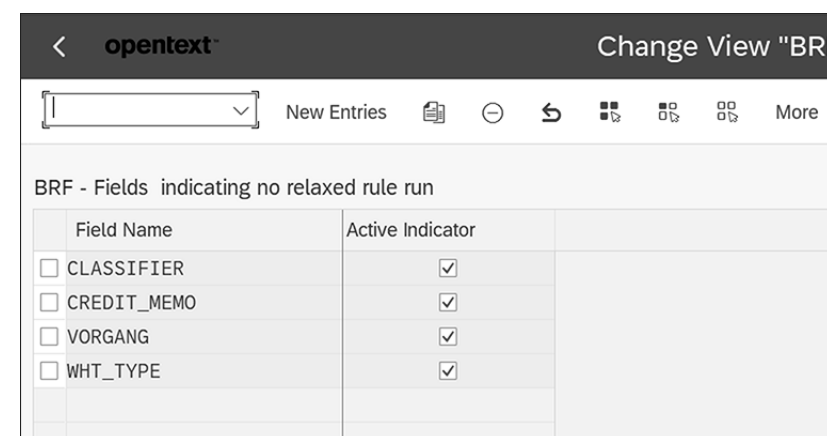


Figure 4.25 Exempting Credit Memos from a Relaxed Rule Run

Taken together, we hope you see how BRF is a powerful and flexible framework for fine-tuning your invoice checks as your vendor relationships mature and your system continually gets smarter. You can easily adjust as your invoicing partners and circumstances change.

## 4.8 Summary

In this chapter, you learned all about the powerful mechanism of business rules in SAP Invoice Management. In Section 4.2, we saw that SAP Invoice Management provides a multitude of preconfigured business rules according to the type of invoice we are processing and the relevant country or countries. In Section 4.4, we showed you how SAP Invoice Management provides a simple way to create your own custom checks. In Sections Section 4.5 and Section 4.6, we explored several preconfigured rules for audits and for duplicate checking. And finally, in Section 4.7, you learned how SAP Invoice Management can serve as an incredibly flexible framework for running business rules whenever and however you want.

In conclusion, if business rules fail, a process type is called to rectify the error. Assigning that process type to the right user is the next crucial step and, fittingly, the topic of the next chapter.

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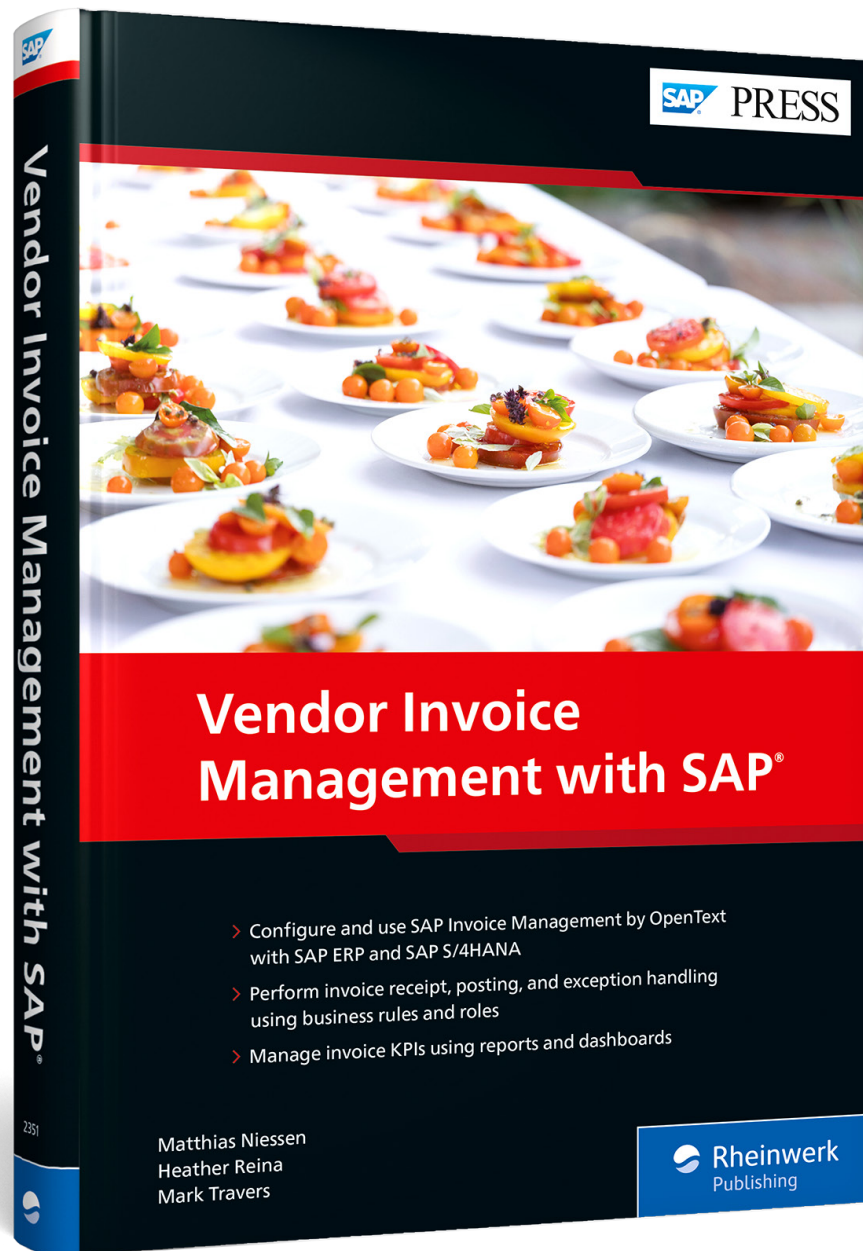
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