Service description
PROXESS Document Reader
Invoice Expert

Status: 05/01/2023

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The documentation describes the available basic functions of the product as well as accessory components which can be combined, adapted and expanded in a modular fashion depending on the requirements of the respective customer.

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Contents

1 Introduction

This document contains a general service description of the **PROXESS Document Reader Invoice Expert** module, which is referred to as the "PROXESS Document Reader" in the following.

All essential components are presented in this description. The actual modules used by the customer can be found in the order confirmation. Deviations from the standard scope of service are defined there and potentially in a commissioned specification sheet.

2 Scope of delivery

- PROXESS Document Reader for OCR recognition of incoming documents (purchasing invoices, purchasing credit notes and QR codes Switzerland), both via e-mail and scan
- Web-based user interface (front end) for verification and manual post-processing of existing documents
- Windows applications for administrative management of the PROXESS Document Reader (back end)

3 Applications

3.1 "Web Verifier" web interface (front end)

For manual post-processing/verification of the documents, the web interface ("Web Verifier") is available to users at a URL provided on a local network. By default, everyone has access to the web interface using the URL. If access is to be restricted, this must be defined in the specification sheet.

All documents which have not been fully machine-recognized are displayed here. Fully recognized documents are given the "*Export*" status without any post-processing and are transferred to the downstream Workflow/Archive system in this way.

The interface is provided in German and English, where German is the default setting which can be changed manually in the application if necessary. Additional languages in the form of language packages are available for purchase.

3.1.1 Task overview

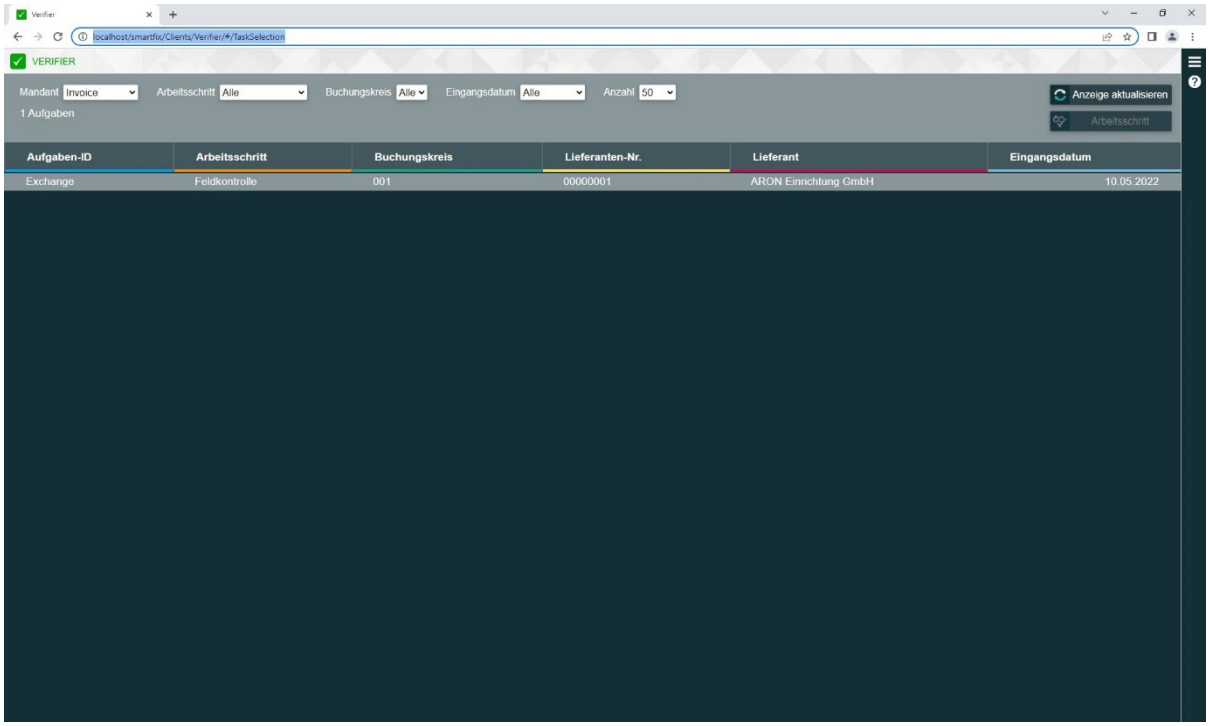


Fig. 3.1 Task overview

The home page (Fig. 3.1) of the Web Verifier is essentially comprised of three important parts.

1. Top ribbon for image stack filtering
2. Table section with all image stacks to be processed, including some information on them
3. Sidebar menu for further interaction with the Web Verifier

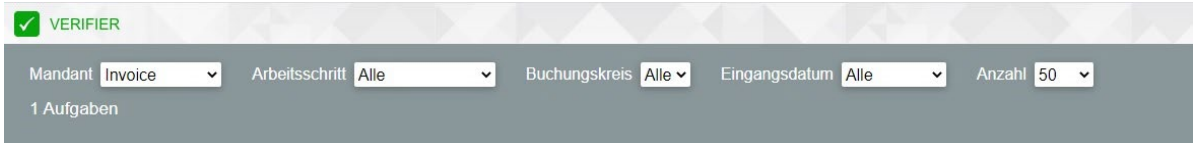


Fig. 3.2 Task overview ribbon

In the top ribbon (Fig. 3.2), filters can be set for the table view (Fig. 3.3) of the image stacks. In this way, individual clients, priorities, working steps, company codes and other filters can be set. Depending on the set filters, only the corresponding image stacks are listed in the table view.

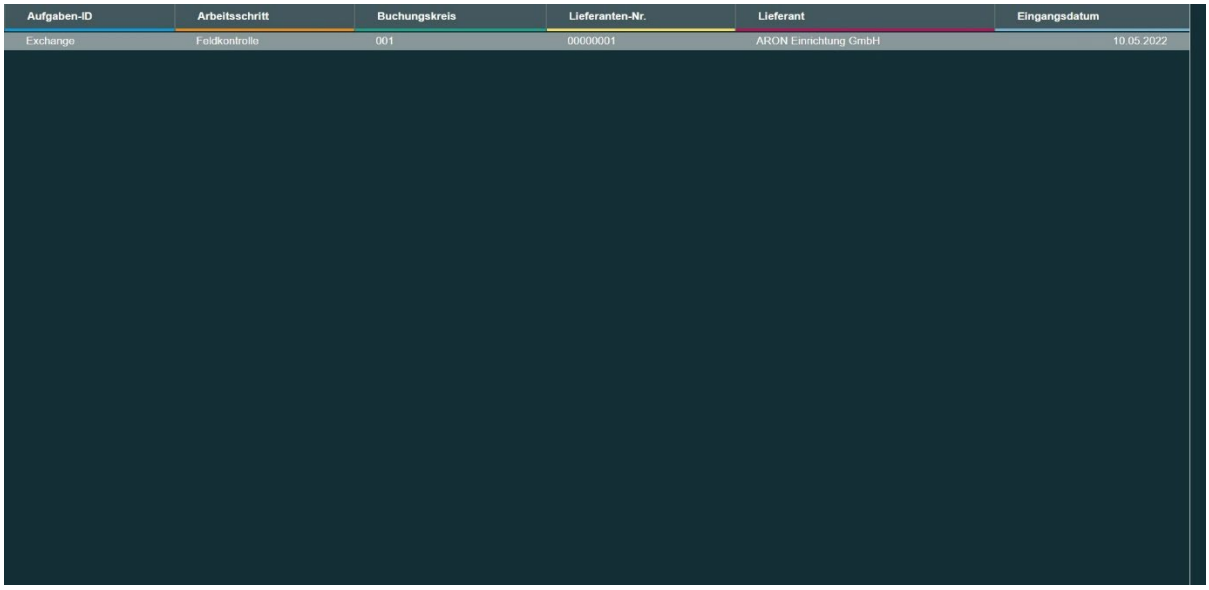


Fig. 3.3 Table view of all image stacks in the task overview

The table view (Fig. 3.3) shows all image stacks to be processed. Set filters reduce the number of image stacks. The list can be sorted as desired (e.g. by working step or priority) using the table headers. An image stack to be verified can also be clicked and processed in this view.

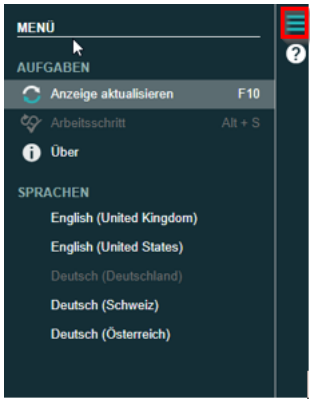


Fig. 3.4 Sidebar menu in the task overview

A sidebar menu can be expanded using the three horizontal bars in the upper right-hand corner. General settings of the Web Verifier can be made there (Fig. 3.4).

3.1.2 Field view – Header & footer data

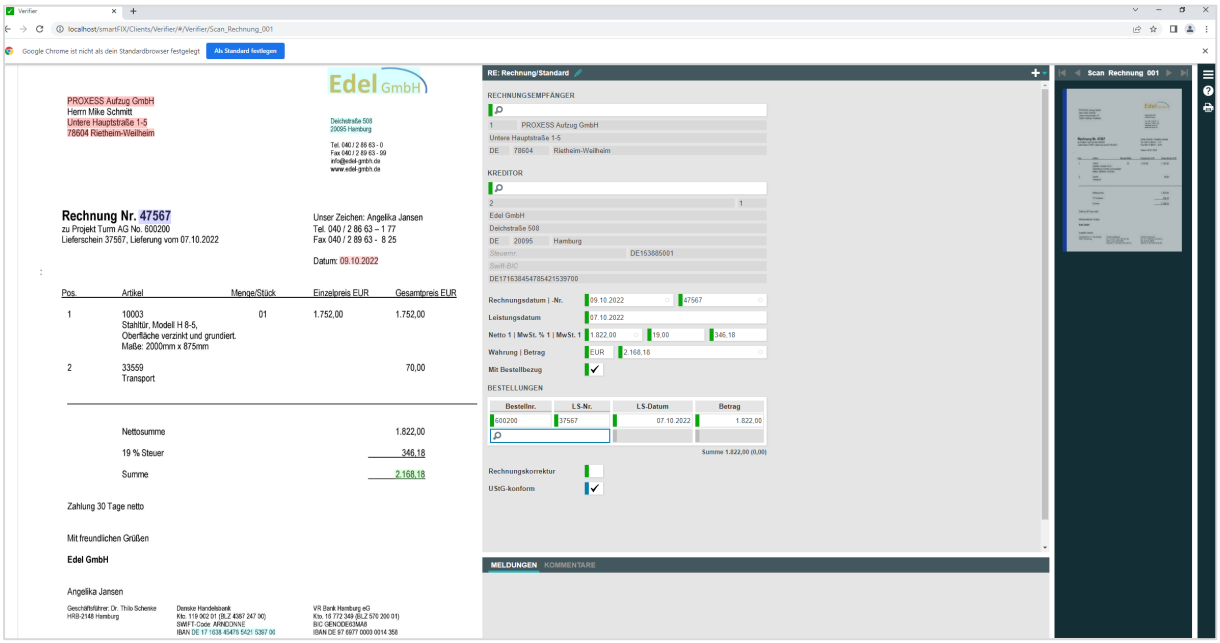


Fig. 3.5 Field view of the Web Verifier

Once an image stack has been selected for verification, the view of the Web Verifier changes to the field view (Fig. 3.5). In this view, the image stack is checked manually with regard to recognized values, and incorrect or unrecognized values are corrected / filled in.

The left side of the field view (Fig. 3.5) shows the selected document, including color marking of the recognized values (amounts, addresses, etc.). If the cursor is moved over an object on the selected document, a small window shows the recognized OCR value with a blue background (Fig. 3.6). These values can also be copied to the fields in the middle section (Fig. 3.8). Multiple objects can also be combined by dragging a frame across the area with the mouse (**Fehler! Verweisquelle konnte nicht gefunden werden.**).

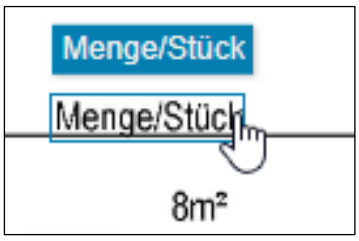


Fig. 3.6 Value recognized by OCR

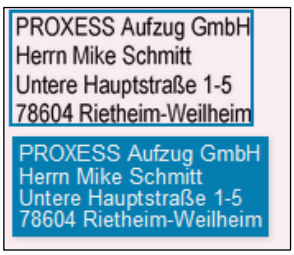


Fig. 3.7 Objects recognized by OCR

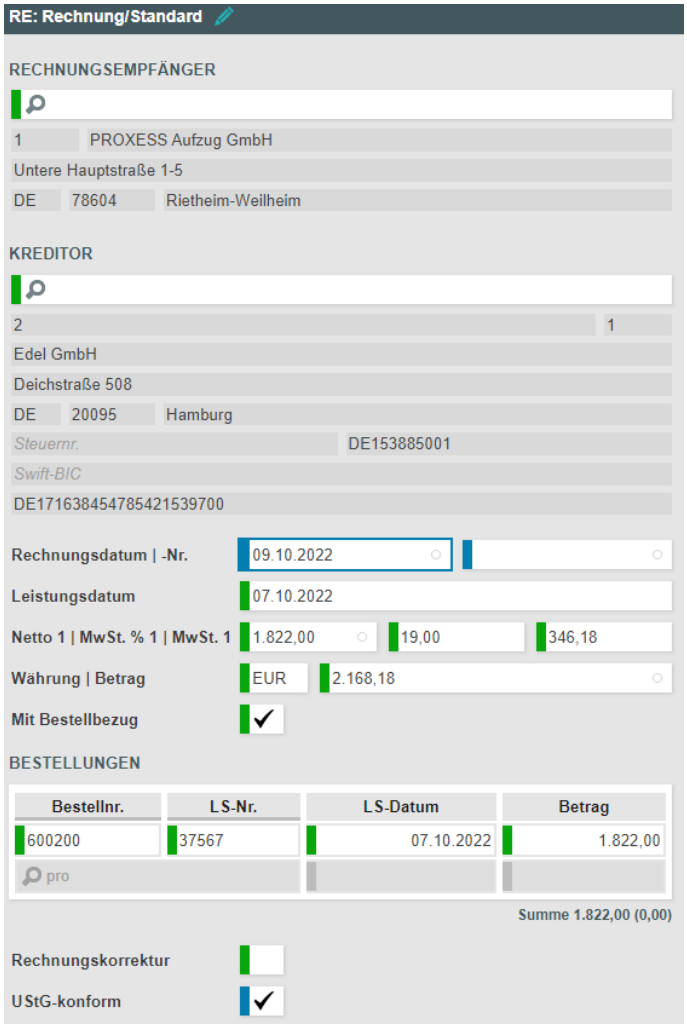


Fig. 3.8 Fields to be checked / filled in

The middle part of the view shows all fields which can be captured for the selected document type. The fields are adjusted accordingly, depending on the document type.

- **Green fields** were captured and verified automatically (e.g. compared to master data).
- **Blue fields** have to be filled in or corrected manually. Confirmation always has to be carried out with the “ENTER” key to enable the system to learn. Blue fields were often correctly recognized but could not be verified with master data or contain logical errors.
- **Gray fields** cannot be manipulated. Some fields contain data connections, e.g. for searching for vendors in the master data and copying the corresponding data to the fields.

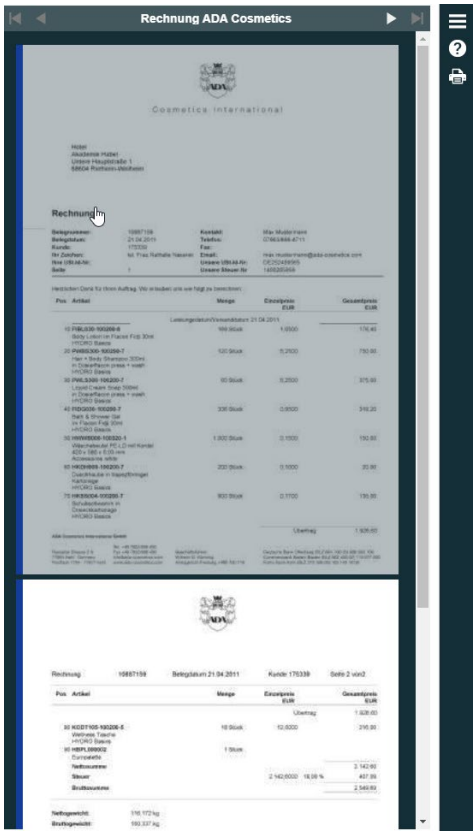


Fig. 3.11 Pages of a document

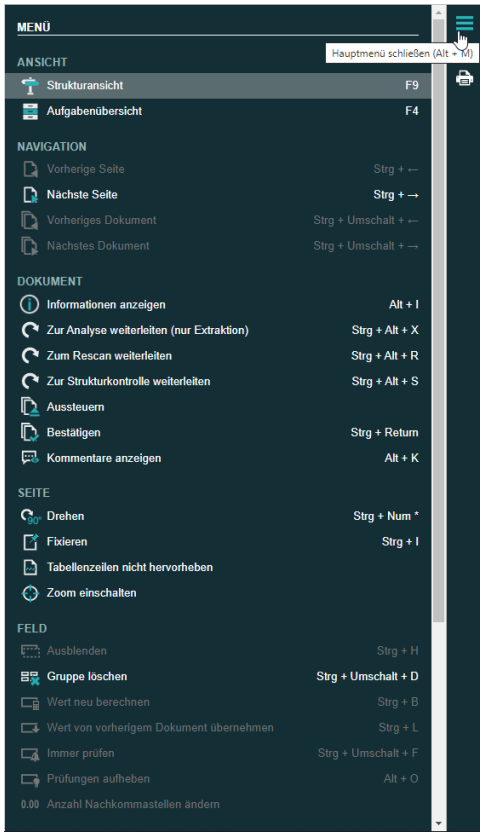


Fig. 3.92 Menu in the field view

The right side of the view lists all of the pages of a document (**Fehler! Verweisquelle konnte nicht gefunden werden.**). Here you can navigate between the pages to fill in or verify all the fields.

The three sections of the view can be enlarged and reduced as desired.

A sidebar menu can be expanded using the three horizontal bars in the upper right-hand corner (Fig. 3.9). Here you can switch between the views or change the image stacks. Fields can also be edited and pages adjusted.

3.1.3 Field view – Item data: Order/delivery note reconciliation

With the order allocation, both order items (orders) and goods receipts (delivery notes) can be allocated to the invoice items. The comparison table SFI_ORDER_ITEM (Section 3.5.3) is used for this purpose.

The comparison is carried out according to the following process:

The analysis looks for an order number on the document.

The search is limited to the identified invoice recipient.

If the order number found can be related to an order, the field *"With order reference"* is activated during manual post-processing (Verifier) by means of a check mark and the *Orders* table is shown. The order numbers identified on the document are now entered into the *Orders* table.

To verify whether the invoice data match the order data, the *Orders* table contains an amounts column, among other features. The sum of the amounts in the *Orders* table is compared with the net amount (minus any delivery charges like postage or freight costs) at the header level. If the amounts are identical, the *Invoice items* table remains hidden during manual post-processing. (Fig. 3.9)

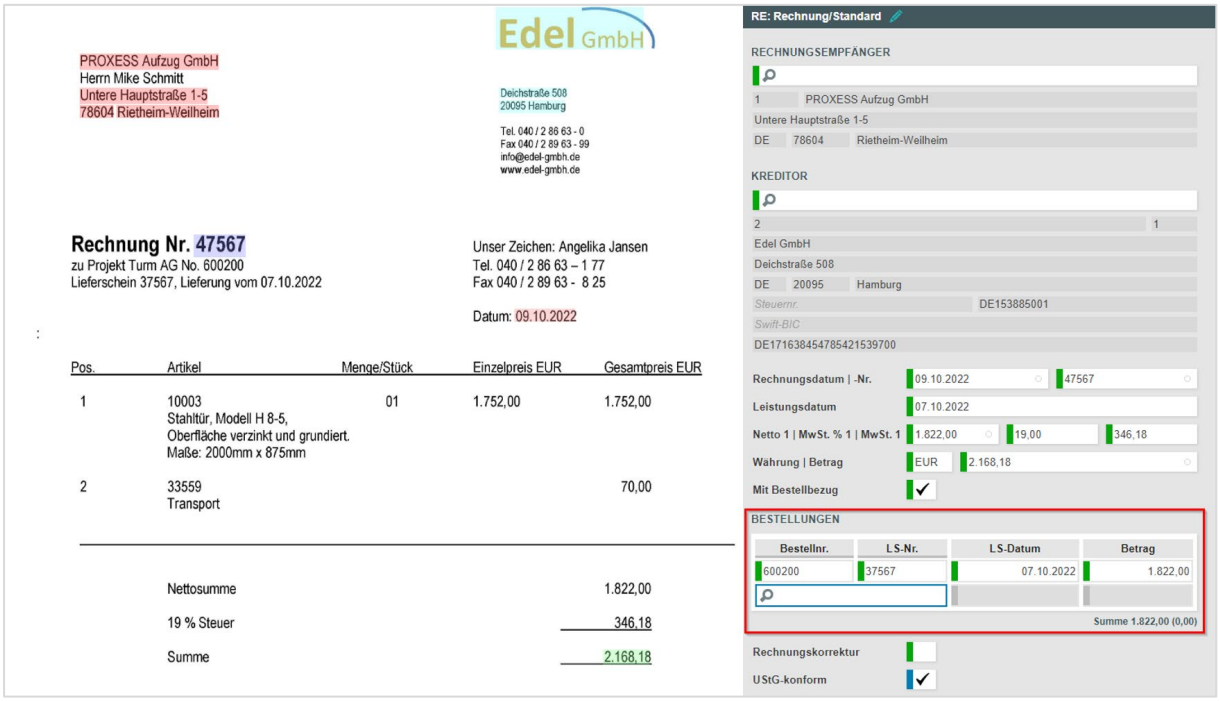


Fig. 3.9 Invoice matches the order/delivery
This is the case if the number in parentheses at the right below the Orders table shows "0.00."

In the background, the *Order items* table is filled with the order items from the comparison data (SFI_ORDER_ITEM) and finally also exported.

If there is a discrepancy between the sum of the amounts in the *Orders* table and the net amount minus the delivery charges, the *Invoice items* table is shown automatically. It contains the data that was extracted from the document (Fig. 3.10).

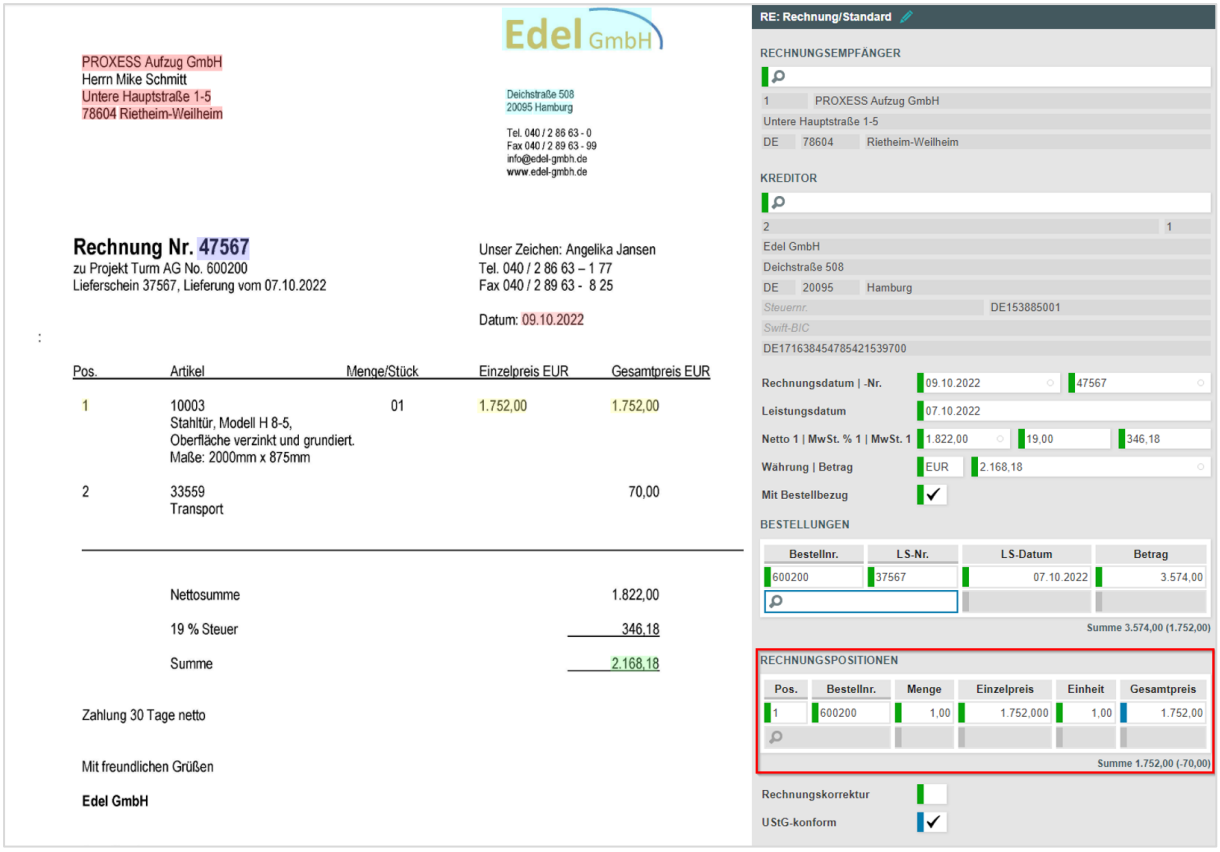


Fig. 3.10 Invoice does not match the order/delivery
This is the case if the number in parentheses at the right below the Orders table shows a difference of "-70.00."

During manual post-processing, the order items in the *Comparison table* can be transferred to the *Invoice items* table. As a rule, these are the item number and order number. If the unit price, the total price and the quantity are not already marked as "correct" (green) in the *Invoice items* table, this data is also transferred.

If there is no order reference, NO item data is forwarded to the downstream system.

3.2 Structure view

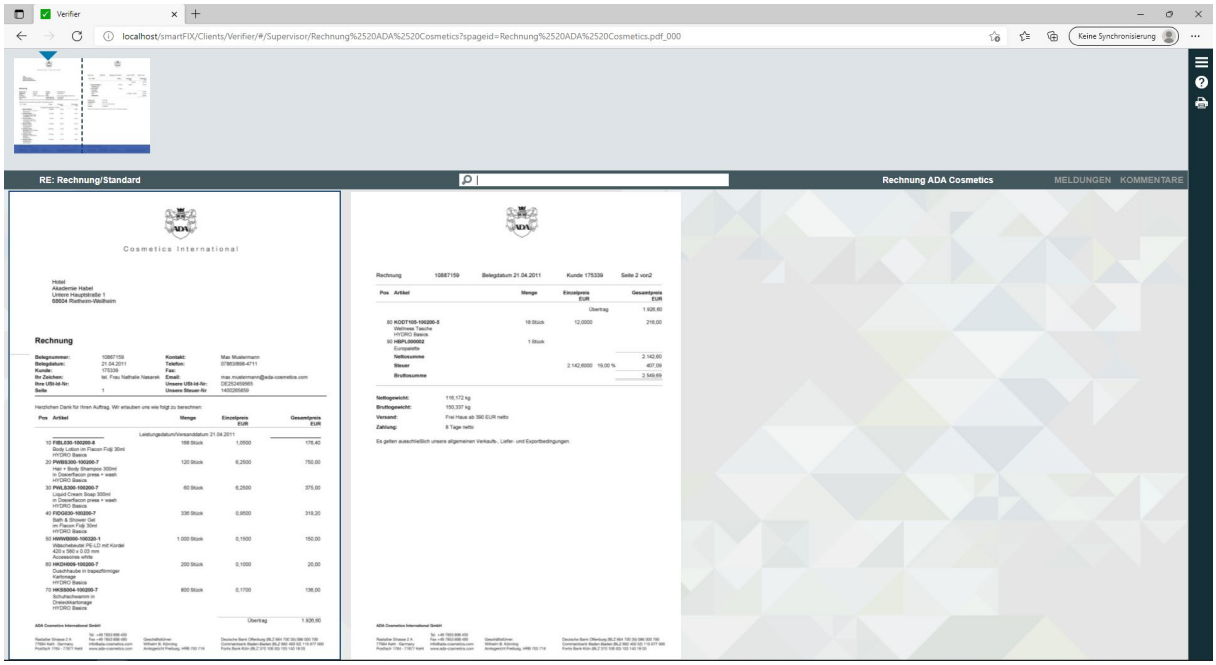


Fig. 3.10 Overview of structure view

Documents can be joined or separated in the structure view (Fig. 3.10). In this way, the pages of a document can be split into individual documents or individual documents combined into a single one. The pages can be separated either by dragging and dropping, using the “CTRL + S” key combination or using the sidebar menu at the top right. The pages can be combined using the “CTRL + M” key combination.

3.2.1 CoordinatorKernel system components (back end)

The *CoordinatorKernel* handles the monitoring and logging functions and checks at regular intervals to determine whether the system components still respond to calls using *Corba* (the *“Common Object Request Broker Architecture,“* which is a standard for platform-independent communication between software components). If the components are not accessible, they are restarted. The *CoordinatorKernel* is set up as a service and runs exactly once on the server. This can be managed by the administration using the “Coordinator” application (Section 3.3.2).

3.2.2 Importer

The *Importer* is responsible for importing documents into the PROXESS Document Reader. By default, a total of two *Importers* are set up.

- *Importer* for PROXESS Scan Link:
  This transfers the scanned image stack to the Document Reader as a PDF.

- E-mail import:

  This makes the PDF document from an e-mail available to the Document Reader. (Section 4.1.2).

3.2.3 Analyser

The fields defined in the *DocumentManager* are extracted using the *Analyser*. A variety of checks are also carried out. If the extraction and all checks have been completed successfully, the documents are automatically transferred to the *Exporter*.

3.2.4 MatchingServer

The *MatchingServer* is a system component which performs the database comparison functions. It is used by the *Analyser*, *DocumentManager* and *Web Verifier* components.

3.2.5 LearnModule

The *LearnModule* is activated prior to the export. Learned samples are collected here using the manually post-processed documents in the Web Verifier. Based on these learned samples, the *LearnModule* creates corresponding learned rules which are then applied when analyzing other image stacks.

Fields which are learned by default in the PROXESS Document Reader are defined in Section **Fehler! Verweisquelle konnte nicht gefunden werden.**.

3.2.6 Exporter

The *Exporter* is responsible for transfer to the downstream system (PROXESS Archive/Workflow).

3.3 Administrative applications

3.3.1 Configurator

The *Configurator* enables configuration and adjustment of the individual components.

E-mail import is configured using the *Configurator*, for example.

3.3.2 Coordinator

The *Coordinator* manages the system components listed in 3.2.1 and serves as a central monitoring platform for the administration.

3.3.3 DocumentManager

The *DocumentManager* carries out functions for defining, testing and optimizing new document classes as well as adjusting/expanding existing configurations.

3.3.4 Sherlock

Sherlock is a diagnostic tool for checking the system configuration of the server and all clients.

3.4 Databases

The databases required for the Document Reader can be found on an MS/SQL database server or, if defined, on MS/SQL Express.

The following three databases are used on the database server:

- **BL_InvoiceMatchingDB**

  This database contains the master data, transaction data and learned data. They are used later on for recognition of the vendor and currency and to check for a valid VAT rate based on the recognized country code, among other things.

- **BL_ControlDB**
  This database contains tables with information on image stacks, images and documents. Processing statuses and tax information, among other things, are also saved here.
- **BL_ResultDB**
  This database contains tables with information on image stacks, images and documents. Processing statuses and tax information, among other things, are also saved here.

3.4.1 Master data within the BL_InvoiceMatchingDB

For the comparison of data read from invoices, e.g. invoice recipients, vendors, currency, country codes and corresponding tax rates, the *PROXESS Document Reader* features database tables. Using this mechanism improves the quality of the OCR result while at the same time ensuring that keys (e.g. tax rate and country codes) are only captured in compliance with the comparison data during post-processing.

Following their initial creation by PROXESS, some of the tables are cyclically supplied with data from the operational databases.

The master data is explained in greater detail in the "PROXESS_Belegleser_Stammdaten.PDF" document.

Automatic provision

Basic data for tables with automatic provision is provided by the customer. The data must be provided in CSV format (encoding: UTF-8, separator: ";") or as a database view in the structure specified by us (Table 3.4).

The automatic updating of all vendor data records occurs through the complete clearing and "reloading" of all vendors on a daily basis.

Manual maintenance

Tables with manual maintenance (Table 3.3) are initially created by PROXESS and then maintained by the customer.

Intervals

The data is updated regularly (recommended: once or twice a day).

Table	Use	Update	Time
SFI_RECIPIENT	Customer data for searching for an invoice recipient	As needed, manual	Before the Document Reader is started
SFI_VENDOR	Supplier data for searching for a supplier	Daily	Monday to Friday ##5:00 a.m.

Table 3.1: Overview of update intervals for comparison tables

3.4.2 Transaction data within the BL_InvoiceMatchingDB

A database table is available in the *PROXESS Document Reader* for comparing invoices with the order and/or delivery note data. This mechanism serves to compare the invoice with the scanned transaction data.

Following their initial creation by PROXESS, some of the tables are cyclically supplied with data from the operational databases.

Automatic provision

Basic data for tables with automatic provision is provided by the customer. The data must be provided in CSV format (encoding: UTF-8, separator: ";") or as a database view in the structure specified by us (Table 3.4).

The automatic updating of all transaction data records occurs by clearing and "reloading" all transaction data on a daily basis.

Intervals

The data is updated regularly (recommended: once or twice a day).

Table	Use	Update	Time
SFI_ORDER_ITEM	Transaction data for recognizing the order reference	Daily	Monday to Friday ##5:15 a.m.

3.5 Overview of comparison tables

Fehler! Verweisquelle konnte nicht gefunden werden. lists all tables available in the smart INVOICE standard. They are part of the BL_InvoiceMatchingDB database. The customer retains ownership of the data.

Table	Use	Maintenance
Tables maintained by the customer		
SFI_RECIPIENT	Contains the data of invoice recipients	Manual
SFI_VENDOR	Contains the vendor data needed to identify the invoicing party	Automatic
SFI_ORDER_ITEM	Contains the order items and, if applicable, the delivery note items	Automatic
Tables updated via service pack		
SFI_COUNTRY	Contains country-specific formats, currencies and VAT rates	Manual with service pack
SFI_CURRENCY_SYMBOL	Contains the currency symbols of the various countries	Manual with service pack
SFI_VAT_RATES	Contains the VAT rates of the various countries	Manual with service pack
Tables filled in by the Document Reader during operation		
SF_LEARN_RULES	Contains the learned rules for the corresponding client	Updated by PROXESS
SF_LEARN_SAMPLES	Contains the learned samples for the corresponding client	Updated by PROXESS

SFI_LEARN_TOP	Contains the learned data for the payment terms	Updated by PROXESS
SFI_CPD_VENDOR	Contains the vendors that do not have their own customer or supplier account and are captured through a collective account	Updated by PROXESS
Tables not used in the project		
SF_VALID_HOSTS	Can be used e.g. to distinguish between production and test systems	-
SFI_AC_ORDER	Job management	-
SFI_BUSINESS_AREA	Management of business areas	-
SFI_COST_CENTER	Saving cost centers	-
SFI_GENERAL_LEDGER	Saving general ledger accounts	-
SFI_WBS_ELEMENT	Management of work breakdown structures -	-
SFI_SPECIAL_ITEM	Contains data for processing special invoices, e.g. road toll or telecommunications invoices	-

Table 3.2 Overview of comparison tables

Additional information on the tables listed above can be found in the Invoice manual. The tables to be maintained by the customer are explained in more detail in the following.

3.5.1 SFI_RECIPIENT table

The invoice recipient data is stored in the SFI_RECIPIENT table. The structure of the data records is described in Table 3.3.

Column name	Format	Description	Mandatory field	Note
RE_PK	Varchar(20)	Primary key for processing several addresses under one recipient number	Yes	Primary key
RE_RECIPIENT_NO	Varchar(20)	Number of the recipient	Yes	Company code
RE_SYSTEM	Varchar(12)	Identification of the downstream logical system	Yes	
RE_NAME	Varchar(80)	Name of the recipient	Yes	
RE_STREET	Varchar(30)	Street of the recipient	Yes	
RE_ZIPCODE	Varchar(7)	Zip code	Yes	
RE_CITY	Varchar(30)	City	Yes	

Column name	Format	Description	Mandatory field	Note
RE_COUNTRY	Varchar(2)	Country	Yes	
RE_ILN	Varchar(13)	ILN of the invoice recipient	No	
RE_TAX_ID_NO	Varchar(20)	Tax ID (must be entered without spaces and separators)	No	
RE_VAT_ID_NO	Varchar(20)	VAT ID (must be entered without spaces and separators)	Yes	
TIMES	Varchar(10)	Date reference on added or modified data records (format: DD.MM.YYYY)	-	Internal function field
MODIFIED	Varchar(1)	Indication whether the data record was modified or added compared to the master data	-	Internal function field

Table 3.3 Definition of SFI_RECIPIENT table

The table is initially filled in by PROXESS and provided by the customer. If data maintenance is necessary, it is carried out manually by the customer.

Company code

By default, a company code and a valid address of the invoice recipient are taken into account.

3.5.2 SFI_VENDOR table

The data for comparison of the supplier is located in the `SFI_VENDOR` table. The structure of the data records is described in Table 3.4.

Column name	Format	Description	Mandatory field	Note
VE_VENDOR_NO	Varchar(20)	Number of the vendor	Yes	Primary key
VE_RECIPIENT_NO	Varchar(20)	Company code of the vendor	Yes	Primary key
VE_NAME	Varchar(80)	Name of the vendor	Yes	
VE_STREET	Varchar(35)	Street of the vendor	Yes	
VE_ZIPCODE	Varchar(10)	Zip code	Yes	
VE_CITY	Varchar(35)	City	Yes	
VE_COUNTRY	Varchar(2)	ISO country code	Yes	ISO3166-Alpha 2 Example: “DE” = “Deutschland” (Germany)

Column name	Format	Description	Mandatory field	Note
VE_TELEFONE_NO	Varchar(25)	Phone number (without international code)	No	
VE_FAX_NO	Varchar(35)	Fax number (without international code)	No	
VE_BANK	Varchar(60)	Name of the bank	No	Main bank connection
VE_BANK_NO	Varchar(15)	Bank code (without spaces)	No	Main bank connection
VE_ACCOUNT_NO	Varchar(18)	Account number	No	Only alphanumerical and numerical values are valid and may need to be normalized prior to the import.
VE_IBAN	Varchar(34)	IBAN	Yes	ISO 13616-1 Only alphanumerical and numerical values are valid and may need to be normalized prior to the import.
VE_SWIFT_BIC	Varchar(11)	Swift code	No	Only alphanumerical and numerical values are valid and may need to be normalized prior to the import.
VE_TAX_ID_NO	Varchar(20)	Tax number of the vendor	No	Tax number or VAT ID must be filled in. Only alphanumerical and numerical values are valid and may need to be normalized prior to the import.
VE_VAT_ID_NO	Varchar(20)	VAT ID number	Yes	Tax number or VAT ID must be filled in. Only alphanumerical and numerical values are valid and may need to be normalized prior to the import.
VE_CLERK_ID	Varchar(12)	Responsible clerk	No	
VE_ILN	Varchar(13)	ILN of the vendor	No	
MODIFIED	Varchar(1)	Indication whether the data record was modified or added compared to the master data	-	Internal function field
TIMES	Varchar(10)	Date reference on modified data records (format: DD.MM.YYYY)	-	Internal function field

Table 3.4 Definition of SFI_VENDOR table

Vendor master data requirements

For the vendor search, all invoice vendors are provided from the master ERP system. For the PROXESS Document Reader, only active vendors are provided without a deletion flag and without a successor supplier entered. Duplicate vendor numbers cannot be transferred to the database (duplicate prevention). Each vendor must be unique.

The exact content of the master/comparison data and customer specifics are defined within the scope of the project.

3.5.3 Table SFI_ORDER_ITEM

The data for the comparison of transaction data is located in the `SFI_ORDER_ITEM` table. The structure of the data records is described in Table 3.4.

Column name	Format	Description	Mandatory field	Note
ORI_PK	Varchar(20)	Consecutive numbering of orders	Yes	Primary key
RE_RECIPIENT_NO	Varchar(20)	Number of the recipient	Yes	
VE_VENDOR_NO	Varchar(20)	Number of the vendor	Yes	
OR_ORDER_NO	Varchar(25)	Order number	Yes	The order number must not contain any spaces
ORI_POS_NO	Varchar(5)	Item number of the articles from the order	No	
ORI_ARTICLE_NO	Varchar(20)	Article number of the vendor	No	The article number must not contain any spaces
ORI_QUANTITY	Number(20,8)	Order quantity	Yes	
ORI_SINGLE_NET_PRICE	Number(16,4)	Single net price	Yes	
ORI_TOTAL_NET_ PRICE	Number(16,4)	Total net price of the item	Yes	
ORI_AA_CC_ID	Varchar(14)	ID of the cost center	No	
ORI_AA_CO_ID	Varchar(14)	ID of the cost unit	No	
ORI_AA_IA_ID	Varchar(14)	ID of the general ledger account	No	
ORI_DESCRIPTION	Varchar(100)	Article description	No	
ORI_DELIVERY_NO	Varchar(16)	Delivery note number	Yes/No	Only required if ORI_IS_DELIVERY = 1
ORI_DELIVERY_ DATE	Datetime	Delivery date	No	

Column name	Format	Description	Mandatory field	Note
ORI_IS_DELIVERY	Varchar(1)	Goods receipt	Yes	The following values can be entered here: 1 = This item is a goods receipt 0 = This item is an order item

4 Functional scope – PROXESS Document Reader Invoice Expert

4.1 Capture

4.1.1 Scanning

Scanning is carried out with the PROXESS Scan Link module, which is supplied with the PROXESS Archive system (not included in the scope of this service).

Document separation for printed documents

By default, the documents are separated by **bar codes**. For this purpose, a **bar code** is adhered to the first page of each invoice. The scanning application separates the individual invoices into separate documents based on the bar codes (attachment separation for pages not to be extracted as an invoice can be implemented with a pre-defined separation bar code).

4.1.2 E-mail import

The standard scope of service includes the connection of **one** inbox.

A description of how it works can be found in Section 4.5.44.4.

4.2 Extraction

The tables in Section **Fehler! Verweisquelle konnte nicht gefunden werden.** describe the fields which can be extracted and, if applicable, compared to matching data and then exported to a downstream system.

The following are listed:

- The **field or export name:** Internal name in the PROXESS Document Reader module
- The **verifier name**: Name with which the field is displayed in the Web Verifier.

- **Ver.:** This column indicates whether the field is displayed in the Web Verifier.
- **Extr.:** This column indicates whether the field is extracted/read in the analysis.
- **Learn:** This column indicates whether the field is being learned. Both the item in the corresponding invoice layout and the structure and key words can be learned. Using the learned data, the result is verified and, if positive, marked as successful. This, in turn, can lead to an automatic export.
- **Exp.:** This column specifies whether the field is taken into account during export.
- A brief **description**

For comparison and for support of verification, more fields are read than are actually exported. This being the case, not all fields are factored into the comparison for evaluating a data record with the same weighting.

4.2.1 Symbols

The tables contain a series of symbols used in Section **Fehler! Verweisquelle konnte nicht gefunden werden.**.

Symbol	Description
✓	The field is extracted, verified, learned or exported.
✚	The field can optionally be shown or hidden in the Web Verifier.
▬	The field is not extracted, verified, learned or exported.

Table 4.1 Symbol definition of the tables

4.2.2 General fields (header data)

Field name / Export name	Verifier name	Ver.	Extr.	Exp.	Learn	Description
INV_DATE	Invoice date	✓	✓	✓	✓	Invoice date of the vendor
INV_NUMBER	Invoice number	✓	✓	✓	✓	Invoice number (*1)
INV_REFERENCE_DATE	Reference date	✚	✓	✓	✓	Reference date for credit notes
INV_REFERENCE_NUMBER	Reference number	✚	✓	✓	✓	Reference number for credit notes
INV_ORDER_DATE	Order date	✚	✓	✓	✓	Order date (header)
INV_ORDER_NO	Order number	✚	✓	✓	✓	Order number (header)
INV_DELIVERY_DATE	Service date	✓	✓	✓	✓	Service date
INV_DELIVERY_NO	Delivery note number	✚	✓	✓	✓	Delivery note number (header)
INV_DISCOUNT_AMOUNT1	Discount	✚	✓	✓	✓	Absolute discount 1 on net price
INV_DISCOUNT_AMOUNT2	Discount	✚	✓	✓	✓	Absolute discount 2 on net price
INV_DISCOUNT_PERCENT1	Discount %	✚	✓	✓	✓	Percent discount 1 on net price

INV_DISCOUNT_PERCENT2	Discount %	+	✓	✓	✓	Percent discount 2 on net price
INV_SMALL_VOL_CHARGE	Small volume charge	+	✓	✓	✓	Small volume charge
INV_PACKING_CHARGE	Packaging	+	✓	✓	✓	Packing charges
INV_POSTAL_CHARGE	Postage	+	✓	✓	✓	Postal charges
INV_FREIGTH_CHARGE	Freight	+	✓	✓	✓	Freight charges
INV_TOLL_CHARGE	Toll charges	+	✓	✓	✓	Toll charges
INV_INSURANCE_CHARGE	Insurance	+	✓	✓	✓	Insurance charges
INV_SPECIAL_CHARGE	Extra charge	+	✓	✓	✓	Extra charge
INV_CUSTOMS_CHARGE	inch	+	✓	✓	✓	Customs duties
INV_NET_AMOUNT1	Net amount 1	✓	✓	✓	✓	Total net amounts with the same VAT rate (1)
INV_TAX_RATE1	VAT rate 1	✓	✓	✓	✓	Value-added tax rate 1
INV_TAX_AMOUNT1	VAT amount 1	✓	✓	✓	✓	Value-added tax amount 1
INV_NET_AMOUNT2	Net amount 2	+	✓	✓	✓	Total net amounts with the same VAT rate (2)
INV_TAX_RATE2	VAT rate 2	+	✓	✓	✓	Value-added tax rate 2
INV_TAX_AMOUNT2	VAT amount 2	+	✓	✓	✓	Value-added tax amount 2
INV_NET_AMOUNT3	Net amount 3	+	✓	✓	✓	Total net amounts with the same VAT rate (3)
INV_TAX_RATE3	VAT rate 3	+	✓	✓	✓	Value-added tax rate 3
INV_TAX_AMOUNT3	VAT amount 3	+	✓	✓	✓	Value-added tax amount 3
INV_CURRENCY	Currency	✓	✓	✓	–	Invoice currency (extracted via the MatchingDB and set accordingly)
INV_AMOUNT	Amount	✓	✓	✓	✓	Final invoice amount (gross)
INV_CREDIT_NOTE	Credit note	✓	✓	✓	–	Credit note
INV_COMPLIANT	§14 compliant	✓	✓	✓	–	Indicator of whether an invoice complies with the requirements as per § 14
INV_COMPLIANCE_ COMMENTS	---	–	✓	✓	–	If the document is not compliant with § 14, a comment is entered into this field which can provide information for further processing as to why the document does not conform to the requirements of § 14 of the German Value Added Tax Act.

Table 4.2 Overview of the default header fields

4.2.3 Invoice recipient fields

The invoice recipient is determined using the (available) master data contained in the *BL_InvoiceMatchingDB*. Here, a variety of different content is compared to the database values and the potential invoice recipient is identified via weighting (prioritizing of the individual fields). The identified invoice recipient always has to be contained in the master data here.

Field name / Export name	Verifier name	Ver.	Extr.	Exp.	Learn	Description
RE_NAME	Name	✓	✓	–	–	Name of the invoice recipient
RE_STREET	Street	✓	✓	–	–	Street and building number of the invoice recipient
RE_COUNTRY	Country	✓	–	–	–	Two-letter ISO country code of the invoice recipient
RE_ZIPCODE	Zip code	✓	✓	–	–	Zip code of the invoice recipient
RE_CITY	City	✓	✓	–	–	City of the invoice recipient
RE_ILN	ILN	–	–	–	–	International location number of the invoice recipient
RE_RECIPIENT_NO	Recipient number	–	–	✓	–	Company code of the invoice recipient
RE_SYSTEM	OS system	–	–	–	–	Identification of the downstream processing system
RE_PK	Key number	–	–	–	–	Key number for the processing of multiple addresses under one recipient number
RE_TAX_ID_NO	Tax number	–	✓	–	–	Tax number of the invoice recipient
RE_VAT_ID_NO	VAT ID number	–	✓	–	–	VAT ID number of the invoice recipient

Table 4.3 Overview of the default invoice recipient fields

4.2.4 Vendor fields

The vendor is identified using the (available) master data contained in the *BL_InvoiceMatchingDB*. Here, a variety of different content is compared to the database values and the potential vendor is identified via weighting (prioritizing of the individual fields).

The main criteria here are the name, street, zip code and city, which limit the number of possible vendors. A unique assignment can be determined using key fields like IBAN and VAT ID if the vendor is still unclear.

The data of the vendor now displayed in the Web Verifier is therefore always from the database.

If the vendor was not identified, learned data cannot be used for the other fields, as the vendor is the “learned key.”

Field name / Export name	Verifier name	Ver.	Extr.	Exp.	Learn	Description
VE_NAME	Name	✓	✓	✓	–	Name of the vendor
VE_STREET	Street	✓	✓	✓	–	Street and building number of the vendor or P.O. box of the vendor
VE_COUNTRY	Country	✓	–	✓	–	Two-letter ISO country code of the vendor
VE_ZIPCODE	Zip code	✓	✓	✓	–	Zip code of the vendor
VE_CITY	City	✓	✓	✓	–	City of the vendor
VE_ILN	ILN	–	–	✓	–	International location number of the vendor
VE_TAX_ID_NO	Tax number	✓	✓	✓	–	Tax number of the vendor
VE_VAT_ID_NO	VAT ID number	✓	✓	✓	–	VAT ID number of the vendor
VE_BANK	Bank	✓	–	✓	–	Bank of the vendor
VE_BANK_NO	Bank code	✓	✓	✓	–	Bank code of the vendor
VE_ACCOUNT_NO	Account number	✓	✓	✓	–	Account number of the vendor (without spaces)
VE_SWIFT_BIC	Swift	–	–	✓	–	Bank identifier code of the vendor
VE_IBAN	IBAN	–	–	✓	–	International bank account number of the vendor’s bank
VE_TELEFONE_NO	Phone number	✓	✓	✓	–	Phone number of the vendor (without international code)
VE_FAX_NO	Fax number	✓	✓	✓	–	Fax number of the vendor
VE_EMAIL	E-mail	–	✓	✓	–	E-mail address of the vendor
VE_CLERK_ID	Clerk	–	–	✓	–	Contact or clerk of the invoice recipient
VE_VENDOR_NO	Supplier number	–	–	✓	–	Vendor number
VE_RECIPIENT_NO	Company code	✓	–	✓	–	Company code of the vendor

Table 4.4 Overview of the default vendor fields

4.2.5 Transaction data fields

The transaction data is identified using the (available) transaction data contained in the *BL_InvoiceMatchingDB*. In this process, the net invoice amount is compared to the database values.

The data of the orders and invoice items now displayed in the Web Verifier is therefore always from the database (Fig. 3.10).

If the vendor was not identified, transaction data cannot be used for the other fields, as the transaction data is saved with the vendor.

Field name / Export name	Verifier name	Ver.	Extr.	Exp.	Learn	Description
INVI_POS_NO	Item	✓	–	✓	–	Item number of the order or delivery note item
INVI_ORDER_NO	Order number	✓	–	✓	–	Order number
INVI_DELIVERY_NO	Delivery note number	–	–	–	–	Delivery note number
INVI_DELIVERY_DATE	Delivery date	–	–	–	–	Delivery date
INVI_ORI_ARTICLE_NO	ERP article number	–	–	✓	–	Internal ERP article number
INVI_ARTICLE_NO	Article number	–	–	✓	–	Article number of the vendor
INVI_QUANTITY	Quantity	✓	✓	✓	–	Item quantity
INVI_SINGLE_NET_PRICE	Unit price	✓	✓	✓	–	Net unit price of the item
INVI_QUANTITY_UNIT	Unit	✓	–	✓	–	Quantity unit
INVI_TOTAL_NET_PRICE	Total price	✓	✓	✓	–	Total net price of the item
INVI_ORI_DESCRIPTION	Description	–	–	✓	–	Description of the item
INVI_IS_DELIVERY	Delivery	–	–	✓	–	Order (value = 0) or delivery note (value = 1) item

4.3 Post-processing

4.3.1 Field maintenance

Should identification not be sufficiently ensured, the post-processor (verifier) has the option to manually enter/select the field content in the Web Verifier *(front end)*. They are supported by definable rules and autocompletion here.

For example, the system ensures that the invoice date is not in the future.

4.3.2 Information to be read

The following information must be read or captured from the document:

- Invoice recipient
- Supplier
- Document type (invoice/credit note)
- Invoice number
- Invoice date
- Gross amount of the invoice
- Value-added tax rates, value-added tax amount and net amounts (up to 3)
- Currency

Required checks in the standard scope

The fields of the invoice recipient and of the supplier are subject to required checks and cannot be "overridden." All other fields can be "overridden" and therefore submitted empty. If other required checks are relevant for the follow-up process, they can also be defined in the project scope.

4.3.3 Rejection

If a document cannot be processed in a meaningful way in the invoicing process (e.g. it is a delivery note, the document is unreadable, etc.), it is possible to "reject" the invoice and place it in the "REJECT" document class.

As a result of this rejection, the document is not passed on to the follow-up process (PROXESS Workflow/Archive).

4.3.4 Value-added tax rates

The tax rates are stored in the *BL_InvoiceMatchingDB* (table: SFI_VAT_RATES) and can be adjusted for compliance with new legal requirements. The configured tax rates are used for automatic searching of tax amounts and tax rates in the document.

4.3.5 Country codes

The country codes are stored in the ISO alpha-2 format in the *BL_InvoiceMatchingDB* (table: SFI_COUNTRY) and are used to check various different legal requirements depending on the country.

4.3.6 Amount checking

The gross amount (final invoice amount), value-added tax and net amounts are identified using different processes. Combinations of gross amounts, net amounts, value-added tax amounts and value-added tax rates are searched for here.

Final invoice amount

The final invoice amount is determined using valid net amounts, value-added tax amounts and rates as well as gross amounts. The correct mathematical correlation between the net amounts, value-added tax amounts and the gross amount is checked here.

Rounding precision

In some countries (e.g. Switzerland and Japan), it is necessary to round final amounts of invoices to a certain level of precision (e.g. 10 Swiss centimes or 1 Yen). This rounding precision for the respective country is specified in the SFI_COUNTRY table in the CO_ROUNDING column. If the column contains a rounding level, both final amounts rounded to this level and non-rounded amounts are taken into account during final-amount searches. If the final invoice amount was not output rounded for a specific country, the rounding precision can be set during manual post-processing.

Multiple value-added tax rates

By default, it is assumed that there is a value-added tax rate on an invoice. Multiple tax rates can be activated for the respective vendor using the “Show/Hide Field” menu item. (up to 3)

4.4 XML export

For further processing in third-party systems, exporting of a text file in the XML format with all relevant document data occurs at the end of the Document Reader process. The generated XML file is added to the corresponding image stack and can be further processed by third-party systems.

The path where the XML file is saved is composed as follows:

\\SERVER\DocumentReader\Invoice\Exchange\“StackName”\Export.xml

The structure of the XML file is described in Table 4.5. The fields available in the default export are defined in Section 0.

XML section	Description
XML header	Information on the structure of the XML file
Stack attributes	Stack information Structure: Key="Stack attribute" Value="Value" Example: Key="RecipientNo" Value="001"
Document attributes	Information on the document, such as the path to the document Structure: LocationID="Page name" ... Path="Path to page" Example: LocationID=" PBInvoicePDF.pdf:0" ... Path=" \\SERVER\smartFIX-System\Invoice\Exchange\PBInvoice_00001\PBInvoicePDF.pdf:0"
Field attributes	All fields marked with "Exp" in Table 4.2 Structure: Name="Field name" ... Value="Field value" Example: Name="INV_AMOUNT" ... Value="123.45"

Table 4.5 XML structure

An example export file and additional information can be requested through the respective project manager.

4.5 "SmartBlocks" functions

4.5.1 Delivery charges

With this *SmartBlock*, fields for delivery charges on the document level (e.g. shipping/freight charges, toll charges or discounts) are activated. Delivery charges can be found in a wide variety of different items on the invoices and can be learned using the item and key terms.

The fields for the delivery charges are factored into the calculation of the invoice amount and are not forwarded to the follow-up process.

The following rule is applied here:
The net amount total of the items, minus discounts and plus delivery charges, corresponds to the total of the net amounts of all VAT rates.

The delivery charges are added to the net amounts. The corresponding value-added tax is then levied on the total. Customs duties are an exception as they are added to the respective gross amount (i.e. net amount + VAT) (e.g. (net amount + freight charges + insurance charges) * (1 + VAT rate) + customs duties = total gross amount).

4.5.2 Conformity checking

Many European countries have legal regulations that stipulate which information has to be present on an invoice. These country-specific regulations stipulate, for example, that an invoice always has to have an invoice date, invoice number and the complete address of the invoicing party. With conformity checking, invoices are checked in accordance with the country-specific specifications. These checks are based on the specifications of the EU (European Union), where country-specific checks are specified for the following countries:

- DE (Germany)
- AT (Austria)
- FR (France)
- IT (Italy)
- ES (Spain)
- NL (Netherlands)
- FI (Finland)
- HU (Hungary)
- LU (Luxembourg)
- RO (Romania)
- SI (Slovenia)
- UK (Great Britain)
- CH (Switzerland)

Conformity checking is always based on the regulations of the country of the invoice recipient, which is determined by the VAT ID of the invoice recipient.
If the sender and recipient are in different EU countries, the VAT ID of the invoice recipient and invoice sender is used to additionally check whether the delivery is an intra-community delivery (cross-border delivery within the European Community).

Calculation of the value-added tax from the discounted net amount

In some countries (e.g. Belgium), it is common for the value-added tax amount to be determined based on the discounted net amount. For this type of invoice, special logic can be used. This takes the cash discount often deducted from the net amount into account when searching for the value-added tax amount. This special logic is currently activated for Belgian invoices.

Example calculation of the value-added tax from a discounted net amount:
Net amount: €100
Cash discount: 10%
Discounted net amount: €90
VAT amount (VAT rate: 21%): €90 * 0.21 = €18.90
Final amount: €100 + €18.90 = €118.90

4.5.3 Substitution recognition

With substitution recognition, a substitution check is activated during verification for each vendor. A substitution exists if an incorrect value has been confirmed during document analysis, i.e. an incorrect value was evaluated as “correct” (green). If a user frequently has to

correct a field during manual post-processing, the system learns that they are systematic substitutions. As a result, the field is automatically evaluated as “system suggestion” (blue) for future analyses, where manual checking must be carried out. If this is no longer necessary, it is possible to activate/deactivate checking of the field with the “Field/Always Check Field (Ctrl + Shift + F)” menu item.

Substitution recognition is always active for the following fields by default:

- INV_DATE (document date)
- INV_NUMBER (invoice number)
- INV_NET_AMOUNT1 (net amount) and
- INV_AMOUNT (total amount)

4.5.4 Automatic e-mail import

Email import makes it possible to transfer attachments of an e-mail from **one** inbox of an e-mail server to the system. The assignment of the invoices as an attachment for each individual e-mail is important here:

- A PDF attachment is expected for each invoice / credit note.
- Multiple invoices / credit notes in a single PDF attachment have to be separated manually in the Document Reader.
- Multiple PDF attachments (documents) can be made to an e-mail.
- *Shared* inboxes cannot be connected.
- If *Office365* is used, *“2-step authentication / Modern authentication“* cannot be activated for the inbox.

For communication with e-mail servers, the following interfaces are supported:

- EWS (Exchange Web Services) from Exchange Server version 2013
- MAPI (Messaging Application Programming Interface) for Exchange Server version 2003
- IMAP (Internet Message Access Protocol)
- EWS OAuth2 (Exchange Web Services, with OAuth2 authentication for Microsoft Office 365 accounts)

4.5.5 Bar code generation

If the document was read into the *PROXESS Document Reader* via automatic e-mail import, a bar code number can be generated using a standalone counter and assigned to the document.

Bar code number range for automatic issuance via Document Reader e-mail import:

Numbers from: 0000 0001 to: 0200 0000

4.6 Additional functions available for purchase

4.6.1 Duplicate checking

The duplicate checking function checks the incoming documents for duplicates and notifies the user of a duplicated document.

All documents which are captured and processed with the Document Reader are saved with the following information in a separate database table:

- Invoice recipient (client)
- Supplier number
- Document number

If these values are recognized during the initial analysis and there is already a duplicate contained in the table, the field “Duplicate found” is shown and checked directly in the processing mode.

If the values change while a document is being processed in the Verifier, duplicate checking is carried out once again in the Verifier after processing is completed (during the export attempt). Here as well, the designation “Duplicate found” is set and the document appears in the Verifier again.

This guarantees that documents which need post-processing in the Verifier are also checked again.

4.6.2 IBAN check

All IBAN alternatives on the document are read with OCR. These alternatives are evaluated with regard to the probability of a valid IBAN. Up to ten alternatives with the best probability are compared to the IBAN of the recognized vendor.

If one of these ten alternatives matches the master data, an indicator (“IBAN found”) is set in the Verifier and confirmation occurs immediately.

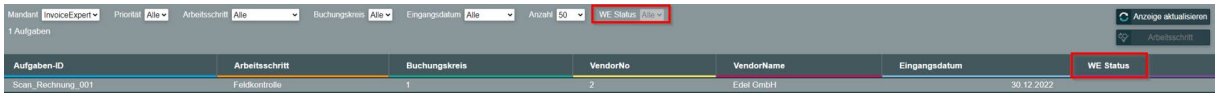
If none of these ten alternatives match the master database, this indicator is not set and confirmation must occur manually:

This therefore indicates that the main bank connection information in the vendor master database is not correct/current.

4.6.3 Delivery check

During the analysis of the invoice, the system checks whether there is an order/delivery associated with the identified vendor.

In the stack overview of the Verifier, there is a new column “Goods receipt status” which shows the recognized status in the task overview. Using this status, the hitlist can be filtered at the top:



If no order reference is recognized, the goods receipt status is set to **“No order reference recognized.”** Hence, those are the invoices without an order reference or cost calculations.

If an order reference and a delivery reference are found, the status is shown as **“Goods receipt posted.”** These invoices have a delivery reference and can be processed.

If an order reference but no delivery reference is found, the status is shown as **“Goods receipt pending**.”

All invoices with goods receipt status “Goods receipt pending” are deferred once per night and checked again for goods receipt, and the goods receipt status is reset according to the criteria described above.

After three days without record of goods receipt, the goods receipt status is set to **“Goods receipt overdue.”**

4.7 Authorizations

Every Verifier user has full access to all documents. This can only be changed on the level of the PROXESS Document Reader configuration.

4.8 Licensing

The license permits use of the PROXESS Document Reader on the server and on all clients that communicate with the server. A volume-based license is also used as a basis.

This license is issued for a throughput volume which can be processed with the license.

DIN A4 is the valid reference size for processed document pages. For document formats larger than DIN A4, a conversion to the basic size DIN A4 is carried out, i.e. in the case of DIN A3 the number of document pages to be processed is doubled.

If more than the contractually agreed upon pages have been processed using the Document Reader, they are subsequently licensed at the end of the year. Should you have any questions, your sales contact would be happy to help you.

Unless otherwise indicated, the license is open-ended.

5 Glossary

This document uses technical terms whose definitions are essential for the precise understanding of the context.

Client

The client represents the highest authority for the operation or management of various different organizational units (e.g. different business divisions or different customers) or different products (e.g. smart INVOICE, smart PKV) on an installation. The individual clients have their own document definitions and individual configuration options.

Correction

Correction is the activity where classification errors, document and process separation errors and page order errors in image stacks are remedied. Image stacks requiring a correction are in the “supervisor” state. Additional authorization is required to correct image stacks in an interface intended for this purpose.

Database comparison

A database comparison is a comparison of read field content with the content of a database.

Documents

A document is comprised of one or more pages whose content belongs together, e.g. incoming invoices.

Image

An image is an electronic copy of a document, e.g. a scanned sheet of paper.

Image stack

An image stack is a number of images or electronic documents.

Learned data

Learned data is created during processing per vendor and determines the items and structure of the field content. Learned fields are listed with “learn” in the tables of Section **Fehler! Verweisquelle konnte nicht gefunden werden.**.

Learned key

The learned key is created using the vendor number and is used for the unique assignment of learned data in the document.

MatchingDB

The matching database is a system-internal database. Parts of the company database required for database comparison are mirrored in it.

OCR recognition

OCR (Optical Character Recognition) refers to text recognition within images. In this process, characters contained in an image are converted to text through optical recognition.