Document to Knowledge™
A CANON COMPANY

IRISXtract™ for Documents

Solution Package
Accounts Payable
Version 7.0

Specification
Administration Guide

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1. Introduction

1.1 About this Document

This document guides through the configuration and usage of the **Solution Package Accounts Payable** (afterwards **SP AP**) version **7.0** based on **IRISXtract™ for Documents** (**X4D**) version **5.0**. Additionally, for the installation and integration purpose the adequate parts of the **X4D** installation guide has to be used and should be known. There is a special chapter for integrating **Solution Packages** within an **X4D** environment in general since system **version 5**.

This document builds up on the knowledge of the basic document processing strategies within an **X4D** system. Thus, it starts with a short overview about the invoice processing in **X4D** that is enabled by **SP AP**, before the comprehensive administration guide itself with the specific application configuration based on the provided sample project follows.

1.1.1 Conventions

This document uses typographical standards and graphical symbols as described in the following.

Special headings and icons mark notable information. There are certain types of alerts with specific symbols used throughout this manual. Each symbol indicates one of the following:

Important:

This symbol indicates important information that you have to read and remember. Failure to observe these instructions may lead to errors or malfunctions. Configurations or data can be lost as well.

Note:

This symbol indicates information that you should read and follow. Failure to follow this information may lead to unexpected function.

Tip:

This symbol indicates additional information and useful tips.

For a reference to external documents, especially third party documentation, there is a special notice using an alternative symbol:

Reference:

This symbol indicates information that you should read from an external document. Failure to follow this information may lead to unexpected function.

Table 1: Common Language that X4D User Guides or Manuals Use

Emphasis	Function	Example
Bold letters usually with an arrow as a separator	Menu items and entries. Can be clicked on with mouse	**Start > Settings > Control Panel**
Bold letters all caps with big initial letter	Names of specific software, technology, engine or component names	**SOLUTION DESIGNER**
Italic bold letters	Specific application roles, parameter sets or optional functions.	A ***Verify Supervisor*** workstation
italic mono spaced letters within quotes	File and Folder names	***"C:\Program Files\IRISxtract"***
Common styled scripting code poss. with light gray background	Declarations, parameter sets or functions, of an API (so as code) used in an IDE or XML editor	`' Input and output folders` `Dim oFSO : Set oFSO = CreateObject ("Scripting.FileSystemObject")`

1.1.2 User Skills

Keep your technical skills in mind before using this manual and getting started with the **Solution Package** in an **X4D** Environment.

You should handle this manual and **IRISXtract™ for Documents**, including all of its software components, with due diligence and care.

Prior using **SP AP,** we recommended that you go through this manual. As the reader of this guide, you must have the appropriate knowledge of **IRISXtract™ for Documents.** In addition, you must be generally familiar with SQL databases and the compatible operating systems.

You must have the knowledge that is common for system administrators or software engineers to ensure correct installation procedures and use of **IRISXtract™ for Documents**. If you do not, I.R.I.S. AG does not exercise accountability for any negative results as an outcome.

This document primarily addresses administrators, application integrators and users that provide Master Data for **X4D** applications in the designated Environment.

Note:

This guide is not directly addressing the typical end users who are doing data capturing work in the invoicing and accounting departments. For these users the documentation of the **X4D** component **VERIFY** is recommended because they generally only interact with **X4D VERIFY**.

This guide requires a basic knowledge about application project developing and configuring an **X4D** system. This can be achieved by graduating **X4D** trainings. If you feel you do not have the proper knowledge, please get in contact with the *I.R.I.S. AG*.

1.2 About Solution Package Accounts Payable

Solution Package Accounts Payable is part of the **Intelligent Document Recognition** (**IDR**) solution platform, **IRISXtract™ for Documents**. **SP AP** interprets the complete text of national and international invoices, credit items and non-purchase-order related invoices. Using its generic rule sets, this solution processes the documents, captures header and footer, data as well as line-items. The extracted data is then ready to be passed to integrated enterprise technologies for further processing.

Figure 1: X4D Content to Process Solution

I.R.I.S. created **SP AP**, using knowledge from many years of experience, numerous projects, and customer feedback.

The core technology, **XContext** engine, is easily managed and flexible to use as it does not need any creditor specific templates to function. A broad range of configurable options can address each of your organizational requirements. Additionally, it is easy to connect to ERP, CRM, ECM, archive, and workflow systems.

Features

1. Reference Reconciliation:

   A very efficient, rough reconciliation tool compares reference and transaction data. By searching for familiar account information, such as a tax ID number, supplier's IBAN, address or telephone information, it is possible to assign a document to, for example, the corresponding supplier. This can also add and correct missing or faulty information (by the help of the verification component of **X4D**). For invoices with an order reference, it is possible to make a technical analysis to consolidate invoice data from received goods and orders.

2. Highest Extraction Performance:

   By using state of the art character recognition software (I.R.I.S.' **iDRS**) combined with the features of **XCONTEXT** (full-text recognition and the excellent table finder), **X4D** achieves the highest possible extraction performance. This includes complete table comparisons of complex table structures and processing fields with up to five decimal places.

3. Content Check:

   Content checking is done after the information has been extracted off of the document. First each individual data field's syntax is checked using regular expressions ("RegEx" or "RE") and look-up tables. Then, interactions between several fields are examined. The result includes information gained from the reference data.

4. Controlled Capture Training:

   Through post-processing in the **IRISXtract™ for Documents VERIFY** workstation, the recognition performance for special cases can be increased. Controlled training can also be applied to table columns. As regards article text, different positions on the first and subsequent pages might have to be taken into consideration.

5. Scripting Interface:

   X4D is an extremely malleable software. The recognition and extraction component, **ANALYZE,** can be changed via scripting as well as the other **X4D** components **IMPORT**, **VERIFY** and **EXPORT**. In some cases the default implementation settings and comprehensive configuration options do not meet the necessary specifications. Then, **X4D** offers a powerful scripting interface with unlimited options for customization on data and component level.

6. Customization:

   Customizing **X4D** to use **SP AP** starts with a simplified installation and adaptation to the **X4D** Environment. **SP AP** can be adapted to meet individual needs by the **SP CONFIG PLUGIN**, a straightforward interface for the project developing tool **SOLUTION DESIGNER.** This allows simple configuration and customization of the invoice solution using a series of 'yes' and 'no' options. By binding **Visual Studio** as developing tool for customizing applications Add-Ins the powerful scripting options are available for you too. Additionally, numerous settings and alterations can be made quickly and easily via Training function within **VERIFY**.

Functionalities

- **SP AP** is a well prepared solution whose main processes can function out of the box with availabilities for adaption and configuration when necessary
  that represents most of the actual processes out of the box also considering adaptions for future documents
- The most productive solution for handling invoices
- Ability for easy and flexible integration and management
- Based on a trusted and freely scalable platform
- **SP AP** is optimized for the processing of invoices by using a special extraction workflow
- It allows for virtually unlimited volumes of documents with a throughput of up to thousand invoices per day
- Invoice processing with an intuitive and user-friendly interface, supporting special functional requirements
- Integration of a very powerful Training mode
- Possibility for an efficient configuration of individual necessities in many areas
- Enhanced implementation of different OCR languages independent from underlying Windows® operating system
- **SP AP** takes great advantage of the Master Data handling of **X4D** (**XMasterData**) with its benefit in loading times, network traffic and memory usage reduction, and an improved fuzzy matching strategy
- Support for Add-in scripting with VB or the powerful .Net libraries within **V**isual **S**tudio as IDE (**I**ntegrated **D**evelopment **E**nvironment). This provides the application adaption by modifying the system project as well as the **X4D** project.
- Easily to integrate in the **SETUP WIZARD** for performing a quick automated installation of the solution package into the **X4D** system

Strategies of Extraction

SP AP combines the **X4D** features with the knowledge of invoice processing and builds up its major strategies, which are applied in the extraction process. Certain document criteria, which are specific for invoices of any kind, are checked and additional application specific settings are loaded to fulfill extraction strategies.

The recognized and extracted document text, furthermore called "Freetext", is structured. This is a segmentation of the optically recognized characters, representing words, strings, dates, amounts, barcodes or even combinations of these items build up as logical blocks. These contextual founds are further on called segments.

- Results of full-page reading (also with correction of segmentations as e.g. barcodes)
- Matching of Master Data (suppliers, orders, currencies, quantity units, etc.)
  – synchronized with data from the connected enterprise content management system
- Direct semantic rules
  For example:
  - Found in table rows:

$$\left(Quantity \times Price\ per\ unit\ \times \frac{1\ -\ Discount\ rate}{100}\right) +\ Extra\ charge\ = Total\ amount$$

  - Commonly found in the table footer:

$$Invoiced\ value\ of\ goods\ +\ Extra\ costs\ (no.1, 2\ or\ 3) -\ Discount\ =\ Net\ amount\ (no.1; no.2)$$

  - Found in the table footer:

$$Net\ amount\ (no.1; no.2) +\ Value\ added\ tax\ (no.1; no.2) =\ Gross\ amount$$

- Heuristic semantic principles
  For instance:

  "The invoice date is the most recent date found on the document, which is not in the future."
- Keywords and regular expressions (invoice number, document type)
- Conventions on geometry and structure (invoice number should be in the upper half of a page)

Execution Tasks of the Solution Specific Extraction

The invoices processing within **SP AP** generates the document result by the following default execution order:

1. Check for the activation of ZUGFeRD (a German specification for electronic invoices) treatment
2. Configuration check of influence by external Master Data.

	Document Processing with Master Data	Master Data Less Document Processing
3.	Determination of addressee or company code (search) depending on the configuration	Skipped
4.	Automatic creditor identification according to the **SP AP** parameter settings	Skipped but Add IBAN search (based on the format)
5.	Platform and **XCONTEXT** searches are triggered for the following:	
a.	Document date	
b.	Document type, invoice no., currency and additional search fields	
c.	Recognition of a Table-with positions	
d.	Footer items (gross, net, tax)	
e.	Order number(s) on position lines	Skip search for database order numbers (search by keywords is recommended)
f.	Global order number	
6.	Extraction of terms of payment (target, discount, gross amount, etc.) depending on the configuration	
7.	If activated, optional determination of Due date	
8.	With creditor specific training function activated:	Skipped, if the training reference is *not* set to something else than the creditor ID!
a.	Trained regions and	
b.	Trained specific table regions	
9.	With creditor specific finishing function activated: Optional finishing of field contents	Skipped
10.	If activated, optional searches for additional items and functions according to custom scripting	
11.	The validation checks the **SP AP** field constraints. As part of this, the position data is matched to the order information	The transaction database matching is switch off!

Note:

Those searches/functions are not processed, if any former one already filled a field value, except footer and trained fields. Field training will always overwrite any results found before. There are no footer searches done by **SP AP** at all, if any footer field is designed in the document template.

Additional process extensions are possible by scripting customized function calls for any search field anywhere before or inside this sequence. Nevertheless, a seriously influenced document result may be expected.

2. Document Processing with the SP AP

Documents may be available in digital form (e.g. e-mails) or a scanner can be used to digitize them. In both of these cases, the documents are converted into image files (TIFF) for further processing by the **X4D** system. The task of **X4D** is to extract any required information from these digital documents and to present it for further processing, for example by an ERP (enterprise resource planning) system.

The procedure within the **X4D** system can be represented in brief as follows:

1. Digitizing documents, e.g. with **IRISPowerScan for X4D** and a scanner or with **XMailFetcher** for e-mails with attachments
2. Importing documents into the system by the **X4D** component **IMPORT**
3. Analyzing the document and extracting the required data by the **X4D** component **ANALYZE**
4. Verifying the result data in the **X4D** component **VERIFY**
5. Exporting data for subsequent processing systems as for instance the ERP by the **X4D** component **EXPORT**

The **SP AP** is a specialized application solution for this procedure with a prepared configuration. Therefore, it has a specific design for processing and handling of certain documents types.

2.1 Document Preparation

SP AP can handle the separation of documents and the tagging of attachments. If there is a scan client or a preceding archiving workflow, **X4D** can channel in advance separated documents for batch processing. **SP AP** can either tag attachments in a predefined manner or handle this by using barcodes or divider sheets.

Prior to scanning, invoices are prepared for further processing:

- Invoices and their attachments (where applicable) are separated into individual documents. The use of special dividing sheets or barcodes (either on the invoice or on the dividing sheet) allows this.
- Within the invoice, the first page being no part of the invoice gets a tag defining the beginning of the attachment. Specialized dividing sheets or barcodes are also suitable for this. The attachments can get a standard, uniform tag, as **X4D** is not processing their content any further.

Tip:

Using barcodes makes it easier to correlate the physical documents with their digital versions.

By using correctly configured scanner software (**X4D** additional **XSCANCLIENT** for instance) or **XMAILFETCHER** the scanned or received documents can by separated prior the processing as invoices with attachments also.

2.2 Document Types

In **SP AP** the data capture workflow of **X4D** is used but only the following document types are considered during the processing:

Purchase-order related invoice:

These invoices are processed by logistics invoice verification.

Non purchase-order related invoices:

These invoices are processed by incoming invoice verification.

Credit notes and prepayments:

These document types can also be treated as invoices.

No other document types are considered!

If other types than the above mentioned should be considered the necessary application project must be designed with its document types, scripts and settings by the use of the **X4D DESIGNER** and **SOLUTION DESIGNER.**

The document type can be invoice (**R** = [Ger.] "*Rechnung*") or credit note (**G** = [Ger.] "*Gutschrift*") and additionally they have an order reference (**MB** = [Ger.} "*mit Beleg*") or not (**OB** = [Ger.] "*ohne Beleg*"). This results in the combinations of abbreviations for the four known types:

RMB = order-related invoice

ROB = non-order related invoice

GMB = order-related credit note

GOB = non-order related credit note

If an invoice or credit note has been determined and an order reference exists, then there is no problem with the document type. If the search for an order reference has failed, a number of situations may exist:

- An order reference is not available on the document
- Some read errors occur
- There is no order reference present in the Master Data

Only in case of exclusively processed non-order related invoices, it is necessary to switch off the confirmation of the document type.

2.2.1 Table and Order Number

If one or more order numbers are found, then these are allocated to the positions. At the same time the document type switches to RMB or GMB (purchase-order related invoice or credit note).

- If just one order number is found, then this is written as the order number to the first field group (head data) and transferred to the table.

- If multiple order numbers are found on a document, then these are directly entered into the position data, depending on their location relative to the position row. In this case, the field Order Number in the first field group is left empty. All order-number candidates are compared with the transaction data and available ones are used.

The purchase-order reference is the primary case differentiation for the behavior with regard to the presence of position data (table). The parameter settings in the configuration (*see section 6.3.14 "Table of Position Data"*) are used to control the tables with regard to the purchase-order reference.

These settings depend on the requirements of the connected ERP system.

2.3 Content and Professional Data Assessment

Nuanced Content Treatment

According to the document type and its extracted content there are some specialized and nuanced opportunities in treating the further content assessments. Especially the process differs according to given document text for instance within ZUGFeRD invoices. This is checked in case option is activated and the imported PDF-A3 document is recognized to have included a ZUGFeRD specific XML structure. Currently, ZUGFeRD documents have to be run through the **XMAILFETCHER** to get the embedded invoice data from the PDF.

Content Assessment

Subsequent to the analysis, the invoice content is checked. This initially involves a syntax check of the individual data fields based upon regular expressions (e.g. date field, amount field) and look-up tables (e.g. currency field).

Continuing, the interrelated content is checked between several data fields (e.g. is the gross amount equal to the sum of the net amount plus sales tax). Finally, the Master Data tables are used derive information (for example, the creditor number can be determined with the bank account information read from the document).

All fields which cannot be classified as "read with confidence" by two alternative recognition processes (character recognition, syntax, or semantic checks) can be subjected to compulsory display at a **VERIFY** workstation for visual inspection according to the double verification principle.

Further Content Assessment

There are two fundamental operating modes of content assessment, which vary due to the recognition of document type. Considering the obvious advantage of ignoring useless verification queries on position fields if documents are invoices without tabled positions, the solution package provides an alteration on the document template in **VERIFY**. This feature will also change the behavior and layout design of the field groups in **VERIFY** depending on the used template. These document templates can be configured with the **X4D DESIGNER**.

Professional Assessment

A professional assessment is carried out in addition to content assessment. This initially involves a further check of all purchase-order related invoices. For example, automatic checks find an agreement between the positions read from the document and the transaction data in the ERP system (e.g. order or receipt of goods). All that remains for the final manual professional data assessment is a check of the position records, which could not be allocated automatically.

Further Professional Data Assessment

Once position records have been allocated, invoice fields requiring more detailed accounting knowledge usually have to be corrected (e.g. confirmation of a creditor at variance with the order, checks on tax codes for foreign invoices, etc.). This task is carried out either in the workflow subsequent to **X4D** or prior to the ERP system.

2.4 Verification

Subsequent to the analysis, all digitized invoice data is subject to manual checks with the double verification principle for the following type of invoices:

- where the analyze checks do not yield a full set of data
- Where rule types (semantic, data comparison, algorithms, etc.)
  cannot automatically confirm the content checks

Master Data from the ERP system supports the processes of recognition and checking. Consequently, the data exported after the capture process has been read and assured to be correct.

2.4.1 Working with X4D Verify

The **Solution Package** changes two obvious parts of the **VERIFY** main window and adapts the graphical user interface:

1. The fields input mask
2. The function menu and shortcuts

The extensive range of standard functions in **VERIFY** has been extended furthermore based on the integrated component scripting. The extension script is always a part of the **Solution Package** project.

Tip:

Most of the **VERIFY** functions are self-explanatory.

We recommend to read the additional **VERIFY** documentation and that you try out the **VERIFY** functions with the demo batches included in the Solution Package.

The input masks

According to the displayed document type, the input masks (“edit views”) show the specific data fields for each document as a form. In the case of line items, as table of position data, the lower area is organized by the respective field group (see *chapter 4 “Data Model”*). **VERIFY** displays two kinds of input mask types within this **Solution Package**:

1. The header and footer fields within the common edit masks with region fields
2. Position fields within a table view

Menu items and Shortcuts

The **SP** adapts **VERIFY** with special function calls and thus menu commands that are grouped into the submenu “**Options**”. Each group can be displayed or concealed system wide by parameter settings (see

section 6.5 "Verify"). It is also possible to limit the display of specific menus to the **VERIFY** supervisor or certain Windows users.

All of the important menu commands can be called via the menu or directly via keyboard shortcuts. If a shortcut is set for a key combination, it takes priority over the standard menu functions.

The list of solution specific functions in **VERIFY** can be reached in **VERIFY ADMIN** within the menu item **Options > Scripting > Show Verify's script functions**.

A full list of the default **VERIFY** shortcuts can be found under **Options > Options** on the **'Shortcuts'** tab. The integrated print function there can be used to make a print out of the list of shortcuts. This is especially useful for the end users at the beginning of the project phase.

2.4.2 Training

The full-text analysis of **IRISXtract™ for Documents** generally finds the required information in the documents automatically at the correct location. In some cases it can be hard to determine the correct information. Thus the user can improve this by influencing the results of the **XCONTEXT** engine shown in **VERIFY** by the training function.

There are two possibilities in training of fields:

- Training of a particular creditor ID by using dactylograms
- Other fields even with combination of their specific search field configuration

Through training, the generic extraction rule types are supplemented with additional, creditor specific information serving to optimize the extraction quality. If the creditor identification fails, a creditor-specific training is not possible.

The execution of training functions are processed within the normal invoice processing order, which is also described in *chapter 1.2 "About Solution Package Accounts Payable" section "Execution Tasks of the Solution Specific Extraction".*

Training of dactylograms

In most cases, the creditor can be determined by the standard methods. If the creditor cannot be reliably determined from this information, then a dactylogram can be trained to recognize a "finger print" of the documents that can uniquely identify the creditor. A dactylogram is a region of a document where the same text is always to be found. The content of this text is unimportant.

Advise for Creditor Specific Training

If a creditor specific training is integrated, consider the following:

- A creditor has to be found, otherwise the training is not available
- A single part of a segment cannot be trained
- Always whole segments are trained even if they are not completely inside the trained area.
- Training replaces the generic SP AP search result
- Training depends upon the layout; different page layouts of one creditor are differentiated
- Training can be made more fuzzy by definition of a concrete training area around a bundle of segments

- Training is configured in correlation to the region type (amount, date, decimal) or to an existing search configuration
- Table fields are trained by their relative distance to the positions' total amount
- Training is possible in two ways:
  - > With area and content checks (regular expression)
  - > Only with area checks (e.g. article text)

Training of Fields

Training involves the allocation of a region to a field (i.e. search an area of the document). This newly learned region is then searched on all subsequent documents of a similar type from this creditor. If a creditor uses a variety of different documents, **X4D** will immediately recognize the document's layout. The combination of the current creditor and the current document layout leads to the correct allocation of the trained region to the field. Documents from the same creditor but of a different layout can be handled by training the field over. This does not influence previous trainings.

When a region is allocated, training simultaneously involves an investigation of the expression which is found. From this result, a regular expression is generated which users of the training data can use to check the results of the search.

Example

During training, the article number "12345" is found within the highlighted region.
This is useful for constructing the regular expression [ZZZZZ], which accepts five-digit numbers as a result.

Subsequently, **X4D** searches the trained regions of the documents for numbers of this format.
In order to permit article numbers in a different format, training can be repeated.

If, during a later training, the article number "1234567" is found in the highlighted region, **X4D** then generates a regular expression [ZZZZZZZ] for results with seven digits.
This regular expression is an alternative for the trained field and is supplemented to the expression with the pipe symbol; the full regular expression is thus [ZZZZZ]|[ZZZZZZZ].

During training, the regular expression which applies to the field is shown in a message and it can be viewed again with the menu command **View > Training: Information**.

Note:

During training, the marked region is always defined as the new search area for the field. If a field is trained several times, then it is the most recently trained region that applies for the following analysis. However, the regular expression is not replaced, but supplemented. Should a trained field produce false results because of an unsuitable regular expression, then the training for the field has to be removed and carried out again.

- If training is carried out for a field where the result is expected to be a date or an amount, no regular expression is generated.
  Checks with specialized regular expressions for 'Amount' and 'Date' are retained.

- Similarly, training does not generate regular expressions for the 'position article text' fields or for fields with user-defined searches.
  In the first and third **VERIFY** mask (field group “1a” and “1b”), only static regions can be learned.

  Example

  If the invoice footer (third field group “1b”) is located under the position data, then the invoice amount cannot be learned. This is because the position of the amount would always be varying on different invoices when the table of position data has more or less lines.

- In the area of position data (second field group “2”), all fields can be learned as part of a table (e.g. order number).
  The position fields Amount, Price and Total price can also be learned (available since **SP AP** version 3.0).

Tip:

As with all creditor-specific settings, training is only worthwhile, if the creditor can be determined automatically first.

2.4.3 Clearing and Finishing

There are additional, creditor specific revision functions for the document processing and its field verification included within the **Solution Package Accounts Payable**. These two certain functions called “Clearing of fields”, a clarification step for the respective field within **VERIFY** and “Finishing” or even “Custom finishing”, an improvement of the document workflow.

Clearing

This can optionally be activated during verification for certain fields, so that these fields are marked to be checked for validation.

Note:

Clearing is **not** possible to use for fields used within a table group as the table of position data

By the help of the configuration parameter “*InvoiceNumber_Activated_Clearing*” the **VERIFY** functions can be activated.

Finishing

This is the opportunity to subsequently change the field values automatically if the recognition constantly failed to find correct content.

Finishing offers very flexible options for the definition of RE (Regular Expression) commands for the vendor-dependent processing of search results.

Finishing commands of various types can be used:

- Based on finishing master functions
- With simultaneous definition of the search region (training)
- By pre-setting in the configuration parameters of **SP AP** (custom finishing)

The finishing functions can be used specifically to the project. With the **X4D DESIGNER**, master functions can be extended by your own implementations.

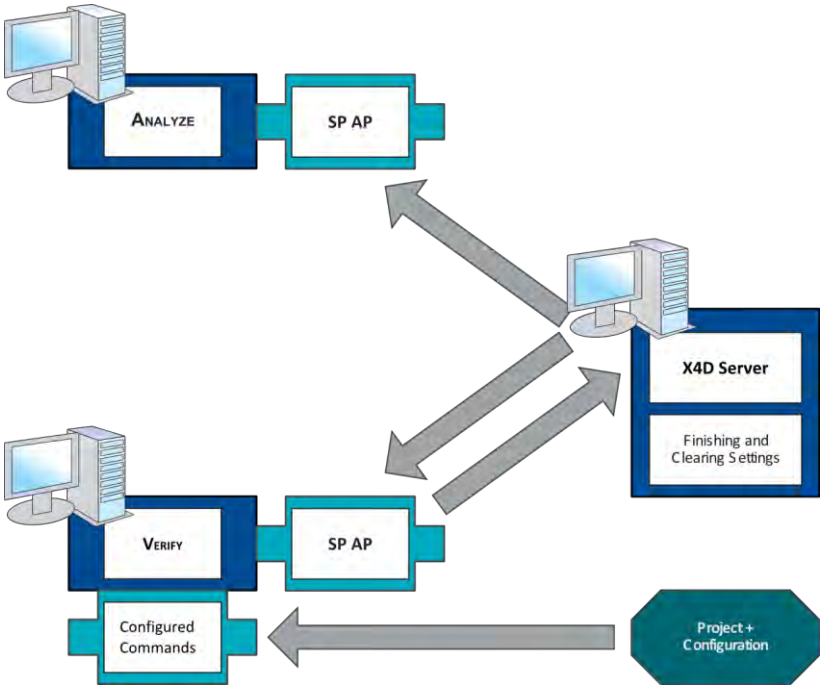

Figure 2: Illustrating sketch about the structure of finishing

- Finishing commands are partially contained in the **SP AP** (**master functions**) or they are generated within the scope of the project configuration (**custom finishing**). These commands are available in **VERIFY**.
- **SP AP** stores the commands along with the respective creditor ID on the **X4D** server.
- **SP AP** calls the commands for the respective creditor ID from the **X4D** server.
- When processing documents, **X4D ANALYZE** operates via the **SP AP** to call the commands for the respective creditor ID from the **X4D** server.

2.5 Exporting Output Data

Once data capture is complete, the exporting from the **X4D** system starts and the document result data is written out in XML format ready for further processing.

Reference:

Please refer to the available in the **X4D** system documentation for more detailed information on subject of the **X4D** component **EXPORT**.

Along with the standard format of the **EXPORT**, **SP AP** generates project-specific data structures during the export process.

If the jobs are fully processed and a subsequent system has to receive them, **EXPORT** can carry out a specialized reformatting and re-naming, which **SP AP** can control.

Impacts Regarding ZUGFeRD Aspects

Please consider that there are certain different behaviors concerning the invoice processing and the export results if handling of ZUGFeRD documents in Import is activated.

Here is a scheme to show the respective behavior for the relevant region fields, because SP AP is using its own output data model:

Imported ZUGFeRD PDF Fields	SP AP Fields	Export Result Fields
Field A	- NOT -	**- NOT -**
Field B	Field B	**Field B**
Field C	Field C	**Field C**
- NOT -	Field D	***Possibly available by a parameter switch***

3. Application Configuration

IRISXtract™ for Documents uses parameter records bundled in the so-called "**project**", which is created for each typical application being processed. This project receives all of the configurations and is self-contained. A project is editable or more precisely developed within the designing tools **X4D DESIGNER** and the **SOLUTION DESIGNER** only. The **Solution Package** supplements this project configuration with additional parameters within the example project. These are edited with a special editor Plug-In within the **SOLUTION DESIGNER**, the **SP CONFIG PLUGIN**. With this approach, there is no need to use the **DESIGNER** for parameterization. Normally no other project configurations have to be changed during common document/invoice processing. The rest remains to project development topics or simple synchronization of Master Data.

Creditor Specifics

It is possible to control the system's processes according to the creditor. This includes the following functions:

- The specifically training of fields
- The activation of certain clearing fields with or without notices for the clerk
- Suppression of standard clearing fields
- Finishing of individual field content

Directly during verification (at the **VERIFY** workstation) they can be activated. The corresponding control data is then stored in the **X4D** system. These functions are located in **VERIFY** under the menu entries '**Document >**' and '**Options >**'.

3.1 X4D Configuration Versioning

To keep the once configured behavior of document treatment untouchable, **X4D** uses a versioning system integrated in the document result tree.

The results get a tag with the respective version number of the used application configuration. Therefore, every **X4D** component controls in any task of loading or opening jobs the marked version number that consists of three numbers with the following structure:

< Major version number >.< Minor version number >.< Build number >

The project filename "***Xtract_7_0_0.zip***" uses this numbering, but with underscore characters instead of the digit characters. The version number rises, if project configurations are changed and saved to the file system.

Simple changes, which do not have great impact in the behavior and with that ensure the downwards compatibility of the project, will be marked with only a raised build number.

Example:
An expression checks the appearance of a 9 digits number but now has to check if there are 10.

But if the changes do have effect on the whole process or document result due to a new region template it will be handled as a version update und will be marked with a raised minor or even major number. Therefore, if the major or minor version number differs from the original project, the **X4D** components will not use the newer version in a running job, even not in any other queue, until this job has finished its complete way through the workflow.

If version differences only occur in the build number– **X4D** checks this on every time a component is loading a job – the just opened job will not be resumed with its initial project configuration. The new project version will be used instead of the previous one. This will happen to the job when it is loaded the next time. This can also happen if a job is reloaded in the same queue or component.

3.2 Batch, Document and Page Parameters

The way in which the system treats a batch of invoices can also be controlled by batch parameters. For example, a batch can be processed without extraction of data from tables. This is useful if a batch contains incoming invoices only and no logistics invoices.

A batch contains a unit, a unit contains documents, and each document contains at least one page. At each level of this structure, an **X4D** system can handle parameters added to the images of the invoices in the import structure. These parameters can be set at the batch, unit and document level in the respective para.dat file. At page level, the parameters are stored in a file for each TIFF image.

```
Data\
        <Batchname>\
                para.dat                                Batch Parameters
                U00000001\
                        para.dat                        Unit Parameters
                        D00000001\
                                para.dat                Document Parameters
                                P00000001FX.tif         Page 1 Image File
                                P00000001.dat           Page 1 Parameters
                                P00000002FX.tif         Page 2 Image File
                                P00000002.dat           Page 2 Parameters
                                …
                        D000000002\
                        ….
Signal\
        <Batchname.scanned>                             Signal File
```

Figure 3: Standard Import Structure

The parameters are given in the respective "***para.dat***" file on the corresponding level and are always entered in the following format:

```
<TableSearch>0</TableSearch>
```

The follow-up parameters can be used to influence the behavior of the **SP AP**.

Batch Level

On batch level, the parameters are given in the ***para.dat*** file.

- **CompanyCode:**
  This defines the company code for all documents of the batch. This code is then used, no matter of the activation for the SP AP search function by the respective parameter “Search for Invoice Recipient”.
- **DefaultCountry**:
  This defines the default country commonly for the footer finder in case the creditor was not found. In this case, the country entered here is used to determine the taxation regulations (VAT rates). The entry corresponds to the value for country code in the Master Data table “***Master_EU.csv***”.
- **DocTypeClearing:**
  "N" deactivates the clearing of documents of type invoice and credit note without purchase order.
- **ScanDate**:
  Permitted values have the format “2006-12-31”.
- **TableSearch**:
  This defines the search mode for the table of position data. This setting overrides the global parameter configuration but however perhaps creditor specific settings within Master Data can override this here.
  - **“0”:** no table search;
    table is not shown in **VERIFY**
  - **“1”:** normal table search
  - **“2”:** **(former “N”)** table search only in background as support for footer search;
    table is not shown in **VERIFY**
- **FooterPage**:
  Limits the footer search to one specific page defined by the given page number. The first page of each document has number 0. If a document in the batch has less pages than the given number, the search is limited
  to the last page of the document.

Document Level

On document level, the parameters are given in the respective “***para.dat***” file. Parameters at this level are only worthwhile, in case of no document splitting and if **VERIFY** cannot conduct document splitting.

- **AttachmentPage**:
  the page counter starts with 1 on the first page of the document; the attachment page defines the first page number of the attachment
- **Barcode**:
  Barcode number for the barcode field

- **CompanyCode:**
  This defines the company code for this particular document. This code is then used, no matter of the activation for the SP AP search function by the respective parameter “Search for Invoice Recipient”.
- **KeyValue**:
  Content is split at the semicolons (separator character) and written out as regions in the result. Because of the separator usage, the key name and key value must not contain any semicolon.
  KeyNameA;KeyValueA;KeyNameB;KeyValueB

Page Level

On page level, the parameters are transferred to a file with the same name as the image, e.g. “***P00000001.dat***” for the first image.

- **Barcode**:
  The barcode of the relevant page.

3.3 Project Settings of the Sample Project

Within **SOLUTION DESIGNER** it is possible to open the provided the sample project and have access to its configuration.

In the following, we focus on the special project settings beside the later on view on the essential elements like the data model, the Master Data files or the parameter descriptions reachable with the **SP CONFIG PLUGIN**.

1. Open **SOLUTION DESIGNER** and load the sample project.
2. Wade to the menu item “**Project > Settings …**”.
3. Have a look on the Project settings.

In contrast to any new **X4D project** created within **SOLUTION DESIGNER**, the following settings found in the respective topic item are the special adaption of the sample project “Invoice”:

- **OCR settings**:
  - In Tab “***Preferred freetext***”
    Freetext searches: “Invoices”
    Context searches
    - **for numbers**: “Invoices”
    - **for dates:** “Invoices”

    Freetext for XClassify: <not editable>
    Freetext for Forms: “Invoices”
  - In Tab “***Invoices***” normally all over the default settings are used, beside the following:
    Text reading:
    - **Engine:** “IDRS”
      - Language: “German”
      - Character set
        “ABCDEFGHIJKLMNOPQRSTUVWXYZÄÖÜabcdefghijklmnopqrstuvwxyzäöüß0123456789$|%(){}/#<>*+=-:,.!?&;'"[]_€£”
      - Segmentation: Block segmentation

- **Master Data**:
  Definition of "*Folder for external Master Data tables*" is "***.\db\src***"

- **Document model**:
  In here properties of the document level are defined. They correspond to the respective parameters on each level as defined for the "***para.dat***" file.
  Please have a look into the before stated *chapter 3.2 "Batch, Document and Page Parameters"* for more details on these document level properties.
  Additionally there are the following special properties:
  - on Batch level: "**SPAPSupport**" of data type "Blob"
  - on Document level: "**ArchivID**" of data type "String"
    "**ExpDocId**" of data type "String"
    "**SPAPDocument**" of data type "Blob"
  - on Sheet level: "**BarcodesFound**" of data type "String"
    "**SPAPPage**" of data type "Blob"

- **Application roles**:
  Only 4 Verify roles ("Supervisor", "Verify1", "Verify2" and "XM_DocumentSeparation")

- **Workflow**:
  Both option for "**moving batches**" are "activated" and
  the "**timeout**" settings for the "jobs in queue" look like this:

Queue Name	Timeout
Supervisor	0
Verify1	0
Verify2	1.440
XM_DocumentSeparation	0
Analyze	0
Export	0

All other topics in the project settings are irrelevant, left out with default values or empty (as default too).

3.4 Configuration of Region Fields and Tables with Freetext Searches

The pane "**Freetext searches**" shows the configuration of specific region fields with subject to searches on freetext in the view "Search configurations". Some of the solution package specific parameters have relations to a range of those fields. The specific search configurations are addressed by certain parameters as stated in the respective sections of *chapter 6 "Parameter Configuration"*. Open the configuration by use of the linking buttons within the respective parameter settings. They are equally feasible in the listing of "Unassigned Fields".

Beside this, those fields which are grouped in the position table build up certain table configurations which can be investigated in the views "Table layout" and "Table constraint rules".

Please open the sample project "Invoices" (also Australia or US version) within **SOLUTION DESIGNER** to have a look on the default settings of this **SOLUTION PACKAGE** specific configuration settings.

Important:

Within the Freetext search configuration there are two issues to be aware of:

- The fields with "SPAPint…" are very special internal ones and thus the type of freetext search configuration should not be changed. Changing the configuration of these fields will lead to different behavior of data recognition and extraction.
- In the view on the specific "Table layout" of "Freetext searches" there are selectable search configurations available which are predefined. Their names are **essential** and do **not** have to be changed for any reason. So let them leave untouched.

3.5 Custom Finishing

The creditor specific finishing document functions are based on standard templates and are processed automatically. As opposed to this, **SP AP** offers also the option of "custom finishing" as a bundle of programmable function calls named "XBooster custom menus". They have to be defined in the **SOLUTION DESIGNER** by the help of the **SP CONFIG PLUGIN** (see *chapter 6.5.7 "XBooster Custom Menus"*). The specific character strings are stored within the **SP AP** configuration that is freshly loaded at any project initialization when loading a batch form the job list. During document processing, they are activated by placing the cursor in the respective field and calling one of these functions offered as menu items in **Options** > **Custom finishing** with key combination **ALT + [0** to **9]**.

These function calls are similar defined with those attributes of the normal standard finishing commands using the separator @@@:

```
Menu_name@@@Prio@@@Mode@@@INSTRUCTION@@@INSTRUCTION2@@@COMMENT
```

Optional they can include some special attributes for custom finishing with conduction to targeted operations outside of the current field by use of four additional attributes for a source (table and field) and a target (also a table and field):

```
@@@SourceTable@@@SourceField@@@TargetTable@@@TargetField
```

Tip:

If a definition for "*SourceTable*" and "*TargetTable*" exists, both entries have to be the same; the values are then processed line by line.

If source and target are validly defined like this, values in one column can be transferred to another column.

Parameter	Definition
Menu_name	Choose and define a speaking name for the function call
Prio	Priority/order "0"=first (highest priority); Each command for a creditor must have a clear priority determining the order of execution. If a command of the same priority is already activated, then the existing command will be replaced!
Mode	Mode (see listing) of the RE command (1 - 5, 8 and 9 are used in **VERIFY** "Test RegExp" dialog)
Instruction	Command instruction, depends on mode
Instruction2	For mode 5 "PipedSubRE"; a special regular expression instruction
Comment	Hint or helping description used if no match is achieved
SourceTable	Empty or source table name
SourceField	Source field name
TargetTable	Empty or target table name
TargetField	Target field name

Modes used for (custom) finishing

The mode identifies each command by its number and corresponds with the following available functions:

Mode	Function	Description
0	Delete	Deletes the field content
1	RE	The command section "Instruction" contains a regular expression. The RE searches through the field content from the right (noCase, letters capitalized) and the match is carried over. If no match is achieved, the content remains unchanged.
2	RE	The command section "Instruction" contains a regular expression. The RE searches through the field content from the right (noCase, letters capitalized) and the match is carried over. If no match is achieved, the content from the COMMENT field is carried over.
3	SubRE	The command section "Instruction" contains a subexpression. The field content is compared by means of the SubRE (noCase, letters capitalized) and extracted if successful. If no match is achieved, the content remains unchanged.
4	SubRE	The command section "Instruction" contains a subexpression. The field content is compared by means of the SubRE (noCase, letters capitalized) and extracted if successful. If no match is achieved, the content from the COMMENT field is carried over.
5	PipedSubRE	The command section "Instruction" contains a regular expression, the command section "Instruction2" contains a sorting order for the results of the regular expression (piped SubRE). In case of a match between the values found and the regular expression, re-sorting will be carried out. If there is no match, the reject character is set as new field result.
6	Fill	The command section "Instruction" contains the desired length of the field content; the field content is filled from the left with zeros until the given length is reached. This method can be used to force results of a certain length with leading zeros.
7	Exchange	Content of the region(s) is exchanged; source and target have to be different! An example of this command is the master function with "Exchange amount with price".
8	Calculate	Calculation of a mathematical formula Supported characters are: “+ - * / \ M” and parentheses (" " or ' '). Here, ‘\’ corresponds to ‘div’ (integer division, e.g. 7 div 2 = 3) and ‘M’ means ‘modulo’ (remainder of division, e.g. 7 mod 3 = 1). The region content can be defined with @RegionName@.
9	Calculate	Similar to mode 8, but if an error occurs in the calculation (e.g. division by zero), the target field is filled with the string of the field ‘Comment’.
10	SearchRE	The target field is only filled if the regular expression is fulfilled.
11	SubRE	The target field is only filled if the regular subexpression is fulfilled.
12	PipedSubRE	The target field is only filled if the sorting order is fulfilled.
13	Choose Alternative	If the alternatives contain the command section "Instruction", this will be selected.
64 to 128		Customer-specific functions

SearchRE

Searches with regular expressions (RE) are used intensively in the configuration. For information on the fundamental handling of regular expressions, please refer to the relevant literature as for instance the Microsoft msdn® information:

".Net Framework Regular Expressions" (http://msdn.microsoft.com/en-us/library/hs600312.aspx).

SubRE

Within finishing the used regular expression (RE) can contain substituted expressions which are referred to as "SubRE" in the following.

Example:
To describe a number with six digits as "123456" in a document, the following RE can be used:

```
[0-9][0-9][0-9][0-9][0-9][0-9]
```

To extract the third and fourth digit in this example (so "34") from this character string, the following SubRE can be used:

```
([0-9][0-9])([0-9][0-9])([0-9][0-9])~2
```

The "~2" here points out the second parenthesized expression, which is the second of the three pairs of digits.
To find the number "34" out of "123456" or alternatively "34" standing alone, the following formulation could be used for the expression:

```
([0-9][0-9])?([0-9][0-9])([0-9][0-9])?~2
```

The wildcard "?" denotes an expression that can appear in the field, but does not have to. To process the "34" only, the "~2" extracts the corresponding part of the result.

PipedSubRE

The function "PipedSubRE" allows search results to be re-sorted with the use of a pipe symbol. For this, the SubRE's are placed in a different order.

Example:
The regular expression for finding a 6-figure numbers is:

```
([0-9][0-9])([0-9][0-9])([0-9][0-9])
```

With the PipedSubRE the three sub expressions can now be re-ordered.

```
~3|~2|~1
```

In this case the order of the three sub expressions is reversed, re-sorting "123456" into "563412".

4. Data Model

The following explains all the different field types defined in the **X4D** data model for documents. Beside some system internal fields, an invoice document itself contains various types of fields, which are header, footer or position fields.

4.1 Naming Convention of Fields in general

The naming of the fields is decided according to the following conventions:

- A **Field name** and a **Field number** each uniquely describe a data field within the specification. Field names are fixed, they span multiple systems, and their capitalization is to be observed; this is because **X4D** uses them as identifiers for variables.
- The **Display name** of a field appears in the **X4D** system's graphical user interface. Editable fields are displayed in **VERIFY** in specific input mask, the **edit views**, which are categorized (“header”, “footer”, and “positions”) by default but also can be customized with the help of the designing tool **X4D DESIGNER**.
- A field's **Export name** corresponds either with the internal field name or with the export name given in the tables. Changes to the **Export name** arise due to the pre-formatting of the connected ERP (e.g. SAP). This ensures that communication between **X4D** and SAP data interfaces is free of conflicts.
- The naming of position fields is decided like the naming of individual fields: This specification does not always list the index for a position field (e.g. Order position corresponds to **Orderposition[i]**).

Every field has a valid format with the following notation:

Format notation	Description
[0-9] or N	Numeric characters
[A-Za-z0-9] or X	Alphanumeric characters
[A-Za-z] or A	Alpha characters, letters
Str	Any character string
Date	Date format: SAP format: YYYYMMDD X4D internal: YYYY-MM-DD
Amount	Amount format: SAP format: N{1,10}.NN X4D internal: N+.NN
Decimal	Decimal format: SAP format: N{1,10}.NN X4D internal: N+(.N*)?
{x}	Exact repeat x times
{x,y}	From “x” characters to max. “y” characters
+	At least 1 character
*****	Any number of characters

Some valid values are configuration-dependent. The additional note (*Config*) is used here. Other values depend on the Master Data, as indicated by the note “Master data”.

4.2 Data Fields used in the SP

The following fields are agreed upon for the data interface in case the export data is to be formatted for processing with SAP. (See also *chapter 2.5 "Exporting Output Data"*) In this case, only fields with corresponding SAP export name are exported. All values are rounded up two decimal places unless there is a different definition of decimals for "ORDERQUANTIY", which is setup by the parameter "*Reformated_SAP_Decimals*" (see the parameter definition). If the SAP formatting is disabled, the export names are the same as the field names and no formatting is carried out.

4.2.1 System Fields

System fields are **X4D** internal fields, which mainly relate to data processing. They are necessary for the handshake in between the **X4D** system with other systems (ERP, archive or scanner input) involved in the overall workflow. They are generally derived from internal variables, although they can be calculated from the documents being processed (e.g. document type).

These fields are obviously not displayed in the respective **VERIFY** edit view as the header, footer or positions fields. They can also be exported with special SAP export names as follows:

Field name	SAP export name	Comment	Format	Note
ArchivId	ARCHIVID	Name of the logical archive on the archive server	Str	
DocId	DOCID	Unique document ID set by **X4D**	Str	N+
ExpDateTime	EXPDATETIME	Date and time of export from X4D	Str	DD.MM.YYYY HH:MM:SS
LastUser	LASTUSER	Scanner/**VERIFY** Operator	Str	
LockIndicator	DOCLOCK	Document locking prevents the further process of this document [1)]	Str	J j N n
SAP_Project	PROJECT	Project name	Str	PPP
SAP_R3Client	R3CLIENT	SAP R/3 Client	Str	RR1
SAP_SysId	SID	ERP system ID	Str	NN1

1 Lock can be set with N and made visible with the **X4D DESIGNER**. Permitted values are n, N, y and Y. An empty field is interpreted as Y.

4.2.2 Header and Footer Fields

An invoice document itself contains the fields with accounting information that represent a header or footer information, which make up the frame of the invoice. Each field normally appears just once, e.g. the invoice date in the header or the sum total amount in the footer. The following fields are captured from an invoice document and are grouped inside the respective field region group “header” and “footer”.

Note:

Optionally, additional **SP AP** information (multiple field names with a respective value) can be transported by **X4D**. These are handed over to the batch of documents at document level and added to the results structure.
There is no permission for export names, which are already in use. The property **KeyValue** is used at document level for this. *(See section 3.2 “Batch, Document and Page Parameters”)*
The use of this is only advisable if document splitting made by the **SP AP** has been disabled and is switched “off” in **VERIFY**. In this case, processed batches must be split before submission to **X4D**.

Header Fields

Field name	Display name	SAP export name	Comment	Format	Note
Addressee	Receiver	-	Addressee check	X*	J (Config)
Barcode	Barcode	BARCODE	Barcode	X*	(Config)
CompanyCode	Company Code	COMPANYCODE	Company code	X*	Master data (Config)
CountrySpecificCode	Country specific code	-	Country specific codes as ESR, KID or SIRET	Str	(Config)
CreditorAccountNumber	Account [2)]	ACCOUNTNUMBER	Vendor's bank account number	X*	Master data
CreditorBankNumber	Bank [2)]	BANKCODE	Vendor's bank code	X*	Master data
CreditorCity	City	-	City of the vendor's address	Str	Master data
CreditorCountry	Country	-	Country of the vendor's address	A{2}	Master data
CreditorIBAN	IBAN [2)]	IBAN	Vendor’s IBAN	X*	Master data
CreditorId	Vendor number	CREDITORID	Vendor ID	N	Master data
CreditorName	Name of vendor	CREDITORNAME	Name of the vendor	Str	Master data
CreditorSalesTaxId	TaxVAT Reg No	SALESTAXID	Vendor VAT ID	X*	Master data (Config)
CreditorTaxId	Tax number	VATNR	Supplier tax number	X*	Master data (Config)
CreditorZIP	ZIP	-	ZIP/post code of the vendor's address	Str	Master data
DocumentDate	Invoice date	INVOICEDATE	Invoice date	Date	(Config)
DocumentType	Document type	DOCTYPE	Document classification type in X4D	Str	RMB, ROB, GOB, GMB (Config)
DueDate	Due date	-	Requested date for payment	Date	

[2] Fields are not visible in the default “edit view” of this group – the display name is only used within messages

Field name	Display name	SAP export name	Comment	Format	Note
InvoiceNumber	Invoice number	INVOICENUMBER	Invoice number	Str	(Config)
OrderNumber [3]	Order number	GLOBALORDERNUMBER	"Global" order number	Str	Master data
OwnSalesTaxId	Own VAT Reg No	-	Own VAT Reg No	Str	Master data
ScanDate	Scan date	INVOICESCANDATE	Document scan date	Date	
Search1	My Search 1 [4]	SEARCH1	Configurable field	Str	(Config)
Search2	My Search 2 [4]	SEARCH2	Configurable field	Str	(Config)
ServiceDate	Service Date	SERVICEDATE	Date of service start	Date	

Footer Fields

Field name	Display name	SAP export name	Comment	Format	Note
Currency1	Currency	CURRENCY	Currency	X*	Master data
Discount	Discount	DISCOUNTAMOUNT	Discount amount	Amount	
ExportFulltext	- [5]	FULLTEXT [6]	Unformatted overall content	Str	
ExtraCharges	- [5]	EXTRACHARGES1	Extra charges	Amount	Combined from ExtraCharges1, ExtraCharges2 and ExtraCharges3
ExtraCharges1	Incidental costs 1	-	Incidental costs (freight, postage, packaging)	Amount	
ExtraCharges2	Incidental costs 2	-	Incidental costs (freight, postage, packaging)	Amount	
ExtraCharges3	Incidental costs 3	-	Incidental costs (freight, postage, packaging)	Amount	
GrossAmount	Gross amount	GROSSAMOUNT	Gross amount	Amount	
NetAmount1 [7]	Net amount 1	NETAMOUNT1	First net amount; VAT rate 1 is charged on this	Amount	
NetAmount2 [7]	Net amount 2	NETAMOUNT2	Second net amount; VAT rate 2 is charged on this	Amount	
NetAmount3 [7]	Net amount 1	NETAMOUNT1	First net amount; VAT rate 1 is charged on this	Amount	
NetAmount4 [7]	Net amount 2	NETAMOUNT2	Second net amount; VAT rate 2 is charged on this	Amount	
PaymentTarget1Amount	Cash discount amount 1 [5]	V1AMOUNT [6]	Discount for the 1st payment target	Amount	

[3] The "global" order number is displayed in the first field group. If just one order number exists, then this field is filled. If several order numbers are in the table, then this field is empty! The "global" order number is intended for the scenario "no table but order information".

[4] Display name and function settings can be changed by the SP AP configuration. By default, no function is available

[5] Fields are not visible in the default “edit view” of this group – if a display name exists, it is only used within messages for instance

[6] Fields only exported if the corresponding function is activated

[7] The SP AP business logic supports up to 4 sales taxes (=VATs)

Field name	Display name	SAP export name	Comment	Format	Note
PaymentTarget1Date	Discount date 1 [8]	V1DATE [9]	Date of the 1st payment target	Date	
PaymentTarget1Days	Days 1	V1DATE [9]	Days for the 1st payment target	Decimal	[1-9]([0-9]+)?
PaymentTarget1Percent	Disc. 1 %	V1PER [9]	Percentage rate for the 1st payment target	Decimal	N{1,2}.N{2,3}
PaymentTarget2Amount	Cash discount amount 2 [8]	V2AMOUNT [9]	Discount for the 2nd payment target	Amount	
PaymentTarget2Date	Discount date 2 [8]	V2DATE [9]	Date of the 2nd payment target	Date	
PaymentTarget2Days	Days 2	V2DAYS [9]	Days for the 2nd payment target	Decimal	[1-9]([0-9]+)?
PaymentTarget2Percent	Disc. 2 %	V2PER [9]	Percentage rate for the 2nd payment target	Decimal	N{1,2}.N{2,3}
PaymentTargetNetDate	Net date [8]	VNDATE [9]	Date of the net payment target	Date	
PaymentTargetNetDays	Net days [8]	VNDAYS [9]	Days for the net payment target	Decimal	[1-9]([0-9]+)?
TaxAmount1 10)	VAT amount 1	VATAMOUNT1	First VAT	Amount	
TaxAmount2 10)	VAT amount 2	VATAMOUNT2	Second VAT	Amount	
TaxAmount3 10)	VAT amount 3	VATAMOUNT3	Third VAT	Amount	
TaxAmount4 10)	VAT amount 4	VATAMOUNT4	Fourth VAT	Amount	
TaxRate1 10)	VAT rate 1	VATRATE1	First VAT rate	Amount	
TaxRate2 10)	VAT rate 2	VATRATE2	Second VAT rate	Amount	
TaxRate3 10)	VAT rate 3	VATRATE3	Third VAT rate	Amount	
TaxRate4 10)	VAT rate 4	VATRATE4	Fourth VAT rate	Amount	
ValueOfGoods	Value of goods [8]	VALUEOFGOODS	Net value of goods as a sum of all position (item) sum amounts	Amount	

[8] Fields are not visible in the default “edit view” of this group – if a display name exists, it is only used within messages for instance

[9] Fields only exported if the corresponding function is activated

[10] The SP AP business logic supports up to 4 sales taxes (=VATs)

4.2.3 Position Fields

The position fields are specially outlined parts of an invoice document that typically is recognized as "*invoices with positions*" (document type) and do have a kind of table with position fields. They are formatted as tables and contain information about the individual positions on the invoice, such as the "quantity" and "single price". These fields can appear many times if invoices contain multiple positions.

The following position fields in an invoice are recorded:

Field name	Display name	SAP export name	Comment	Format	Note
PosArticleNumber	Article no.	ORDERMATNR	Article number	Str	Master data
PosArticleText	Article text	ORDERTEXT	Item text	Str	Master data (Config)
PosCostCenter [11]	-	ORDERCOSTCENTER	Cost center from transaction Master Data[1]	Str	Master data
PosDiscount [12]	D-Amount	ORDERDISCOUNT	Discounted amount	Amount	
PosDiscountRate [12]	D-Rate	ORDERDISCOUNTRATE	Order discount rate on position unit price	Amount	
PosExtraCharge	Surcharge	ORDERSURCHARGE	Surcharge	Amount	
PosGLAccount [11]	-	ORDERGLACCOUNT	G/L account from transaction Master Data[1]	Str	Master data
PosNumber	No.	-	Number of the position on the document	N+	automatic
PosOrderItem	Pos	ORDERITEM	Position number of the order	N*	Master data
PosOrderNumber	Order number	ORDERNUMBER	Order number	N*	Master data
PosPricingUnit	PU	ORDERPRICEUNIT	Price per unit	N{1,3}	1,100,1000
PosQuantity	Quantity	ORDERQUANTITY	Position quantity	Decimal	
PosQuantityUnit	QU	ORDERQUANTITYUNIT	Ordered quantity for a position	X+	
PosSinglePrice	Amount	ORDERSINGLENETAMOUNT	Position unit price	Decimal	N*.N{2,5}
PosTaxAmount	Tax amount	-	Item tax amount	Amount	
PosTaxRate	Tax rate	-	Item tax rate	Amount	
PosTotalNetAmount	Total amount	ORDERFULLNETAMOUNT	Full net amount of the order	Amount	

[11] The cost center and the G/L account are not present in the standard data structure. The use of these fields must be set up on a per-project basis with the **X4D DESIGNER**.

[12] The fields discount amount and discount rate are valid in parallel. The discount can be entered in any one of the fields or in both of them. If both fields are filled, a check is made on the amount at the discount rate.

5. The Business Rules Set

Business rules are the basis for the procedures in recording and processing incoming invoices. The business rules are oriented by the valid guidelines on correct invoicing.

The business rules are implemented by format checks, logically linked fields and comparisons with Master Data. The following describes the business rules, which are implemented and addressed by the **Solution Package** specific sample project.

Note:

Unless specified otherwise, these business rules can be adapted to specific requirements by changing the parameter settings of the project within **SOLUTION DESIGNER**, especially in the workspace of **SP CONFIG PLUGIN**.

The respectively used fields are configured specific to the business rules. If you like to adapt the settings of the region template, the business rule specification may prevail against your customization then. Check if your configuration changes have any bearing on the field behavior.

5.1 Platform Comprehensive Rules

In the **X4D** system, you can select the following three mechanisms either by preprogrammed functions or by project-specific scripts.

5.1.1 Format Checks

Format checks involve the character-for-character comparison of a field value with a predefined format. As a typical example, a (financial) amount may not have more than two decimal places.

5.1.2 Linked Fields

Logically linked fields use a formula to check the content of one or more fields. Typical linked fields are net amount + sales tax = gross amount.

5.1.3 Data Comparisons

A field's validity can also be checked by a Master Data comparison. The check for valid sales tax rates per country found in the respective table is an example for this kind of business rules.

5.2 Solution Specific Business Rules

5.2.1 Determine the Creditor

Depending on the **X4D** analysis method (**XFINGERPRINT** or **XCONTEXT**) the identification of the creditor or vendor is carried out as follows:

- **XFINGERPRINT:**
  A creditor or vendor is uniquely identified from the *CreditorId* as defined when the corresponding document templates as definitions were created with the **X4D DESIGNER**.
- **XCONTEXT:**
  A vendor or creditor is determined by comparing entries in the Master Data with the bank code and bank account number, the IBAN or the sales tax (VAT) ID found on the document.

Note:

When working with **SP AP**, only **XCONTEXT** is employed for analysis and so the creditor is determined by referring to the Master Data. Alternatively, the creditor can be determined by training a dactylogram (see also *chapter 2.4.2 "Training > Training of dactylograms"*).

Further information on the parameter settings of the following optional search methods for creditors is found in *section6.3.2 "Creditor Search"*.

Search Functions for Creditor Determination

Optionally, further search functions can be used to determine the *Vendors Id*. To this end, special columns in the Master Data tables, which contain the corresponding search terms, are used. The table "***Master_Creditor.csv***" is used for determining the creditor. Along with the original columns for "*company code*", "*bank sort code*", "*bank account no.*", etc., this table additionally contains the columns **XPRO1** to **XPRO5**. Additional information for the determination of the vendors **CREDITORID** is recorded here. For example, if the **CREDITORID** can only be precisely determined with the aid of a department name within the relevant company, then this department is listed along with the relevant vendors in one of the **XPRO** columns.

Another additional extension is created by the Master Data table for extended information on the creditors named "***Master_CreditorExtension.csv***". This table is for manual optimization and contains the columns **EPRO1** to **EPRO5**. In the interests of optimization, this file can be edited to help finding those creditors, which cannot be found in the ERP system data.

The method, by which the creditor is searched for, can be selected from editing the search string as follows:

DEFAULT:

Search via bank code, bank account number, IBAN, sales tax (VAT) ID and national tax number.

XPRO:

This is a comparison with the content of the **XPRO1, XPRO2, XPRO3, XPRO4,** or **XPRO5** columns in the Master Data table "***Master_Creditor.csv***" as a **unique** characteristic or in combination. It can be adapted by the search configuration reached by the parameter *"Search Configuration for XPRO Search"*.

EPRO:

This is a comparison with the content of the **EPRO1**, **EPRO2**, **EPRO3**, **EPRO4,** or **EPRO5** columns in the Master Data table "***Master_CreditorExtension.csv***" as a **unique** characteristic or in combination. It can be adapted by the search configuration reached by the parameter *"Search Configuration for EPRO Search"*.

DACTYLOGRAM:

Determine the creditor by trained **dactylograms**

The following aspects should be considered for the search functions:

- Multiple search functions can be combined with the pipe symbol as a separator:
  In this case the following search function is used if the previous one did not produce a result.
  In this way, even the default search can be set to a lower rank.
- Empty fields in the database can never be found.
- All of the various searches normally compare what they read exactly with the database content, without considering capitalization. It is possible to adapt this for **XPRO** and **EPRO** within the "**Freetext searches**" configuration.
- If an unambiguous assignment of the creditor is not possible then the **CREDITORID** can be determined by manually selecting the vendor from the Master Data with **VERIFY**.

5.2.2 Document Type

The document type is determined by a search for specific key words on the document. These key words are stored in the system table *"xckDocType.csv"*. Negative signs for amounts or other linked fields are not considered when determining the document type.

5.2.3 Order Reference

If no reference to an order is found, then the document can optionally be put on display so that the user can carry out checks in line with the double-verification principle.

5.2.4 Invoice No.

Invoice numbers can be forced to be displayed for checking in line with the double-verification principle.

5.2.5 Document Date

The Document Date represents the actual invoice date, which in principle is found on the document by a heuristic search function. The youngest date in the past (relative to the value of "*ScanDate*") is chosen from all of the found dates. It is possible to enable a check on the maximal date difference allowed for the invoice date. By default this check is disabled.

If the document date cannot be extracted from the document, then the current day's date can optionally be set instead.

5.2.6 Scan Date

The scan date is either filled with the current date at the time of import or it is supplied with the document batch.

5.2.7 Rounding Tolerance

All linked fields containing amounts are given a rounding tolerance (adjustable by parameter "*Currency Tolerance*"). For example the default value of ±"`0.02`".

5.2.8 Related Extra Charges

Charges for freight, transort and packaging are read from the document without further classification and are allocated in the order in which they occur to the fields *ExtraCharges1*, *ExtraCharges2* and *ExtraCharges3*.

5.2.9 Net Amounts

Checks are made, that the sum of *ValueOfGoods*, *ExtraCharges1*, *ExtraCharges2* and *ExtraCharges3* minus *Discount* adds up to the sum of all activated *NetAmount* fields.

5.2.10 Sales Tax (VAT) Rate

The fields *TaxRate1, 2*, *3* and *4* are determined from *NetAmount* and *TaxAmount* according to the allowed sales tax (VAT) rates for the vendor's country. Standard values are those for Germany, although these can be changed.

There is an option to also use the valid tax rates of the country of the creditor's bank as given in the Master Data for determination of the sales tax (VAT) rates.

5.2.11 Sales Tax (VAT) Amount

The fields *TaxAmount1*, *2*, *3* and *4* are checked against *NetAmount1*, *2*, *3* and *4* as well as *TaxRate1*, *2*, *3* and *4*.

5.2.12 Gross Amount

SP AP checks if the sum of all activated *NetAmount* and *TaxAmount* fields add up to the *GrossAmount*.

5.2.13 ESR, KID and SIRET Codes

Certain vendor specific code numbers of the following countries are commonly used in association with payment slips:

- **ESR** in Switzerland
- **KID** in Norway
- **SIRET** in France

In case the default active search for these country specific codes disturb the determination of equal code numbers for invoices used in other countries, the "enable field" parameter can be switched off. But there must be a custom search function defined with the project scripting.

5.2.14 Currency

The field Currency is checked against the Master Data (valid currencies).

5.2.15 Order Numbers

If just one order number is given for the entire invoice, then the field *PosOrderNumber* for all positions (items) is filled with this order number. Alternatively the *PosOrderNumber* is read for all position (item) blocks. Checks are made that the *PosOderNumbers* exist in the order Master Data.

5.2.16 Position Amounts

The fields *PosTotalNetAmount* are each checked against this:

$$\left\{PosQuantity \times \left(\frac{PosSinglePrice}{PosQuantityUnit}\right) \times (1 - PosDiscountRate)\right\} + PosExtraCharge$$

The values given in the Master Data table "***cxkPricingUnits.csv***" are iterated for the *PosQuantityUnit*.

5.2.17 Value of Goods

The field *ValueOfGoods* is checked against the sum of the fields *PosTotalNetAmount*.

5.2.18 Tax Numbers

The document is searched for *CreditorTaxId*, *CreditorSalesTaxId* and *OwnSalesTaxId,* independently of the determination of the creditor and compared with the appropriate existing data.

Note:

SP AP finds also all VAT IDs from EU countries and Switzerland, without being listed in the master database. Found VAT IDs are filled into the corresponding fields. Candidates that are found are checked to see if the VAT ID is valid. Some countries are subject to more stringent check procedures. If the potential VAT ID does not meet with these rules, then this is displayed.

Checks on tax numbers can not only be activated or deactivated. They can also be applied with various settings. The following rule serves the extraction according to "**UStG"** (German VAT law) relating to "**VSt-Abzug"** (pre-tax deduction).

1. Vendor from Germany; VAT ID or tax no. must be given.
2. Vendor from EU (not DE); VAT ID must be given.
3. Vendor from outside of the EU; no input required.
4. If the VAT rate is 0%, then the company's own VAT ID must also be given in the document (EU invoice).

The correctness of accountancy procedure and the application of the data remains the *domain* of the subsequent ERP system. Due to the checking rules, some invoices with "non-taxable sales" will be displayed by the **X4D** component **VERIFY**, even though they are correct. The correctness of these invoices can only be determined with accounting knowledge. An extraction solution would not be able to verify this correctness without additional information about the creditor, invoice, company specifics and similar criteria. The document can manually be marked as valid by the help of the **X4D** component **VERIFY**.

Tip:

Invoices, which cannot be processed fully automatically, are rare. In case of a high proportion of documents of this type, the configuration can be extended on a project-specific basis.

The *CreditorTaxId* and *CreditorSalesTaxId* are compared with the vendor's master data. If this information does not exist in the master data then manual entry of tax number or VAT reg no. can be made compulsory. Otherwise there is no check for an entry.

5.2.19 Handling of Non-Invoice documents

In case the document is been provided by **ANALYZE** to be checked as an "Invoice" but nevertheless it is not, the **VERIFY** user can switch the document type into "Other" by this. A comment can be passed to the following process.

5.2.20 Company Code / Debtor

For the further processing of the documents, the determination of the addressee or debtor is similarly important in automatically determining the creditor. According to sales tax law (§14 of German VAT) the addresses of all invoices have to be checked. Determining the addressee (or debtor) is closely linked with the selection of the company code to be applied.

The *addressee/debtor* is checked or the company code is derived based on the address found in the Master Data. The addressee search is similarly structured to the alternative creditor search (*see section 6.3.12 "Search for Invoice Recipient"*).

Search Functions for Debitor Determination

If company-code determination is activated, then a company-code-creditor check and filtering is automatically activated. If the company code is found, then the result of the creditor search is filtered for valid combinations of creditor and company code. So two cases are to be differentiated:

- The debtor uses just one company code or the company code is determined from the vendor's Master Data (“***Master_Creditor.csv***”). In those cases the search for the addressee only serves to prove that the user's own address is on the invoice. Clearing can be achieved automatically with the search function – if the search is still unsuccessful, then the user can confirm the correct addressee manually at the **VERIFY** workstation. This is done by typing **J** in the "`Addressee`" field. The mode in which the search for the addressee is only used for confirmation is activated by leaving the column "`CompanyCode`" empty in the addressee table "***Master_Debitor.csv***".

Tip:

In **VERIFY** the field “company code” is editable if the code was determined via the addressee table “***Master_Debitor.csv***”. The "Addressee" field is irrelevant in this case.

But it cannot be edited, if the code was determined via the vendor information found in the Master Data table “***Master_Creditor.csv***”.

- The debtor uses different company codes (e.g. “`1000`” for “`XSample Plc.`” and “`2000`” for the subsidiary company “`XSample Ltd.`”) and which company code is to be applied has to be determined from the addressee. The company code search is activated by filling the column "`CompanyCode`" in the addressee table "***Master_Debitor.csv***" with the company codes corresponding to the appropriate addressees.
  (see *section 7.17 “Master_Debitor.csv”* for structure of the database file and searching for company codes)

  Once the company code has been determined from the addressee table there is a further check: The Master Data table “***Master_Creditor.csv”*** is used to see if the current vendor is allowed to book from this company code, i.e. the combination of vendor and debtor is checked.

Various search methods can be used to allocate an invoice to a precise addressee. To this end, special columns in the Master Data table which contain the corresponding search terms are used. The table “***Master_Debitor.csv”*** is used for determining the addressee (debtor). Along with the company descriptor, this table contains further columns **DPRO1** to **DPRO5**, in which additional information for the determination of debtors is recorded.

For example, if the debtors can only be precisely determined with the aid of a department name within the relevant company, then this department is listed along with the relevant debtors in one of the **DPRO** columns.

The method by which the debtor is searched for can be selected from the following:

DRE:

A search string (Debtor Regular Expression) for the recognized German addresses. Based on the German address search, which is integrated into **XCONTEXT**, all fields are merged into an adjusted character string (Name1+Name2+Street+ZIP+City). After this, the entire table content of the search column (DRE) is compared as a regular expression with the address. This allows even addresses on two lines to be resolved.

DPRO:

This is a comparison with the content of the **DPRO1**, **DPRO2**, **DPRO3**, **DPRO4,** or **DPRO5** columns in the Master Data table "***Master_Debitor.csv***" as a **unique** characteristic or in combination. It can be adapted by the search configuration reached from the parameter *"Search Configuration for Recipient Search"*.

The following aspects should be considered for the search functions:

- Multiple search functions can be combined with the pipe symbol as a separator:
  In this case the following search function is used if the previous one did not produce a result. Thereby the order of the search functions can be set, e.g. the **DRE** search can be lower ranked.
- Empty fields in the database can never be found.
- All of the various searches normally compare what they read exactly with the database content, without considering capitalization. It is possible to adapt this for DPRO within the "**Freetext searches**" configuration.

Note:

Adjustment of the chars not used in **DRE** search cannot be configured with **SP AP**. The adjusted characters are the same as the *RemovedChars* in the standard setting.

5.2.21 Position Records

The basis and pre-requisite for the automatic matching of position records for purchase-order related invoices to the transaction Master Data is the determination of the order number. If the order number is not found, then the automatic matching of the position records is not possible. If a position in the invoice can be successfully matched to a position in the transaction data, then the data field *PosOrderItem* can be filled out accordingly.

Tip:

Automatic matching requires the provision of current transaction data found in the Master Data table "***Master_Transaction.csv***", including all open orders from all creditors.

The field for the "position article text" can be filled out in the following alternative manner which can also be combined:

1. Manual entering or leaving empty:
   > Text for individual positions can be entered by keyboard or my marking with a mouse click.
   > Alternatively, the command "**Functions > Fill table column**" in **VERIFY** can be used to transfer text from the document to fill an entire column.
2. Learning via creditor-specific training, i.e. by allocating a region of the document:
   > Training can be carried out for purchase-order related and non-purchase-order related documents.
   > If an ROI (region of interest) on a document has been trained for the position article text, then the information found there is carried over.
3. Fetching from transaction Master Data (no region)
   (*See section 6.3.14 "Table of Position Data"):*
   > Taking the article text from the transaction Master Data is only possible for purchase-order related documents if the order number and the position were allocated correctly.
   > Transaction master data is only used if there is no region for the article text (by manual entry with region or training).
4. Additional supplement upon export:
   Upon export from the **X4D** system, the position article text can additionally be supplemented with the unformatted content of the position row, if the field is empty.
   (*See section 6.3.1 "Basic Settings"*)
   > Automatic filling on export is only used when a region is available for the position row and the field itself is empty.
   > For this, the row region is extended to cover the full width of the document and the complete content is carried over unformatted.
   > Content of known regions (quantity, unit price, sum price, etc.) is not carried over.

5.2.22 Business Rules without external Master Data

It is now possible to process invoices without using the Master Data tables "***Master_Creditor.csv***", "***Master_Debitor.csv***" and "***Master_Transaction.csv***". This function is triggered by the use of the special parameter '**Do not use external master data files**'. According to this the document processing is changed.

5.2.23 Payment Targets

Determining the payment target is optional. If it is activated and information on the payment target is found in the document, the corresponding fields are filled out. All other fields are automatically calculated with regard to the scan date (or invoice date) and the gross amount. A re-calculation relating to the changed field takes place automatically.

Fields which are found on the document are weighted more in processing than calculated values. Defining the payment target in days has a higher priority than a payment target date; a percent value for cash discount is rated higher than a discounted amount.

If the fields of the PaymentTarget1Days, PaymentTarget2Days or PaymentTargetNetDays are empty, then the fields are valid. The gross amount must also be valid for the check.

The following check rules are used for the payment target information:

- ScanDate < PaymentTarget1Date < PaymentTarget2Date < PaymentTargetNetDate
- PaymentTarget1Days < PaymentTarget2Days < PaymentTargetNetDays
- 0.0% < PaymentTarget2Percent < PaymentTarget1Percent < 100%
- PaymentTarget2Amount (discount amount) < PaymentTarget1Amount < GrossAmount
- Amount from *PaymentTarget1* and *PaymentTarget2* have to satisfy the following context:
- GrossAmount * PaymentTargetPercent = PaymentTargetAmount (with tolerance defined by the Parameter "*Currency_Tolerance*" default = 0.02)
- "PaymentTargetAmount" is always the target amount to pay instead of a probably shown saved amount. Therefore, if "PaymentTargetAmount" seems to be "GrossAmount" * (1 – "PaymentTargetPercent") the "PaymentTargetAmount" is set to "GrossAmount" * "PaymentTargetPercent"

5.2.24 Service Date

The search for a service date is optional. It works as a two-step search. The first step is a search for the keywords in ***"cxkServicedate.csv"***. If one unique occurrence of a keyword was found, the service date is set as the date value, which is nearest to the keyword.

5.2.25 Search1/Search2

For each of the fields SEARCH1 and SEARCH2, it is possible to deposit a project-specific "**Freetext searches**" configuration.

6. Parameter Configuration

The configuration of **SP AP** is a fixed element of the **X4D** project or, more precisely, it is an element of the project file. The parameters relating specifically to the application for invoice processing are only a subset of the overall configuration. These parameters can only be edited with the help of the very convenient **SP CONFIG PLUGIN** inside the **SOLUTION DESIGNER,** which is an essential of any **Solution Packages**.

Reference:

To learn more about the use of the **SP CONFIG PLUGIN**, please take a look into the specific manual of it, found within the installation folder or the system documentation in case it is.

Language settings

All displayed texts are by default in English but can be localized to the respective needs. This project specific configuration of the language settings is done within the "Language" view of the **SP CONFIG PLUGIN** workspace in the **SOLUTION DESIGNER .**

The configuration of the translation behavior itself depends on a special parameter inside the configuration set named "**Language_Dynamic**". The language of the project specific items displayed in **VERIFY** can be changed by this. All values that are defined for the respective items in the corresponding project are valid.

The "**Language_Dynamic**" value itself sets the language only of the project in use. Thus it only affects messages which are implemented with script functions (field contexts), and extended menu entries.

- If dynamic language selection is activated (set to *TRUE*), the language is selected automatically. In this case the used language matches the actual user's language setting in **VERIFY**.

Note:

If the user has set a language in **VERIFY** that is not included in the project in **SP AP**, then the project's default language will be used instead.

The function for dynamic language selection allows the display language to be modified for the language setting used by the current user, assuming that this language is defined in the projects parameter configuration (*see section 6.5.3 "Language Settings"*).

Parameter Format Type Definition

Valid given format types for the **X4D** parameter values are:

STRING:	Strings of alphanumeric characters
BOOLEAN:	TRUE or FALSE
INTEGER:	The typical int32 value. A subset of real numbers consisting of natural (signed) numbers in a range from -231 to $(231-1)$
DOUBLE:	Floating point number; the decimal separator is a point! This does not differ in case of different language or country settings inside windows, the designated **X4D** component or within the **Solution Packages** project scripts

As a special extension of the above stated types the **SP** support the following additional types:

Group:	This defines a specific name for a group of other parameters. In Case of being a root node in the parameter listing, this parameter can also be displayed with a configured icon
Regular Expression:	This is a special form of the STRING type declaring the functionality of a regular expression. Such parameters are recognized as kind of function set which has to be configured that way
String list:	A listing of Strings with definition of a list delimiter
Bit mask:	Type integer as sum of single bit value (E.g. “1” on + “2” on + “4” off + “8” on = “11”)
Searchfield configuration	Basically a string hosting the name of the “Freetext search” configuration and a button linking to the respective configuration.
Password:	Basically a string parameter that is hosting a password so the displaying is masked by asterisks. When editing the value a dialog opens to enter the password twice before it can be applied. A typical usage is for account credentials when sending emails via **EXPORT**

Configuration in general

The configuration parameters are stored individually and they are all defined with these elements:

Name	Explanation
NAME	The displayed name of the parameter
KEY	An internal identifier for the configuration
TYPE	Type of field content with its specific format
VALUE	Describes the content or function of the corresponding field region
CHILDREN	Other parameters which are subordinate to this parameter

The following describes in detail the parameter configurations and their structure in sections, groups and superior parameters. In former Versions of **SP AP** this structure was a flat listing only recognizable by the specific key name of the parameter. This difficult way is nowadays outdated and can be switched for those older projects. Also, the other way round still works.

The Structure of the Parameter Set

The **SP AP** parameter set can be grouped and organized within the **SP CONFIG PLUGIN**. The provided preset structure correlates all parameters into major sections which are root nodes on the first level and groups in the second level which bundle the parameters. Beside some of the superior groups there are also parameters in parallel, which again can have subordinate parameters as a child element. So the structure has a maximum of four stage levels. More or less the originate default structure can be customized by reorganizing or extending with own parameters to the specific needs.

This default structure of parameters with their nodes, groups and superior parameters can be deduced by the following indexed descriptions.

6.1 Document and Attachment Separation

Name	Explanation
NAME	Document and attachment separation
KEY	**_DocumentAndAttachmentSeparation**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*_AttachmentSeparation*; *_DocumentSeparation*

This node covers parameters for the separation of documents and for attachments.

6.1.1 Attachment Separation

Name	Explanation
NAME	Attachment separation
KEY	**_AttachmentSeparation**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Delete_Attachment_Separator*; *Barcode_Attachment_activate*; *Static_Attachments*

In this group, the parameters according to the separation of attachments are bundled.

Attachment pages are not taken into account for analysis of the document. No OCR will be done on pages marked as attachment. For separating attachments from the original document special barcodes can be used which provide information for dividing the document into invoice and attachment. The following methods exist for communicating the barcode information on the division of attachments to the **X4D** system:

- Barcode information can be given to the system via job parameters. The necessary values are written to the file which provides information on document level.
- If barcode information is entered in the job parameters at the document level, then a file "***para.dat***" describes the structure of the entire document. A barcode is defined for each document (in the "*Barcode*" field) along with the page number of the attachment (in the field "*AttachmentPage*"). Page numbering starts with "**1**" for the first page of the document; the "*AttachmentPage*" value defines the page number where attachment begins.

Tip:

The use of barcode information at document level is only possible for documents divided in advance. (See also *chapter 3.2 "Batch, Document and Page Parameters"*)

- As an alternative, barcode information can be communicated at page level.
  In this case, a file in the format "***P0000000x.dat***" containing the barcode information is created for each page ("**0000000x**" being an 8 digit sequential number with leading 0). In this case every single page is identified independently from other pages. The pages can be re-ordered or merged to new documents without losing the information on the attachment division.
- The OCR (recognition engine) in the **X4D** system reads the barcode signaling the division of an attachment from the page itself.

Note:

If barcodes are not correctly found, the recognition engine has to be set up more precisely in the document template within the **X4D DESIGNER**.

Attachment recognition by barcode can be activated and furnished with the corresponding barcodes.

Delete the First Attachment Sheet

Name	Explanation
NAME	Delete the first attachment sheet
KEY	**Delete_Attachment_Separator**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

The attachment separator sheet will be marked as deleted in case of activation. This can be useful, if the first sheet is a separator sheet.

True/Active (default): The attachment separator sheet will be marked as deleted.

False/Inactive: The attachment separator sheet will be handled like any other attachment.

Detect the start of an attachment via barcode

Name	Explanation
NAME	Detect the start of an attachment via barcode
KEY	**Barcode_Attachment_activate**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*Barcode_Attachment_Barcode*; *Barcode_Attachment_XScanClientBarcodesFound*

This uses special barcode to determine attachments and activates the attachment division by barcode. All of the procedures described above (*see "Attachment Separation"*) are activated for this (job parameters at document level, job parameters at page level, barcode recognition).

If suitable information is found in the job parameters, it will be applied. Otherwise the barcodes themselves will be read out by using the barcode engine.

- **Barcode Values that Should be Considered**

Name	Explanation
NAME	Barcode values that should be considered
KEY	**Barcode_Attachment_Barcode**
TYPE	STRING
VALUE	**"00000000";"009876543215"**
CHILDREN	*<none>*

Special barcodes which denote an attachment are edited here. If several barcodes are entered here, they are set between quotation marks `" "` and separated from one another by a semicolon character `;`.

If **ANALYZE** finds a barcode which corresponds with the **Barcode_Attachment_Barcode**, then the attachment is defined with this page.

- **Use Barcodes found by the Scan Client**

Name	Explanation
NAME	Use barcodes found by the scan client
KEY	**Barcode_Attachment_XScanClientBarcodesFound**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

True/Active (default)**:**

This also uses barcodes delivered from **XSCANCLIENT**. There is a property `<barcode>` given in the parameter data file on page level.
(See *section 3.2 "Batch, Document and Page Parameters"*)

False/Inactive:

There is no effect on the attachment treatment if **XSCANCLIENT** delivers barcodes.

Static Attachments

Name	Explanation
NAME	Static attachments
KEY	**Static_Attachments**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

False/Inactive (default)**:**

All pages following the first attachment page are treated as documents again.

True/Active:

All pages after the first attachment page will also be marked as attachments and will not be analyzed.

6.1.2 Document separation

Name	Explanation
NAME	Document separation
KEY	**_DocumentSeparation**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Barcode_SplitDocsViaVariableBarcodes*; *_DetectViaSeparatorSheet*

There are various modes for dividing documents with **SP AP**. All modes are activated as standard and can be used with one another.

- Division by a special dividing sheet (**XFINGERPRINT**)
- Division with a barcode on a special dividing sheet
- Division based on a barcode on the first page of an invoice

Modes 1 and 2 are very similar, which is why the document dividing sheet supplied with **SP AP** serves as **XFINGERPRINT** and also as a dividing sheet with barcode. This is because each can be recognized by both **XFINGERPRINT** and by the barcode search. A result of this methodology is greater certainty of document division.

Detect the start of a new document via barcode

Name	Explanation
NAME	Detect the start of a new document via barcode
KEY	**Barcode_SplitDocsViaVariableBarcodes**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*Barcode_Same_VariableBarcode*; *Barcode_RE_4_VariableBarcode*

In case variable barcodes are used for the detection this indicates to determine the first page of a document. This activates document division by flexible barcodes.

- **All Barcodes will have the same value**

Name	Explanation
NAME	All Barcodes will have the same value
KEY	**Barcode_Same_VariableBarcode**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

This allows the use of just one barcode for document splitting.

- **Barcode value (regular expression)**

Name	Explanation
NAME	Barcode value (regular expression)
KEY	**Barcode_RE_4_VariableBarcode**
TYPE	STRING - REGEXP
VALUE	**[0-9]{6,12}**
CHILDREN	*<none>*

This is the definition by a regular expression for the barcode checking. All barcodes which are found are compared with this RE. Only valid barcodes will prompt a division.

Detect the start of a new document via separator sheet

Name	Explanation
NAME	Detect the start of a new document via separator sheet
KEY	**_DetectViaSeparatorSheet**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*DocSplitter_Route2Trash*; *DocSplitter_ViaBarcode_activate*; *DocSplitter_Fingerprint_Activate*

The following parameters are used for defining the document separation via separator sheets.

Move the separator sheet to the trash queue

Name	Explanation
NAME	Move the separator sheet to the trash queue
KEY	**DocSplitter_Route2Trash**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	<none>

Division by a special dividing sheet (the “doc splitter”) provides the option of automatically splitting out the dividing sheet for routing to the trash queue.

Recognize separator sheet by barcode

Name	Explanation
NAME	Recognize separator sheet by barcode
KEY	**DocSplitter_ViaBarcode_activate**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*DocSplitter_SeparatorPage_Barcode*

This is used to activate the document division by fixed barcodes on separator sheets.

Barcode values that should be considered

Name	Explanation
NAME	Barcode values that should be considered
KEY	**DocSplitter_SeparatorPage_Barcode**
TYPE	STRING
VALUE	**012345678905**
CHILDREN	*<none>*

The values entered as the barcode will denote a new document. Several codes can be separated from one another by a space character.

When **ANALYZE** finds a barcode which corresponds with the **DocSplitter_SeparatorPage_Barcode**, then it is defined as the dividing sheet (Document template: “*DocSplitter*”). If no barcodes are defined in this field, this function is deactivated.

Recognize separator sheet by Fingerprint

Name	Explanation
NAME	Recognize separator sheet by Fingerprint
KEY	**DocSplitter_Fingerprint_Activate**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

This activates the document division via **XFINGERPRINT**. A special page is used to split documents in a batch. If this is recognized, the following pages starting with the special page are split to a new document.

Tip:

The file "***DocumentSeparatorSheet.tif***" is a dividing sheet supplied with **SP AP** for cases requiring the division of documents. This also contains a fixed barcode for division.

6.2 Enable Fields

All fields are listed and grouped by the corresponding field groups of the document template:

- "01 Header"
- "02 Line items"
- "03 Footer"

It is optional to enable/disable fields with in their respective region. Rules and parameters affected by this will change their behavior and if disabled, will no longer be processed. If an entire parameter group is disabled, all fields within this group will be disabled.

Note:

The possibility to "enable" fields has only effect on those field regions and affected parameters given by the Solution Package.

It is not possible to simple create a custom parameter and field region which might be addressed here. This has to be done by scripting in your own Add-In.

Please see *chapter 4.2 "Data Fields used in the SP"* for more information on the fields that especially are exported.

6.2.1 01 Header

All the fields listed in this region are generally derived by the document header. Each field can be enabled/disabled for the use in **VERIFY** and all its functional affiliation in the business logic. There is also a special subgroup for those fields concerning the creditor search.

6.2.2 02 Line Items

All the fields listed in this region concern the document's line items. Each Field in the table of position data can be enabled/disabled for the use in **VERIFY** and all its functional affiliation in the business logic.

6.2.3 03 Footer

All the fields listed in this region concern the document footer. Each field can be enabled/disabled for the use in **VERIFY** and all its functional affiliation in the business logic.

6.3 Extraction and Validation

Name	Explanation
NAME	Extraction and Validation
KEY	**_ExtractionAndValidation**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*_BasicSettings;* *_CreditorSearch;* *_DocumentType;* *_DueDate;* *ZUGFeRD:Import:Activate;* *_FieldConstraints;* *_InvoiceDate;* *_InvoiceNumber;* *_OrderNumber;* *_PaymentTargetFinderOptions;* *UseSmallAmountFinder;* *Receiver_Search;* ***Service Date;*** *_TableOfPositionData;* *_VATRuleSet*

All parameters according to the Extraction and validation process in the special invoice treatment are summed here.

6.3.1 Basic Settings

Name	Explanation
NAME	Basic Settings
KEY	**_BasicSettings**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Barcode_Validation_Not_Empty;* *_SplittingOptions;* *Currency_Tolerance;* *Context:DefaultCurrency;* *Context:Databaseless;* *_Export*

All basic settings are reached by this group.

Barcode value is not allowed to be empty

Name	Explanation
NAME	Barcode value is not allowed to be empty
KEY	**Barcode_Validation_Not_Empty**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

True/Active (default)**:** This forces the presence of a barcode in the appropriate region of the document.

False/Inactive: Otherwise an empty region will also be valid.

Batch Splitting Options

Name	Explanation
NAME	Batch splitting options
KEY	**_SplittingOptions**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Do_Not_Split_After_Analyze*; *Route_Split_Every_Doc2Single_Batch*; *Route_Approved_Docs2Export*

Documents in a job can be divided into multiple jobs. This can be used to separate valid documents from a job directly after using **ANALYZE**, so grouping these into a valid batch. This is then sent directly to **EXPORT** and is not displayed in **VERIFY**.

Do not split the batch after Analyze

Name	Explanation
NAME	Do not split the batch after Analyze
KEY	**Do_Not_Split_After_Analyze**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

This activates according to the workflow definition in the "***WFCFG.XML***" the batch splitting after a batch has been sent from **VERIFY** and not after **ANALYZE**. The standard setting "**True**" offers the advantage that all *DocSplitters* etc. in **VERIFY** are visible.

- **Split out every document into a single batch**

Name	Explanation
NAME	Split out every document into a single batch
KEY	**Route_Split_Every_Doc2Single_Batch**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

After processing in **VERIFY**, this splits every single document into a batch to form a separate job for each document according to the workflow definition in the "***WFCFG.XML***".

- **Split out valid documents and send them to Export**

Name	Explanation
NAME	Split out valid documents and send them to Export
KEY	**Route_Approved_Docs2Export**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

This activates the splitting of valid documents to a separate job which no longer has to be checked in **VERIFY** according to the workflow definition in the "***WFCFG.XML***".

Currency Tolerance

Name	Explanation
NAME	Currency tolerance
KEY	**Currency_Tolerance**
TYPE	DOUBLE
VALUE	**0.02**
CHILDREN	*<none>*

This is the definition of the allowed tolerance of currency, when calculating amounts in searches and validation.

Note:

A concrete value to define the threshold (positive just as negative) is needed.

Do not is zero this parameter to "0" or "0.00" or equal, otherwise the position table could not be found and amounts in the footer can get erroneous values.

Default Invoice Currency

Name	Explanation
NAME	Default invoice currency
KEY	**Context:DefaultCurrency**
TYPE	STRING
VALUE	**EUR**
CHILDREN	*<none>*

Set this value (default = "EUR") in the currency field if no currency was found on the document.

Export

Name	Explanation
NAME	Export
KEY	**_Export**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Export:ExportDisabledFields;* *Export_Full_Text;* *Reformated_SAP_Upload;*

This group bundles parameters concerning Export.

Export Disabled Fields

Name	Explanation
NAME	Export disabled fields
KEY	**Export:ExportDisabledFields**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

True/Active:

Fields set up as disabled (not checked in Enabled fields) are nevertheless included in the export structure (ResultOut)

False/Inactive (default)**:**

Fields set up as disabled (not checked in Enabled fields) are not included in the export structure (ResultOut)

- **Export Full Text**

Name	Explanation
NAME	Export full text
KEY	**Export_Full_Text**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

This activates the export of the complete free-text of the document content without segmentation into the field "ExportFulltext".

- **Reformat the XML Output for SAP**

Name	Explanation
NAME	Reformat the XML output for SAP
KEY	**Reformated_SAP_Upload**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*Reformated_SAP_Decimals*

False/Inactive (default)**:**

All region fields and their data are exported according to their application settings in the **X4D** system.

True/Active:

This will activate the reformatting of results for further processing in SAP. If an error occurs during reformatting (e.g. a user declared erroneous field content as valid), then **EXPORT** is interrupted and the error message is displayed when the job is opened. All values are rounded up to two decimal places unless there is a different definition of decimals for "ORDERQUANTIY", which is setup by the parameter "*Reformated_SAP_Decimals*"

- **Maximum number of decimals in quantity**

Name	Explanation
NAME	Maximum number of decimals in quantity
KEY	**Reformated_SAP_Decimals**
TYPE	INTEGER
VALUE	**2**
CHILDREN	*<none>*

Sets the maximum number of decimals exported to SAP field "ORDERQUANTITY". If the value in **X4D** field "PosQuantity" has less decimals, only the existing decimals are exported. If the value has more decimals, the quantity is rounded to the given number of decimals.

Do not use external master data files

Name	Explanation
NAME	**Do not use external master data files**
KEY	**Context:Databaseless**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

True/Active:

All searches and validations are performed without reference to Creditor id and/or company code;
"***Master_Creditor.csv***", "***Master_Transaction.csv***" and "***Master_Debitor.csv***" are ignored and can be completely empty; Validation cannot assure, that invoice is correct according to tax laws (normally regulating that sender and recipient have to be clearly stated on the document).
In this case it is recommended for order number search to be switched to "mode 0".

False/Inactive (default)**:**

This normal behavior uses Master Data.

6.3.2 Creditor Search

Name	Explanation
NAME	Creditor search
KEY	**_CreditorSearch**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Context:CreditorSearch:Config;* *Context:DefaultCountry;* *Creditor_Accept_Leading_Zeros;* *CreditorSearchEPRO_SF2;* *CreditorSearchXPRO_SF2;* *Export:WriteCreditorIdToPDB*

This is the group for the definition of creditor search relevant parameters.

If **XPRO** or **EPRO** is used, then debtor data is to be avoided. If debtors can appear in the creditor data, then it is important to ensure that the data in **XPRO** and **EPRO** and the search configuration cannot cause the creditor to be determined on the basis of debtor data. This would lead to the selection of an incorrect *VendorId*.

Creditor Search Order

Name	Explanation
NAME	Creditor search order
KEY	**Context:CreditorSearch:Config**
TYPE	STRING
VALUE	**DACTYLOGRAM|DEFAULT|XPRO**
CHILDREN	*<none>*

This parameter configures the mode for the creditor or vendor search (see *chapter 5.2.1 "Determine the Creditor"*). The pipe symbol ("|") is used for adding different search modes in sequence. The possible modes are:

"DACTYLOGRAM": Searches the vendor by trained dactylograms.

"DEFAULT": Uses the default search method for creditor identification by use of Master Data table "***Master_Creditor.csv***" (VAT-ID, IBAN, national tax no. and a combination of bank no. and bank account no.)

"XPRO": This search method uses a "**Freetext searches**" configuration (reachable by parameter "*Search Configuration for XPRO Search*") as alternative creditor determination with the **XPRO** values found in the Master Data table "***Master_Creditor.csv***".

"EPRO": A possible search method that uses a "**Freetext searches**" configuration (reachable by parameter "*Search Configuration for EPRO Search*") as alternative creditor determination with the **EPRO** values found in the master data table "***Master_CreditorExtension.csv***".

Default Creditor Country

Name	Explanation
NAME	Default creditor country
KEY	**Context:DefaultCountry**
TYPE	STRING
VALUE	**DE**
CHILDREN	*<none>*

This defines the "Default_Country" which is used if no creditor is available.

Do not reformat Creditor ID (Accept Leading Zeros)

Name	Explanation
NAME	Do not reformat creditor id (accept leading zeros)
KEY	**Creditor_Accept_Leading_Zeros**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

If this parameter is set to "**True**", leading zeros in a 'CreditorId' will be accepted.

Filter the Creditors Based on Company Code

Name	Explanation
NAME	Filter the creditors based on company code
KEY	**Context:CreditorSearch:FilterOnCompanyCode**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

True/Active (default)**:**

The creditor ID search is filtered by 'CompanyCode' and the validations based on 'CreditorId' also take the company code into account (alike the field constraints checking the tax rates). Only pairs ('CreditorId' and 'CompanyCode') that are listed in the Master Data table "***Master_Creditor.csv***" are allowed.
The column "`CompanyCode`" in there has to be filled.

False/Inactive:

The creditor id is always used as is, without filtering by 'CompanyCode'. Searches and validations are done only by the 'CreditorId'; the column "`CompanyCode`" in table "***Master_Creditor.csv***" may be empty; arbitrary combinations of 'CreditorId' and 'CompanyCode' are allowed.

Note:

Setting the parameter to "**False**", may lead to worse results in creditor ID search (because of missing filter, more alternatives could be found, so the creditor ID cannot automatically be extracted).

Search Configuration for EPRO Search

Name	Explanation
NAME	Search configuration for EPRO search
KEY	**CreditorSearchEPRO_SF2**
TYPE	STRING (Search field configuration)
VALUE	**SPAPintCreditorEPRO**
CHILDREN	*<none>*

This parameter is a link to a search field configuration. So there is a button in addition to the value for switching to the corresponding search field configuration. The value of this parameter points directly to the specific search field name. **You should not change this value for any reason**.

Search Configuration for XPRO Search

Name	Explanation
NAME	Search configuration for XPRO search
KEY	**CreditorSearchXPRO_SF2**
TYPE	STRING (Search field configuration)
VALUE	**SPAPintCreditorXPRO**
CHILDREN	*<none>*

This parameter is a link to a search field configuration. So there is a button in addition to the value for switching to the corresponding search field configuration. The value of this parameter points directly to the specific search field name. **You should not change this value for any reason**.

Write Creditor ID to PDB as Custom Value

Name	Explanation
NAME	Write creditor id to PDB as custom value
KEY	**Export:WriteCreditorIdToPDB**
TYPE	Boolean
VALUE	**False**
CHILDREN	*<none>*

True/Active:

Value of field "**CreditorId**" is written into the **PDB** as a custom key/value pair with key="CreditorId".

False/Inactive (default)**:**

Creditor id is not written to the PDB.

6.3.3 Document Type

Name	Explanation
NAME	Document type
KEY	**_DocumentType**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Approve_DocType_IfNoOrderReference*; *_DocumentTypeAbbreviations*

All parameters concerning the document type definition.

Approve document type if there is no order number

Name	Explanation
NAME	Approve document type if there is no order number
KEY	**Approve_DocType_IfNoOrderReference**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

This activates the clearing of the document type if no order reference is found.

Note:

The request for clearing can be changed by a job parameter or through vendor-dependent suppression.

Document Type Abbreviations

Name	Explanation
NAME	Document type abbreviations
KEY	**_DocumentTypeAbbreviations**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*DocType:Invoice:GMB*; *DocType:Invoice:GOB*; *DocType:Invoice:RMB*; *DocType:Invoice:ROB*

In this group the abbreviations of the document types can be changed throughout the system. The default settings correspond to the parameter keys, which originally are named by the German abbreviations.

The four types are:

- Credit notes with purchase order: (German = "**G**utschrift **m**it **B**ezug") "GMB"
- Credit notes without purchase order: (German = "**G**utschrift **o**hne **B**ezug") "GOB"
- Invoices with purchase order: (German = "**R**echnung **m**it **B**ezug") "RMB"
- Invoices without purchase order: (German = "**R**echnung **o**hne **B**ezug") "ROB"

These defined values are used as values of the field "DocumentType" later on.

Tip:

The key words used for determining the document type are defined in the internal master data table "***cxkDocType.csv***" (see *chapter 7.2 "cxkDocType.csv"*).

Credit Note with Purchase Order

Name	Explanation
NAME	Credit note with purchase order
KEY	**DocType:Invoice:GMB**
TYPE	STRING
VALUE	**GMB**
CHILDREN	*<none>*

This is the document type (default **GMB** = German: "Gutschrift mit Beleg") representing a credit note with a corresponding purchase order number.

Credit Note without Purchase Order

Name	Explanation
NAME	Credit note without purchase order
KEY	**DocType:Invoice:GOB**
TYPE	STRING
VALUE	**GOB**
CHILDREN	*<none>*

This is the document type (default **GOB** = German: "Gutschrift ohne Beleg") representing a credit note without a corresponding purchase order number.

- **Invoice with Purchase Order**

Name	Explanation
NAME	Invoice with purchase order
KEY	**DocType:Invoice:RMB**
TYPE	STRING
VALUE	**RMB**
CHILDREN	*<none>*

This is the document type (default **RMB** = German: “Rechnung mit Beleg”) representing invoices with a corresponding purchase order number.

- **Invoice without Purchase Order**

Name	Explanation
NAME	Invoice without purchase order
KEY	**DocType:Invoice:ROB**
TYPE	STRING
VALUE	**ROB**
CHILDREN	*<none>*

This is the document type (default **ROB** = German: “Rechnung ohne Beleg”) representing invoices without corresponding purchase order number.

6.3.4 Due Date

Name	Explanation
NAME	Due date
KEY	**_DueDate**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	DueDate_SF2

This is the group for the parameters concerning the search for due dates.

Search Configuration for Due Date

Name	Explanation
NAME	Search configuration for due date
KEY	**DueDate_SF2**
TYPE	Searchfield configuration
VALUE	**SPAPintDueDate**
CHILDREN	*<none>*

This parameter is a link to a search field configuration. So there is a button in addition to the value for switching to the corresponding search field configuration. The value of this parameter points directly to the specific search field name. **You should not change this value for any reason**.

6.3.5 Extract Fields from Embedded ZUGFeRD XML File

Name	Explanation
NAME	Extract fields from embedded ZUGFeRD XML file
KEY	**ZUGFeRD:Import:Activate**
TYPE	Boolean
VALUE	**False**
CHILDREN	*ZUGFeRD:Import:SkipVerify*; *ZUGFeRD:Import:DoSPAPSearches*

This is a parameter for handling of ZUGFeRD documents, which only works, if the ZUGFeRD information is extracted from the PDF file by **XMAILFETCHER**.

True/Active:

If document includes ZUGFeRD data, **SP AP** extracts available field values from there.

Depending on the ZUGFeRD profile, fields normally extracted in **SP AP** could be missing.

False/Inactive (default)**:**

SP AP ignores possibly included ZUGFeRD data.

Send documents with embedded ZUGFeRD XML directly to Export after Analyze

Name	Explanation
NAME	Send documents with embedded ZUGFeRD XML directly to Export after Analyze
KEY	**ZUGFeRD:Import:SkipVerify**
TYPE	Boolean
VALUE	**False**
CHILDREN	*<none>*

This parameter only influences the logic, if the parent parameter is set too.

True/Active:

If document includes ZUGFeRD, workflow routes it directly to Export after Analyze.

Note:

If the parameter "Send documents with embedded ZUGFeRD XML directly to Export after Analyze" is activated, no manual validation in Verify will take place. All validation values are set to "approved"!

False/Inactive (default)**:**

Documents will normally be routed to Verify, even if including ZUGFeRD data

Use SP AP logic for fields not filled from ZUGFeRD XML

Name	Explanation
NAME	Use SP AP logic for fields not filled from ZUGFeRD XML
KEY	**ZUGFeRD:Import:DoSPAPSearches**
TYPE	Boolean
VALUE	**False**
CHILDREN	*<none>*

This parameter only influences the logic, if the parent parameter is set too.

True/Active:

If some standard search field cannot be extracted from ZUGFeRD data, perform the normal **SP AP** search afterwards; this does not apply to the table of position data and all footer fields.

False/Inactive (default)**:**

Only do extraction from ZUGFeRD data, don't use any standard **SP AP** searches.

6.3.6 Field Constraints

Name	Explanation
NAME	Field constraints
KEY	**_FieldConstraints**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Constrain_SetCreditorInformation_OnlyNameZipCityCountry*; *Constrain_CheckPosSum_ErrorState2Table*; *Constrain_CheckCreditorIdAndOrdernumber*

These parameters have influence on the behavior of the field constraints used to check the linked fields business rules.

Fill only Creditor ZIP, City and Country from Creditor ID

Name	Explanation
NAME	Fill only creditor zip, city and country from creditor id
KEY	**Constrain_SetCreditorInformation_OnlyNameZipCityCountry**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

The field constraint **"SetCreditorInformation"** normally fills all creditor specific fields (except the tax numbers) from the master data when the "CreditorId" is set. If this parameter is set to "**True**", only the regions "CreditorName", "CreditorZIP", "CreditorCity" and "CreditorCountry" are filled.

If Table Sum Differs from Value of Goods Display Message also in Position Data

Name	Explanation
NAME	If table sum differs from value of goods display message also in position data
KEY	**Constrain_CheckPosSum_ErrorState2Table**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

If this parameter is set to "**True**", the field constraint **"CheckPosSum_ValueOfGoods"** will set possible error messages not only in the field "ValueOfGoods" but also in all fields "PosTotalNetAmount" of the group "TableOfPositionData".

Order Number must correspond to the Creditor ID

Name	Explanation
NAME	Order number must correspond to the creditor id
KEY	**Constrain_CheckCreditorIdAndOrdernumber**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

This checks if order number fits the creditor identifier according to the Master Data. If they don't match, creditor and order number are not set as valid when this parameter is set to "**True**".

6.3.7 Invoice Date

Name	Explanation
NAME	Invoice date
KEY	**_InvoiceDate**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*InvoiceDate_CreateIfEmpty*; *InvoiceDate_Tolerance*

If the invoice date is not found automatically, then the current date can be set; otherwise it can be checked for an excessive deviation from the current date.

Create from System Date if Empty

Name	Explanation
NAME	Create from system date if empty
KEY	**InvoiceDate_CreateIfEmpty**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

If no invoice date is found then the current day's date is applied instead.

Maximum Age in Days

Name	Explanation
NAME	Maximum age in days
KEY	**InvoiceDate_Tolerance**
TYPE	INTEGER
VALUE	**-1**
CHILDREN	*<none>*

This defines the maximum tolerance between the current date and the invoice date. "-1" (default) deactivates this.

Tip:

These are calendar days not workdays.

6.3.8 Invoice Number

Name	Explanation
NAME	Invoice number
KEY	**_InvoiceNumber**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*InvoiceNumber_activated_clearing*; *InvoiceNumber_SF2*

For the invoice number search, it is possible to activate the clearing of the result by the **VERIFY** user. Additionally there is also a Parameter using a Freetext search configuration.

Activate Clearing

Name	Explanation
NAME	Activate clearing
KEY	**InvoiceNumber_activated_clearing**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*InvoiceNumber_is_found_through_training_no_clearing*

This activates the clearing function so that the invoice number must be approved by user.

▶ **Only if Invoice Number is not trained**

Name	Explanation
NAME	Only if invoice number is not trained
KEY	**InvoiceNumber_is_found_through_training_no_clearing**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

This suppresses the clearing function of the invoice number field, if this field has been trained. Consequently, the invoice number field no longer needs approval.

Tip:

These global settings for clearing can also be changed depending upon the vendor

Search Configuration for Invoice Number

Name	Explanation
NAME	Search configuration for invoice number keywords
KEY	**InvoiceNumber_SF2**
TYPE	STRING (Search field configuration)
VALUE	**SPAPintInvNo**
CHILDREN	*<none>*

This parameter is a link to a search field configuration. So there is a button in addition to the value for switching to the corresponding search field configuration. The value of this parameter points directly to the specific search field name. **You should not change this value for any reason**.

6.3.9 Order Number

Name	Explanation
NAME	Order number
KEY	**_OrderNumber**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*OrderNumberMode0_SF2*; *OrderNumberMode1_SF2*; *Context:OrderNumberSearchMode*

The search mode can be defined for the order number search.

Search Configuration for Order Numbers (Search Mode 0)

Name	Explanation
NAME	Search configuration for order numbers (search mode 0)
KEY	**OrderNumberMode0_SF2**
TYPE	STRING (Search field configuration)
VALUE	**SPAPintOrderNoMode0**
CHILDREN	*<none>*

This parameter is a link to a search field configuration. So there is a button in addition to the value for switching to the corresponding search field configuration. The value of this parameter points directly to the specific search field name. **You should not change this value for any reason**.

Search Configuration for Order Numbers (Search Mode 1 or 2)

Name	Explanation
NAME	Search configuration for order numbers (search mode 1 or 2)
KEY	**OrderNumberMode1_SF2**
TYPE	STRING (Search field configuration)
VALUE	**SPAPintOrderNoMode1or2**
CHILDREN	*<none>*

This parameter is a link to a search field configuration. So there is a button in addition to the value for switching to the corresponding search field configuration. The value of this parameter points directly to the specific search field name. **You should not change this value for any reason**.

Search Mode

Name	Explanation
NAME	Search mode
KEY	**Context:OrderNumberSearchMode**
TYPE	INTEGER
VALUE	**1**
CHILDREN	*<none>*

Modes for the order number search:

0: Key word search (attractor) with subsequent RE (**OrderNumberRegExp**).
An expression which corresponds to the RE is searched for within the proximity of that key word. In this case the order number is not searched for in the table of positions. The search for an order number by key word is only suitable for invoices with just one order number. The key words for order number search are given in the Master Data table *"cxkOrderNumber.csv"*.

1: Search by database comparison (Master Data table "***Master_Transaction.csv***").
The order number is also searched for in the table of position data, where several different order numbers can also be found in one invoice.

2: Equally used as "**1**" but uses a filter on "CreditorID" for displaying the results.

6.3.10 Payment Target Options

Name	Explanation
NAME	Payment target options
KEY	**_PaymentTargetFinderOptions**
TYPE	Group
VALUE	*<empty>*
CHILDREN	*PaymentTarget:ScanDateAsReference*

This is a group of parameters concerning the payment target finder.

Use the Scan Date as Reference Date

Name	Explanation
NAME	Use the scan date as reference date
KEY	**PaymentTarget:ScanDateAsReference**
TYPE	**BOOLEAN**
VALUE	**True**
CHILDREN	*<none>*

With this the calculation of the payment target based on the scan date is activated. Otherwise the document date applies.

6.3.11 Search for Gross Amount without Net and Tax

Name	Explanation
NAME	Search for gross amount without net and tax
KEY	**UseSmallAmountFinder**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*SmallAmountFinderCheckForZero*; *SmallAmountFinderMaxValue*

This parameter activates the “small amount finder”. It searches for amounts that are not the sum of net amounts which are multiplied with tax rates. If this parameter is set to “**True**” and no gross amount is found, this document will be treated as a “small amount invoice”.

Tip:

There is also a subordinate parameter used for defining its limitations.

Check if 0% tax rate is allowed

Name	Explanation
NAME	Check if 0% tax rate is allowed
KEY	**SmallAmountFinderCheckForZero**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

This parameter activates an additional check, if the parameter ‘Search for gross amounts without net and tax’ is activated.

True/Active (default)**:**

The search for small amounts is only done, if 0% tax are allowed in the creditor country (or fallback country).

False/Inactive:

The search for small amounts is done regardless of allowed tax rates.

Maximum Value of Gross Amounts without Net and Tax

Name	Explanation
NAME	Maximum value of gross amounts without net and tax
KEY	**SmallAmountFinderMaxValue**
TYPE	DOUBLE
VALUE	**5000**
CHILDREN	*<none>*

With this parameter, the maximum value for the limiting of small amounts is defined used by the "small amount finder" if "UseSmallAmountFinder" is set to "**True**".

6.3.12 Search for Invoice Recipient

Name	Explanation
NAME	Search for invoice recipient
KEY	**Receiver_Search**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*Receiver_Search:Order;* *Receiver_Search:SimpleValue;* *RecipientSearch_SF2*

This parameter activates the addressee search.

True/Active (default)**:** The receiver must be found

False/Inactive: Disables the receiver search by master data.

The subordinated parameters are used to define the addressee search.

Recipient Search Order

Name	Explanation
NAME	Recipient search order
KEY	**Receiver_Search:Order**
TYPE	STRING
VALUE	**DPRO|DRE**
CHILDREN	*<none>*

Define here the order of search methods that are processed to find the recipient, separated by the pipe symbol ("|"). The possible search modes are:

```
DPRO|DRE
```

In case the recipient is found, the remaining searches are omitted. For more information about DPRO and DRE see *chapter 5.2.20 "Company Code / Debtor"*.

Recipient Search simple Value

Name	Explanation
NAME	Recipient search simple value
KEY	**Receiver_Search:SimpleValue**
TYPE	STRING
VALUE	**J**
CHILDREN	*<none>*

This must always equal the value in the column "SIMPLE" of the debtor master data. If the address search is not used to determine the company code (*see 5.2.20 "Company Code / Debtor"*), this value is used in the field "Addressee" to indicate if the address was found. If the address could not be confirmed automatically, the user may enter this character to confirm the address on the document.

Search Configuration for Recipient Search

Name	Explanation
NAME	Search configuration for recipient search
KEY	**RecipientSearch_SF2**
TYPE	STRING (Search field configuration)
VALUE	**SPAPintDebitorCompanyCode**
CHILDREN	*<none>*

This parameter is a link to a search field configuration. So there is a button in addition to the value for switching to the corresponding search field configuration. The value of this parameter points directly to the specific search field name. **You should not change this value for any reason**.

6.3.13 Service Date

Name	Explanation
NAME	Service date
KEY	**_ServiceDate**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*ServiceDate_SF2;*

Group for parameters concerning service date

Search Configuration for Service Date

Name	Explanation
NAME	Search configuration for service date
KEY	**ServiceDate_SF2**
TYPE	STRING
VALUE	**SPAPintServiceDate**
CHILDREN	*<none>*

This parameter is a link to a search field configuration, so there is a button in addition to the value for switching to the corresponding search field configuration. The value of this parameter points directly to the specific search field name. **You should not change this value for any reason**.

6.3.14 Table of Position Data

Name	Explanation
NAME	Table of position data
KEY	**_TableOfPositionData**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Context:DefaultPosQuantityUnit;* *Table_Position_Extract_Text;* *_PositionMatches;* *_OrderNumberExists;* *_OrderNumberMissing;* *_DisabledTableMode;* *_PositionDataMatching;* *Table_SearchMode*

These are the parameters of the “search for” and “check” of position data.

After the table positions have been read from a document, they are matched against the transaction data (“***Master_Transaction.csv***”) from the ERP system. This type of matching attempts to find correct order positions for the found order number automatically. It is based on a number of strategies, which are executed one after the other. Only a selection of these matches may be desired for certain projects.

Default quantity unit

Name	Explanation
NAME	Default quantity unit
KEY	**Context:DefaultPosQuantityUnit**
TYPE	STRING
VALUE	**ST**
CHILDREN	*<none>*

If not found, this is the fallback value for the position quantity unit.

Extract Position Text

Name	Explanation
NAME	Extract position text
KEY	**Table_Position_Extract_Text**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

This activates the transfer of the complete text of a position row to the article text field if this field is empty. The content is used unformatted from the right to the left. Any content possibly recognized in the fields '**PosSinglePrice'**, '**PosQuantity'** and '**PosTotalNetAmount'** is not extracted. This extraction is not done before the document runs through the **X4D EXPORT**.

If a Position matches …

Name	Explanation
NAME	If a position matches …
KEY	**_PositionMatches**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Table_ArticleNumber_From_Transaction;* *Table_Position_Text_From_Transaction;* *Table_QuantityUnit_From_Transaction*

This group of parameters is dealing with applicable information being filled from the transaction Master Data.

Note:

The automatic takeover of position text from the transaction data is not possible if a region was trained. The position text training takes priority.

- **Use the article number from Master_Transaction**

Name	Explanation
NAME	Use the article number from Master_Transaction
KEY	**Table_ArticleNumber_From_Transaction**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

If a position could be matched to the Master Data, the article number is taken from "***Master_Transaction.csv***".

- **Use the article text from Master_Transaction**

Name	Explanation
NAME	Use the article text from Master_Transaction
KEY	**Table_Position_Text_From_Transaction**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

This activates the takeover of position text from the transaction data in "***Master_Transaction.csv***" where a valid combination of order number and position is found.

- **Use the Quantity Unit from Master_Transaction**

Name	Configuration
NAME	Use the quantity unit from Master_Transaction
KEY	**Table_QuantityUnit_From_Transaction**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

If positions can be matched, the quantity units are taken from "***Master_Transaction.csv***".

If an Order Number Exists …

Name	Explanation
NAME	If an order number exists …
KEY	**_OrderNumberExists**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Table_Allow_Empty_Table_if_order_reference;*

This is an organizational group. These settings depend on the requirements of the connected ERP system.

Allow the Table of Position Data to be Empty

Name	Explanation
NAME	Allow the table of position data to be empty
KEY	**Table_Allow_Empty_Table_if_order_reference**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

If this parameter is activated (set to "**True**") as well as an existing purchase order reference, an empty table will be allowed.

If no Order Number exists …

Name	Configuration
NAME	If no order number exists …
KEY	**_OrderNumberMissing**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Table_Allow_Empty_Order_Positions;* *Table_Allow_Empty_Table_without_order_reference;* *Table_NoExportIfNoOrderReference*

This is where the corresponding settings can be made in case of order references missing in the Master Data.

Allow Order Position to be Empty

Name	Explanation
NAME	Allow order position to be empty
KEY	**Table_Allow_Empty_Order_Positions**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

This allows positions which are not available in the order found in Master Data to exist.
Here, the field '**PosOrderItem**' may be left empty.

Allow the Table of Position Data to be Empty

Name	Explanation
NAME	Allow the table of position data to be empty
KEY	**Table_Allow_Empty_Table_without_order_reference**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

This allows an empty table if no reference of a purchase order exists.

Do not Export the Table of Position Data

Name	Explanation
NAME	Do not export the table of position data
KEY	**Table_NoExportIfNoOrderReference**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

Only in case of an **EXPORT** setting with the special SAP formatting, this suppresses the exporting of a table if no order number is available. Without the specific **EXPORT** setting, the parameter is useless and will be ignored.

Options for Disabled Table Mode

Name	Explanation
NAME	Options for disabled table mode
KEY	**_DisabledTableMode**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*TableSearch:NoSearch:OrderNumberMustBeEmpty*; *Use_Simple_Verify_if_no_Tablesearch*

In case of a disabled table mode, this group bundles the options for the configuration of searches.

Order Number Must be Empty

Name	Explanation
NAME	Order number must be empty
KEY	**TableSearch:NoSearch:OrderNumberMustBeEmpty**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

If the parameter "*Table search mode*" is not "`1`", then no table is filled out and the position data is skipped in **VERIFY**.

If the ERP system is SAP, then the order number must be empty. For this reason, this parameter is provided to determine whether the order number must be empty in the case of a found order number but missing position data.

Use Simple Verify

Name	Explanation
NAME	Use simple Verify
KEY	**Use_Simple_Verify_if_no_Tablesearch**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

When set to "**False**" the document template for invoices with position is used regardless of the table search mode.
It is defined by the following:

- The parameter "**Table search mode**",
- The batch parameter "**TableSearch**" or
- The value in the master data table "***Master_CreditorTableSearch.csv***".

If this is set to **"True"** and the table search mode is "`0`" or "`2`", the template for invoices without positions is used.
The only difference is that are two edit views (as opposed to default three: Header, Line Items, and Footer) for the region groups available in **VERIFY**. The footer fields are then also visible on the first edit view while the second only includes the fields for payment target and custom searches.

If you want to use the "**Simple Verify View**", the entries in "***Master_CreditorTableSearch.csv***" may not override the table search mode to be "`1`".

Position data matching

Name	Explanation
NAME	Position data matching
KEY	**_PositionDataMatching**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Context:FastMatcherExtraDBFields*; *Context:FastMatcherFilterDBFields*; *Context:FastMatcherOptions*

A group of parameters concerning matching of line item values to Master Data entries.

Extra DB fields for matching

Name	Explanation
NAME	Extra DB fields for matching
KEY	**Context:FastMatcherExtraDBFields**
TYPE	**STRING**
VALUE	*<empty>*
CHILDREN	*<none>*

This is a possibility to define an additional matching step for "FastMatcher". This is performed before all other steps defined by "**Context:FastMatcherOptions**". The table line is matched by given pairs of line item fields and columns from the table "***Master_Transaction.csv***" (all separated by blanks)

Example:

"PosQuantity QUANTITY PosArticleNumber ARTICLENUMBER"
This setting can find a valid entry of matching position lines using the combination of quantity and article number.

Filter DB Fields for Matching

Name	Explanation
NAME	Filter DB fields for matching
KEY	**Context:FastMatcherFilterDBFields**
TYPE	**STRING**
VALUE	*<empty>*
CHILDREN	*<none>*

Defined here, are possible additional filters for "FastMatcher", which are separated by blanks. Each filter has to be a pair (also separated by blank) of line items region name and corresponding column in Master Data table "***Master_Transaction.csv***". Only the existing entries matching all filters are taken into account before the position matching.

Example:

"CreditorId CREDITORID PosArticleNumber ARTICLENUMBER" would be a valid filter.

Note:

Keep in mind that matching is always filtered by "PosOrderNumber".

Position Data Matching Options

Name	Explanation
NAME	Position data matching options
KEY	**Context:FastMatcherOptions**
TYPE	INTEGER
VALUE	**15**
CHILDREN	*<none>*

This describes the match strategy for determining order positions in the invoice by a bitmask. The following match strategies can be applied:

"`0`": **ON** - Match by unique single price

"`1`": Match by unique combination of quantity and single price

"`2`": Match by correct single price relating to pricing unit

"`4`": Match position where order has just one position

"`8`": Overwrite single price and pricing unit from master data on match

"`-1`": **OFF** (this is a standalone option which cannot be used additive) deactivates the automatic matching of order positions.

The match strategy is expressed as the sum of all strategies. If the value is "15", then all five are included.

If "1" and "2" are both included, there is an additional matching step done with the combination of quantity and single price relating to the pricing unit.

Table Search Mode

Name	Explanation
NAME	Table search mode
KEY	**Table_SearchMode**
TYPE	INTEGER
VALUE	**1**
CHILDREN	*<none>*

This defines the search mode for position tables. This setting can be overridden by batch parameter within "***para.dat***" or by the master data table "***Master_CreditorTaleSearch.csv***" per creditor. The possible values are:

- "0": no table search; table is not shown in **VERIFY**
- "1": normal table search
- "2": table search only in background as support for footer search; table is not shown in **VERIFY**

6.3.15 VAT Rule Set

Name	Explanation
NAME	VAT rule set
KEY	**_VATRuleSet**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*SalesTax_CheckOwnVatNo;* *SalesTax_activate;* *SalesTax_RE_VatNo_Search;* *_TaxIdSearches;* *_TaxRates*

These are the parameters for checks on the VAT ID numbers and the corresponding rule set.

If nothing is found by the displayed search, or if no **VatNo** or tax number is present in the Master Data, the document will be sent to the **VERIFY** queue and will be displayed in the job list there.

Activate check for own VAT number

Name	Explanation
NAME	Activate check for own VAT number
KEY	**SalesTax_CheckOwnVatNo**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

This activates the checking of the own VAT number according the EU business rules. If true, own ID must be found while sales tax rate = "0" or vendor country is not equal default country.

Enable VAT or National Tax Number Validation

Name	Explanation
NAME	Enable VAT or national tax number validation
KEY	**SalesTax_activate**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*SalesTax_CheckVatNoFormat;* *SalesTax_CheckOnlyVatNo;* *SalesTax_AllowAnyVatNo;* *SalesTax_Country_Code_Germany_MasterCreditor;* *SalesTax_WeakTaxRules*

This will activate/deactivate checks on the taxation (with national tax number or VAT-ID)

XCONTEXT has integrated searches for *VatRegNo* and *TaxNumber*. There is also the option to start an editable search by setting this to "**True**".

▶ Check VAT Number for Valid Format

Name	Explanation
NAME	Check VAT number for valid format
KEY	**SalesTax_CheckVatNoFormat**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

This activates the validation of a found **VatNo** matching a usable format.

Do not Check National Tax Number

Name	Explanation
NAME	Do not check national tax number
KEY	**SalesTax_CheckOnlyVatNo**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

This reduces the check of all tax numbers to the sales tax number (**VatNo**), which has to be filled. Checking of the national tax number is deactivated then.

Do not Check VAT Number against Master Data

Name	Explanation
NAME	Do not check VAT number against master data
KEY	**SalesTax_AllowAnyVatNo**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

This defines the matching of tax numbers against the Master Data.

True/Active (default)**:** Any characters may be entered.

False/Inactive: Values have to match exactly.

Note:

This entry is only relevant if **SalesTax_WeakTaxRules** is set to **"False"**.

German Country Code in Master_Creditor Table

Name	Explanation
NAME	German country code in Master_Creditor table
KEY	**SalesTax_Country_Code_Germany_MasterCreditor**
TYPE	STRING
VALUE	**DE**
CHILDREN	*<none>*

Do not change this value!

This is the country code for Germany, corresponding to the entered one in the Master Data table "***Master_Creditor.csv***" (for instance as used inside the **SP AP** example the ISO 3166-1 code: DE).

The German code is used to identify German creditors as a reference. This is only used in the context of the tax validation. A special rule set according to the German tax act is applied in this case.

Note:

This entry is only relevant if **SalesTax_WeakTaxRules** is set to **"False"**.

Simple VAT or National Tax Number Check

Name	Explanation
NAME	Simple VAT or national tax number check
KEY	**SalesTax_WeakTaxRules**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

This checks if sales tax (VAT) reference is fulfilled or if any character is filled in the tax regions.

True/Active (default)**:**

Allows any characters to be entered into the fields "Tax number" and "VAT Reg No". Entering these characters is equivalent to clearing and approval. This approach can be used, for example, to check the presence of a tax number on the document where the actual content of the tax-number field is not necessary. It can then be discarded by the **X4D** system. Any changes to the Master Data are made directly in the ERP system in this case.

False/Inactive:

Activates European check procedure which depends on the vendor's country. To differentiate the cases, the vendor's country is compared with the user's own country (key "Context:DefaultCountry") and the table "***Master_EU.csv***". The country codes have to correspond with those in "***Master_Creditor.csv***".
Preferably, country codes should match the ISO standards.

The following cases are possible:

- Vendor from Germany; tax ID or national tax number are required.
- Vendor is EU based, not Germany, tax ID is required.
- Vendor from outside the EU; no input required.

Search VAT Numbers based on Format Rules

Name	Explanation
NAME	Search VAT numbers based on format rules
KEY	**SalesTax_RE_VatNo_Search**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*SalesTax_RE_VatNo_Search_ApproveNotCheckableUIDs*; *SalesTax_SearchCountries*

Searches for **VatNos** by a regular expression and filters the results by Master data for own or customer ones.

- **Approve VAT Numbers that cannot be Verified by Checksum**

Name	Explanation
NAME	Approve VAT numbers that cannot be verified by checksum
KEY	**SalesTax_RE_VatNo_Search_ApproveNotCheckableUIDs**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

This activates the confirmation of a well formed **VatNo** founded on the document, if this is not in the Master Data tables and not available in the verifiable **VatNos**.

- **List of countries for which the tax id search is performed**

Name	Explanation
NAME	**List of countries for which the tax id search is performed**
KEY	**SalesTax_SearchCountries**
TYPE	STRING
VALUE	*<empty>*
CHILDREN	*<none>*

Define here a restriction list of countries for which the tax id search is performed only. Preferably, country codes should match the ISO 3166-1 standards. Please use blanks as separator in this listing. Let it empty for the default behavior of no restriction.

Tax Id Searches

Name	Explanation
NAME	Tax id searches
KEY	**_TaxIdSearches**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*TAX:TaxNumber:Search;* *TAX:OwnVATRegNo:Search;* *TAX:SalesVATRegNo:Search;* *SalesTax_CountryCodeOptional*

Here you can switch on or off additional searches for tax numbers. The respective parameter activates the certain finders addressed in **XCONTEXT** so that the related fields are filled with the found context.

Activate Search for National Tax Number

Name	Explanation
NAME	Activate search for national tax number
KEY	**TAX:TaxNumber:Search**
TYPE	BOOLEAN
VALUE	**FALSE**
CHILDREN	*<none>*

You can activate searching for additional tax numbers compared with those candidates, which are also present as "NATIONALTAX" in the Master Data table "***Master_Creditor.csv***". By default, this parameter is deactivated.

Activate Search for Own VAT Registration Number

Name	Explanation
NAME	Activate search for own VAT registration number
KEY	**TAX:OwnVATRegNo:Search**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

This activates/deactivates the additional search for the user's own **VATRegNo**, stated in the Master Data tables.

Beside the integrated searches for "*VatRegNo*" and "*TaxNumber*", this is the option to activate a search for the user's own VAT Id numbers, which must be found if "VAT rate = 0" or "vendor country ≠ default country".

Activate Search for VAT Registration Number

Name	Explanation
NAME	Activate search for VAT registration number
KEY	**TAX:SalesVATRegNo:Search**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

This parameter activates the search for creditor specific VAT RegNo. They can be compared with those candidates, which are also present in the Master Data, if the parameter "*Do not check VAT number against Master Data*" is deactivated.

List of countries for which tax ids are also searched without country code

Name	Explanation
NAME	List of countries for which tax ids are also searched without country code
KEY	**SalesTax_CountryCodeOptional**
TYPE	STRING
VALUE	**BE ES GB IT**
CHILDREN	*<none>*

Define here a list of countries for which the tax id search based on format rules is performed although the VAT IDs could probably miss the country code. Preferably, country codes should match the ISO 3166-1 standards. Please use blanks as separator in this listing. The default value here is "BE ES GB IT".

Tax Rates

Name	Explanation
NAME	Tax rates
KEY	**_TaxRates**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Default_Tax_Rate_Value_1*; *Default_Tax_Rate_Value_2*; *Default_Tax_Rate_Value_3*; *Default_Tax_Rate_Value_4*; *UseOnlyZeroTaxForInternationalShipment*; *UseAlsoBankCountryAsValidTaxRate*

Standard values for the project are *Default_Tax_Rate_Value_1* (and 2, 3, 4). These values are used by the system if corresponding to the identified company code no tax rates are found in the Master Data table *"**CxkTaxRates.csv**"*.

Default Tax Rate 1

Name	Explanation
NAME	Default tax rate 1
KEY	**Default_Tax_Rate_Value_1**
TYPE	STRING
VALUE	**19.00**
CHILDREN	*<none>*

This value is used for possible tax rates if there are no rates defined in the Master Data table *"cxkTaxRates.csv"* for the recognized company code.

Default Tax Rate 2

Name	Explanation
NAME	Default tax rate 2
KEY	**Default_Tax_Rate_Value_2**
TYPE	STRING
VALUE	**16.00**
CHILDREN	*<none>*

This value is used for possible tax rates if there are no rates defined in the Master Data table *"cxkTaxRates.csv"* for the recognized company code.

Default Tax Rate 3

Name	Explanation
NAME	Default tax rate 3
KEY	**Default_Tax_Rate_Value_3**
TYPE	STRING
VALUE	**7.00**
CHILDREN	*<none>*

This value is used for possible tax rates if there are no rates defined in the Master Data table *"cxkTaxRates.csv"* for the recognized company code.

Default Tax Rate 4

Name	Explanation
NAME	Default tax rate 4
KEY	**Default_Tax_Rate_Value_4**
TYPE	STRING
VALUE	**0.00**
CHILDREN	*<none>*

This value is used for possible tax rates if there are no rates defined in the Master Data table *"**cxkTaxRates.csv**"* for the recognized company code.

Search only for 0% Tax in Case of International Shipment Invoices

Name	Explanation
NAME	Search only for 0% tax in case of international shipment invoices
KEY	**UseOnlyZeroTaxForInternationalShipment**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

Activates the usage of 0% tax rate searches in case of invoices with international shipment.

True/Active: Search for 0% tax rates is activated

False/Inactive (default)**:** A tax rate is also needed for international invoices

Use also bank country code to determine tax rate

Name	Explanation
NAME	Use also bank country code to determine tax rate
KEY	**UseAlsoBankCountryAsValidTaxRate**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

Do not change this value!

If the "Ceditor Default Country" is not set to US and this is set to "**True**" the bank country code inside "***Master_Creditor.csv***" is used as second criterion for finding valid tax rates.

6.4 General

Name	Explanation
NAME	General
KEY	**_General**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Context:Debug;*

This is the group of general parameters concerning the **XContext** engine above all other **SP AP** specific parameters.

6.4.1 Enable debug output

Name	Explanation
NAME	Enable debug output
KEY	**Context:Debug**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

This activates the debug mode for reason and functions on development and trouble shooting.

Important:

This parameter should only be used by developers, working in the appropriate **X4D** developing Environment. The activation affects the system's speed and behavior.

Do not activate this parameter in an X4D production Environment!

6.5 Verify

Name	Explanation
NAME	Verify
KEY	**_Verify**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*_DatabaseDialogs;* *_FieldAlternatives;* *_LanguageSettings;* *_Menus;* *_Training;* *_XBoosterCustomMenus*

There are special parameters which influence the behavior of **VERIFY**.

6.5.1 Database Dialogs

Name	Explanation
NAME	Database dialogs
KEY	**_DatabaseDialogs**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*_CreditorLookup;*

This is an organizational group of those parameters relating to the creditor determination via Master Data table lookup.

Creditor Lookup

Name	Explanation
NAME	Creditor lookup
KEY	**_CreditorLookup**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Verify:PrepareDBSearch:HideBankAccount*; *Verify:PrepareDBSearch:CopyCompanycode;* *Verify:PrepareDBSearch:CopyCreditorId;* *Verify:PrepareDBSearch:CopyVatRegNo*

When opening the database dialog, values found on the documents may be taken over. This may be inconvenient for the continued processing of the DB dialog. The “creditor lookup” parameters can be used to control this behavior when the DB dialog is opened.

Hide columns bank account and bank code in dialog

Name	Explanation
NAME	Hide columns bank account and bank code in dialog
KEY	**Verify:PrepareDBSearch:HideBankAccount**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

Since more and more IBAN specifies the bank accounts, the columns "bank account" and "bank code" in most cases are useless.

True/Active (default)**:** This hides "bank account" and "bank code" in the creditor lookup dialog.

False/Inactive: This shows "bank account" and "bank code" additionally to column IBAN.

Preset Dialog with Company Code

Name	Explanation
NAME	Preset dialog with company code
KEY	**Verify:PrepareDBSearch:CopyCompanycode**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

This copies the company code into the dialog. This is not recommended if the Master Data contains empty company code rows.

If the Master Data tables do not contain any "Company Code", the one found on the document is entered into the DB dialog. Then the corresponding creditor can only be found when the company code in the dialog field has been deleted. To prevent the company code from being entered automatically, this parameter can be set to "**False**".

Preset Dialog with Creditor Id

Name	Explanation
NAME	Preset dialog with creditor id
KEY	**Verify:PrepareDBSearch:CopyCreditorId**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

As the previous parameter, except that it relates to the takeover of "CreditorId".

Preset Dialog with VAT Number

Name	Explanation
NAME	Preset dialog with VAT number
KEY	**Verify:PrepareDBSearch:CopyVatRegNo**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

As the previous parameter, except that it relates to the takeover of the sales tax (VAT) IDs. This will copy the determined tax (VAT) number into the dialog, not recommend if no or only few VAT numbers are found in the Master Data.

6.5.2 Field Alternatives

Name	Explanation
NAME	Field alternatives
KEY	**_FieldAlternatives**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Verify:ExpandCreditorAlternatives*; *Verify:ShowFieldAlternativesIfEmpty*; *Verify:ShowOrderNumbers*

When entering a value into a field, the value is compared with existing data and potential candidates for selection can be displayed in a drop-down list. According to the settings grouped in here this behavior can be defined more precisely.

Show Additional Information in Creditor Alternatives

Name	Explanation
NAME	Show additional information in creditor alternatives
KEY	**Verify:ExpandCreditorAlternatives**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

This will display the region specific creditor alternatives with additional support information to make a selection on the name, ZIP and country in addition to the creditor ID.

Show Field Alternatives if a Field is Empty

Name	Explanation
NAME	Show field alternatives if a field is empty
KEY	**Verify:ShowFieldAlternativesIfEmpty**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

Valid values are:

True/Active (default)**:**

Displays the existing candidates (if exist), when a field region is empty or if the existing value is deleted.

False/Inactive:

The empty field is left unaffected.

Show Order Number Alternatives

Name	Explanation
NAME	Show order number alternatives
KEY	**Verify:ShowOrderNumbers**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

This parameter will display a dropdown list with order numbers, but this can slow down **VERIFY** if there are many order numbers. If there is a large quantity of potential candidate data when entering the order number, the reaction times of **VERIFY** may slow down. For this reason, the dropdown list has a switchable activation.

6.5.3 Language Settings

Name	Explanation
NAME	Language settings
KEY	**_LanguageSettings**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Language_Dynamic*; *Language*

The language is defined for the menu entries, the fields' display names, and error messages in **VERIFY**.

The respective translation is taken from the project configuration as edited in the Language view of the **SP CONFIG PLUGIN**. In **VERIFY** the language selection for the items can only be displayed if a translation

into the designated language is available. Otherwise the default language “English” is taken as fallback for that item.

Select Solution Package Language Automatically

Name	Explanation
NAME	Select solution package language automatically
KEY	**Language_Dynamic**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

Valid values are:

True/Active (default)**:**

This means that the language is user dependent and selected automatically by switching in the **VERIFY** menu.

False/Inactive:

The used language in **VERIFY** is the one, defined in the project, no matter what language is chosen in **VERIFY**.

Solution Package Language

Name	Explanation
NAME	Solution package language
KEY	**Language**
TYPE	STRING
VALUE	**DE**
CHILDREN	*<none>*

This parameter defines the language to use in **VERIFY**, if **Language_Dynamic** is set to **“False”**. If the language code is not available in the project configuration as set up in the Language View of the **SP CONFIG PLUGIN**, English is the fallback default.

6.5.4 Mark Non-Invoice ("Other") documents as delete

Name	Explanation
NAME	Mark Non-Invoice ("Other") documents as delete
KEY	**Verify:MarkDoctypeOtherAsDelete**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

This defines in case documents marked as non-invoice in **VERIFY** (menu entry "Handle as Non-Invoice document") they should be marked for deletion. Documents marked for deletion are normally handled differently by Export.

6.5.5 Menus

Name	Explanation
NAME	Menus
KEY	**_Menus**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*_ShowMenus;* *Verify:ShowCreditorSpecificsOnlyInSupervisor;* *Verify:ShowSubmenuOnlyInSupervisor;* *Verify:ShowSubmenuToSpecialWindowsUser*

The display of the **SP AP** specific menus in **VERIFY** can be controlled by the following parameters.

Menus to show

Name	Explanation
NAME	Menus to show
KEY	**_ShowMenus**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Verify_Menu_Clearing;* *Verify_Menu_FinishingMain;* *Verify_Menu_FinishingMaster;* *Verify_Menu_Functions;* *Verify_Menu_Information;* *Verify_Menu_FinishingLearn;* *Verify_Menu_Support;* *Verify_Menu_Training;* *Verify_Menu_Workflow*

The special **SP AP** menu's view in **VERIFY** can be separately switched on or off. Additional, special functions can also be restricted for only use by the **Supervisor**.

Menu Clearing

Name	Explanation
NAME	Menu Clearing
KEY	**Verify_Menu_Clearing**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

Activates/deactivates the display of the sub menu **Options** > **Clearing**.

Menu Finishing

Name	Explanation
NAME	Menu Finishing
KEY	**Verify_Menu_FinishingMain**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

Activates/deactivates the display of the sub menu **Options > Finishing**.

Menu Finishing: Master Functions

Name	Explanation
NAME	Menu Finishing: Master functions
KEY	**Verify_Menu_FinishingMaster**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

Activates/deactivates the display of the sub menu **Options > Finishing:Master functions**.

Menu Functions

Name	Explanation
NAME	Menu Functions
KEY	**Verify_Menu_Functions**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

Activates/deactivates the display of the sub menu **Options > Functions**.

Menu Information

Name	Explanation
NAME	Menu Information
KEY	**Verify_Menu_Information**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

Activates/deactivates the display of the sub menu **View > Information**.

Menu Learn And Finish

Name	Explanation
NAME	Menu Learn and finish
KEY	**Verify_Menu_FinishingLearn**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

Activates/deactivates the display of the sub menu **Options > Learn and finish**.

Menu Support

Name	Explanation
NAME	Menu Support
KEY	**Verify_Menu_Support**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

Activates/deactivates the display of the sub menu **View > Support**.

Menu Training

Name	Explanation
NAME	Menu Training
KEY	**Verify_Menu_Training**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

Activates/deactivates the display of the sub menu **Options > Training**.

Menu Workflow

Name	Explanation
NAME	Menu Workflow
KEY	**Verify_Menu_Workflow**
TYPE	BOOLEAN
VALUE	**True**
CHILDREN	*<none>*

Activates/deactivates the display of the sub menu **Options > Workflow**.

Show Creditor Specific Menus only in Supervisor

Name	Explanation
NAME	Show creditor specific menus only in Supervisor
KEY	**Verify:ShowCreditorSpecificsOnlyInSupervisor**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

True/Active:

The creditor specific sub menus are displayed only to ***Supervisor***.

False/**Inactive** (default)**:**

All creditor specific sub menus of the **SP AP** in **VERIFY** are displayed to all users.

Show Menus only in Supervisor

Name	Explanation
NAME	Show menus only in Supervisor
KEY	**Verify:ShowSubmenuOnlyInSupervisor**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

True/Active:

The display of specialized sub menus of the **SP AP** is made available to ***Supervisor***.

False/**Inactive** (default)**:**

All specialized sub menus of the **SP AP** in **VERIFY** are displayed to all users.

Show Menus only to Specific Windows Users

Name	Explanation
NAME	Show menus only to specific Windows user
KEY	**Verify:ShowSubmenuToSpecialWindowsUser**
TYPE	STRING
VALUE	*<empty>*
CHILDREN	*<none>*

The display of specialized sub menus of **SP AP** in **VERIFY** is limited to those Windows users entered here. Multiple entries are separated by the pipe symbol ("|"). It is only possible to define users, but no groups.

If "*Supervisor only*" is activated, then these users will see all activated sub menus.

6.5.6 Training Functionality

Name	Explanation
NAME	Training functionality
KEY	**_Training**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Add_CompanyCode_To_CreditorId;* *_ReloadRules;* *Context:TrainingReferenceField;*

Training data can be applied in **VERIFY** without need to completely reset the results from the document. Here there are certain parameters for adaption of this behavior.

Consider the Company Code for Training

Name	Explanation
NAME	Consider the company code for training
KEY	**Add_CompanyCode_To_CreditorId**
TYPE	BOOLEAN
VALUE	**False**
CHILDREN	*<none>*

Field trainings are creditor-specific. If this parameter is set to "**True**", the *CompanyCode* will be added to the stored training information. With this parameter, field trainings are specified regarding the combination of creditor and company code.

Rules for Reloading the Trained Data

Name	Explanation
NAME	Rules for reloading the trained data
KEY	**_ReloadRules**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Verify:Training:OnDocEnter;* *Verify:Training:OnValidCreditor*

There are two situations where it is advisable to check for already existing training data:

- When a new document with a valid "*CreditorId*" is loaded/activated
  (the parameter "**Reload rule in case a document is being selected**" *is used*)
- When the entering of a valid "*CreditorId*" is applied
  (the parameter "**Reload rule in case the creditor is being changed**" is used)

For both cases, there are separate parameters with settings for how the training is applied.

They are set as a combination of a keyword and a number, separated by the pipe symbol.

```
<value1:keyword>|<value2:number>
```

The following keywords are allowed:

nothing: Training data is not applied

automatic: Training data is automatically applied

ask: User is asked to apply training data manually.

Valid values for the number are:

"**0**": Apply all available trainings

"**1**": Apply all new trainings added today

"**2**": Apply all new trainings added since the current batch was created

"**3**": Apply all new trainings added since the last time the current batch has been processed in **VERIFY**. If the current batch has not yet been opened in **VERIFY**, this item works in exactly the same way as "**2**".

Reload Rule in Case a Document is Being Selected

Name	Explanation
NAME	Reload rule in case a document is being selected
KEY	**Verify:Training:OnDocEnter**
TYPE	STRING
VALUE	**ask|3**
CHILDREN	*<none>*

A pair of value 1 (Keyword) and value 2 (Number) combined with the separator pipe symbol "`|`":

Valid keywords for value1: "`nothing`", "`ask`" (*default*), "`automatic`"

Valid numbers for value2: "`0`" = all; "`1`" = today; "`2`" = SinceBatch; "`3`" = LastVerify (default)

See the definition in the group parameter "*Rules for reloading the trained data*" above.

Reload Rule in Case the Creditor is Being Changed

Name	Explanation
NAME	Reload rule in case the creditor is being changed
KEY	**Verify:Training:OnValidCreditor**
TYPE	STRING
VALUE	**ask|0**
CHILDREN	*<none>*

A pair of value 1 (Keyword) and value 2 (Number) combined with the separator pipe symbol "`|`":

Valid keywords for value1: "`nothing`", "`ask`" (*default*), "`automatic`"

Valid numbers for value2: "`0`"=all (*default*); "`1`"=today; "`2`"=SinceBatch; "`3`"=LastVerify

See the definition in the group parameter "*Rules for reloading the trained data*" above.

Training Reference Field

Name	Explanation
NAME	Training reference field
KEY	**Context:TrainingReferenceField**
TYPE	STRING
VALUE	**CreditorId**
CHILDREN	*<none>*

Here you can change the definition of which field should be used as reference for field trainings. This field will also be the one, which can be trained by the dactylogram. The configuration is especially interesting in combination with "Do not use external master data files", where no creditor id is used.

6.5.7 XBooster Custom Menus

Name	Explanation
NAME	XBooster custom menus
KEY	**_XBoosterCustomMenus**
TYPE	GROUP
VALUE	*<empty>*
CHILDREN	*Verify_XBooster_Custom_0;* *Verify_XBooster_Custom_1;* *Verify_XBooster_Custom_2;* *Verify_XBooster_Custom_3;* *Verify_XBooster_Custom_4;* *Verify_XBooster_Custom_5;* *Verify_XBooster_Custom_6;* *Verify_XBooster_Custom_7;* *Verify_XBooster_Custom_8;* *Verify_XBooster_Custom_9;*

In order to process additional "custom finishing" functions after the standard **VERIFY**, functions this parameter can be used to define custom **VERIFY** menus which call these functions. Up to 10 function calls can be added to the **VERIFY** menu with these parameters.

XBooster Custom Menu Item 0 to 9

Name	Explanation
NAME	"XBooster custom menu item 0" up to "… item 9"
KEY	**Verify_XBooster_Custom_0; _1; _2; _3; _4; _5; _6; _7; _8; _9**
TYPE	STRING
VALUE	*<empty>*
CHILDREN	*<none>*

These parameters cover the definition of finishing functions which customize up to 10 "XBooster" menu items. Each call has to be configured with attributes separated by "@@@". The ending with the symbol ";" separates this definition from the next function call. Normally the following definition with six attributes can then be executed as the finishing function for the field where the cursor is currently located:

```
Menu_name@@@Prio@@@Mode@@@INSTRUCTION@@@INSTRUCTION2@@@COMMENT
```

This custom finishing also provides the option to conduct targeted operations outside of the current field. By a source (table and field) and a target (also a table and field) definition with the following additional four attributes:

```
@@@SourceTable@@@SourceField@@@TargetTable@@@TargetField
```

They are similar parameterized to the normal standard finishing commands but include some more special parameters for custom finishing. Please check *chapter 3.5 "Custom Finishing"* for more information.

7. Master Data

The Master Data for the **X4D** system is stored in a proprietary database format which enables the data to be accessed extremely quickly in real time. To provide Master Data to the **X4D** system it has to be stored in the ASCII CSV format in UTF-8 encoding. Importing Master Data into an **X4D** system takes place offline with the help of the **XMASTERDATA** processing. This converts the existing data given by the external CRM (**C**ustomer **r**elationship **m**anagement) or ECM (**E**nterprise **c**ontent **m**anagement) into the internal **X4D** data format and stores this within the file system.

Reference:

Further information on importing Master Data and its general specification of format is available in the **X4D** documentation "***System Description - Overview***" especially in the **XMASTERDATA** description.

Internal and External Master Data

In general, the **X4D** system distinguishes between external and internal Master Data and so does the SP AP sample too.

Note:

To ensure complete functionality of the **SP AP** sample project, the set of Master Data needs to be integrated into the **X4D** system. The given definition of the folder for external Master Data tables in the project settings is a static path:

C:\Users\Public\Documents\IRISXtract\db\Invoices\src

Opening the view on Master Data tables in the **SOLUTION DESIGNER** of an **SP AP** sample project that has not been integrated correctly, evokes warnings when opening these external tables. Please check the storage of those files before opening the sample project in the **SOLUTION DESIGNER**.

It is possible to use every Master Data table as an external one. External Master Data tables can be updated whenever needed. However, if it is desired to simply use the database internally, application developers should implement the static data as internal Master Data.

When creating Master Data tables in the **SOLUTION DESIGNER** it can be distinguished between the two cases:

1. The creation of internal tables in the **SOLUTION DESIGNER** creates the table layout and empty Master Data files in the project directory.
2. In contrast, external tables are normally not created. They are typically imported from a sample file. The table and column names are imported from that file so that no mistyping can occur.

List of Master Data Tables (=Files) Included in SP AP

Table	Description	Section
cxkCurrency.csv	Currency key database	7.1
cxkDocType.csv	Document types	7.2
cxkDueDate.csv	Keyword list used for searching due dates	7.3
cxkInvoiceNumber.csv	Keyword list used for invoice number search	7.4
cxkKIDNumber.csv	Keyword list used for searching KID Numbers	7.5
cxkMonthNames.csv	Month names used for date extractions	7.6
cxkOrderNumber.csv	References for searching order numbers	7.7
cxkPaymentTarget.csv	Payment target finder	7.8
cxkPricingUnits.csv	List of allowed factors for the pricing units	7.9
cxkQuantityUnits.csv	Names and abbreviations used for searching quantity units	7.10
cxkTableHeader.csv	Keyword list used for searching the table of position data	7.11
cxkTaxRates.csv	Rates of taxes	7.13
Master_Creditor.csv	Vendor database *(external)*	7.12
Master_CreditorExtension.csv	Alternative vendor search	7.14
Master_CreditorTableSearch.csv	Creditor specific table search switch	7.15
Master_DateFormat.csv	Custom description of date formats for single countries or creditors	7.16
Master_Debitor.csv	Addressee/ Company code/ debtor determination	7.17
Master_EU.csv	Taxation check	7.18
Master_OwnVatRegNo.csv	Own VAT registration number(s)	7.19
Master_Transaction.csv	Transactions master database *(external)*	7.20

Tip:

The respective field names corresponding to the column names are in alphabetical order, within the following description of each master data table of the **SP AP** sample project.

7.1 cxkCurrency.csv

Finding the currency key requires the look-up table "***cxkCurrency.csv***".

Column/Field name	Field description
KEY	Currency search keyword
NLIST	Exclusion attribute - use "~-" to negate
VALUE	Currency abbreviation

7.2 cxkDocType.csv

In order to determine the document type, the look-up table "***cxkDocType.csv***" is required.

Column/Field name	Field description
KEY	Keyword
NLIST	Exclusion attribute - use "~-" to negate
VALUE	Document type (abbreviation)

Here the column VALUE should only contain the following values:

"**RMB**" (abbreviation of German "**Rechnung mit Bezug**" = invoice with purchase order)

"**ROB**" (abbreviation of German "**Rechnung ohne Bezug** = invoice with purchase order)

"**GMB**" (abbreviation of German "**Gutschrift mit Bezug**" = credit note with purchase order)

"**GOB**" (abbreviation of German "**Gutschrift ohne Bezug**" = credit note without purchase order)

Tip:

The document type is interpreted during document processing. The abbreviation of the document type as defined in the parameters is used for the respective keyword as display name in **VERIFY**.

7.3 cxkDueDate.csv

This is a keyword list for the determination of time for payment.

Column/Field name	Field description
KEY	Keyword
NLIST	Exclusion attribute - use "~-" to negate

7.4 cxkInvoiceNumber.csv

This is the list of keywords used for the search of invoice numbers. Only values are found near these keywords and may be used as invoice numbers. If the exclusion attribute "~-" is set, values near this keyword will not be taken into account with the search. If not all invoice numbers are found with the standard keys provided, it is possible to add or change keywords in this table.

Column/Field name	**Field description**
KEY	Keyword
NLIST	Exclusion attribute - use "~-" to negate

7.5 cxkKIDNumber.csv

With this keyword list, the string values will identify the key for the KID number (Norwegian country specific code).

Column/Field name	**Field description**
KEY	Key identifiers for the KID number

7.6 cxkMonthNames.csv

When determining the relevant dates of delivery, order, purchase or offer written on the invoices, an internal table "***cxkMonthNames.csv***" is used. The date finding algorithm uses the names given in this table to find longer date formats with the month name written out. It could be necessary to adapt this table to special abbreviations or different languages. The example project includes the most prevalent names and abbreviations for English, French, German, Spain and Dutch.

Column/Field name	**Field description**
MONTHID	Number of month*
NAME	Keyword

* The MONTHID is corresponding to the numeration of the Gregorian calendar

7.7 cxkOrderNumber.csv

Like the table "***cxkInvoiceNumber.csv***", this internal table "***cxkOrderNumber.csv***" is a list of keywords. It is only used, if the parameter order number "*search mode*" (*chapter 6.3.9*) is set to "0". Order numbers found can be determined by "**Freetext searches**" on the invoices. It might be necessary to add or change keywords in this table, if not all order numbers are found within the standard.

Column/Field name	**Field description**
KEY	Keyword
NLIST	Exclusion attribute - use "~-" to negate

7.8 cxkPaymentTarget.csv

For the determination of the existing terms of delivery written on the invoices, an internal table "***cxkPaymentTarget.csv***" is used. It could be necessary to adapt this table to special phrases or different languages.

Column/Field name	**Field description**
ANCHOR	Compulsory part of the search text. This search word is required as an anchor or attractor to locate the area where the information on the payment target is to be searched for. The search word does not necessarily need to be related to the content of the payment target.
COMMENT	Sample text, serves to determine the size of the region to be searched
EXPAND	Search direction around the anchor (R=right L=left O=above U=under; F=also use values far away)
GROUPS	Number of complete payment targets involved (payment target 1, 2 and net), values 0 - 3.
REGEXP	Regular expression that must apply to the search text; e.g. `([0-9])(% after)([0-9]{1,2})(days)`

The payment target finder proceeds as follows to find the information about payment targets:

1. Search for all anchors on the document
2. Thereafter it works its way from group 3 to 0.
3. A search of the environment is carried out for each anchor found.
   - The direction of the search around the anchor is defined by the value in the EXPAND field.
   - The size of the region to be searched is defined by the sample text in the COMMENT field.
4. The content of this region is used for the later processing. It is checked with the pseudo-regular expression from REGEXP. If the extracted information satisfies the expression, then this data is transferred to the payment target fields which are defined in REGEXP.

Note:

Processing is not interrupted by a successful finding, but values which have already been found will not be overwritten.

The pseudo-regular expression REGEXP is made up in part from normal regular expressions and placeholders for the payment-target information.

Example:

```
Within @VNT@ days net
```

The placeholder "@VNT@" here stands for the net payment target days. The characters "@" frame the placeholder for the field and are removed prior to the search. In case of matching, the placeholder is filled out with the text as found. If the text "within 14 days net" is found here, the value "14" replaces the field "VNT".

Placeholder for marking of payment-target fields:

- The letter V stands for '*Valuta*' (= date for payment).
- 1, 2, N stands for payment target 1, 2 or net.
- The last letter stands for T=days, D=date, B=amount and P=percent.

That implies the following possibilities: V1T, V1D, V1B, V1P, V2T, V2D, V2B, V2P, VNT and VND.

7.9 cxkPricingUnits.csv

The specific decimals from column VALUE define the allowed pricing units used within line item searches and their validation. It is required for the respective Freetext search configuration and thus only those pricing units defined here can be used in **VERIFY**.

Column/Field name	**Field description**
VALUE	Allowed pricing units
KEY	Equals "key" on every row

7.10 cxkQuantityUnits.csv

This table is used to recognize quantity units in position lines. A search for the keywords (column KEY) is performed on found position lines. If a keyword matches, the abbreviation from column VALUE is set into the PosQuantityUnit field of the line. Only quantity units defined here can be used in **VERIFY**.

Column/Field name	**Field description**
KEY	Keyword
VALUE	Common abbreviation referring to the keyword field

7.11 cxkTableHeader.csv

This is keyword list for searching headings of tables with position data.

Column/Field name	**Field description**
TableName	Name of the field region of type 'table'
ColumnName	Name of the column inside the table region
ColumnHeader	Key word to 'ColumnName' found on the document
LeftOpen	[1 | 0] if search area is extended more to left edge of the keyword

Column/Field name	Field description
RightOpen	[1 | 0] if search area is extended more to right edge of the keyword
StartAtSegmentBorder	[1 | 0] if the keyword should be found at the start of any OCR segment
EndAtSegmentBorder	[1 | 0] if the keyword should be found at the start of any OCR segment

7.12 Master_Creditor.csv

The comparison of the creditor with the vendor Master Data refers to an extract from the ERP Master Data table (in the case of SAP/R3, this is the table "LFA1"). The following data is necessary:

Column/Field name	Field description
BANKACCOUNT	Account number
BANKCOUNTRY	Bank country code
BANKSORTCODE	Bank sort code
CITY	City
COMPANYCODE	Company code
COUNTRYCODE	Vendor country code*
CREDITORID	Vendor number
IBAN	IBAN for the bank account
NAME1	Name 1
NAME2**	Name 2
NATIONALTAX	National tax number
VATREGNO	VAT registration number
XPRO1	Alternative creditor determination
XPRO2	Alternative creditor determination
XPRO3	Alternative creditor determination
XPRO4	Alternative creditor determination
XPRO5	Alternative creditor determination
ZIP	ZIP code

* Code corresponds to the ISO 3166-1 alpha-2 standard
** NAME2 is not required for the SP AP processing

A vendor can be listed multiple times in the table if it is listed in multiple company codes or with multiple bank accounts.

Note:

The automatic determination of the company code from the vendor master database is only possible if the vendor is listed under a **single** company code and if the '**addressee** check' is activated.

The column for company code takes on a different significance if the company code has to be determined.

- If a company code is given, then this vendor can only be booked with this given company code. If a vendor is permitted for several company codes, the corresponding rows must be defined.
- If, on the other hand, the COMPANYCODE entry is empty, the vendor is able to present invoices to every company code, if the parameter 'Filter the creditors based on company code' is deactivated.

When bank account details are provided, rules apply for the respective country (for example the following already integrated country rules):

Note:

Special characters such as"– / ." and 'space' are not to be used for bank account details.

Germany: BANKSORTCODE and BANKACCOUNT required

Netherlands: BANKACCOUNT in 9-digit format: For "Postbank" accounts with a leading "**P**", no leading zeros.

Belgium: BANKACCOUNT is entered into documents in the format "123-1234567-12";
to be entered into the Master Data in the format "123123456712".

France: BANKACCOUNT is entered into documents in the format "12345 12345 12345678901 12";
to be entered into the Master Data in the format "12345123451234567890112".

7.13 cxkTaxRates.csv

This "***cxkTaxRates.csv***" is a predefinition table of the most common country oriented tax rates.

Column/Field name	**Field description**
COUNTRYCODE	Code as defined in "*Master_EU.csv*"
TAXRATE	Any kind of tax rate such as corporate, sales, payroll or any individual one

7.14 Master_CreditorExtension.csv

For the extended vendor search there is the file "***Master_CreditorExtension.csv***", which has to be edited manually. The following data is necessary:

Column/Field name	**Field description**
COMPAYCODE	Alternative vendors company code
CREDITORID	Vendor number
EPRO1	Alternative creditor determination
EPRO2	Alternative creditor determination
EPRO3	Alternative creditor determination
EPRO4	Alternative creditor determination
EPRO5	Alternative creditor determination
NAME1	Name 1*

* Name 1 only serves as a reminder and is not incorporated. Data contained here is not applied any further.

7.15 Master_CreditorTableSearch.csv

This is a listing of those creditors for which the default table search behavior can be switched to a specific one. A company code can be defined as a filter, if the creditor ids are not unique.

Column/Field name	**Field description**
CREDITORID	Vendor number
COMPAYCODE	Company code
TABLESEARCH	Search mode [`0`|`1`|`2`] of position table

Define per creditor the mode for searching the table of position data. This setting overrides even the global parameter configuration or the batch parameter from the "***para.dat***" file. Possible values for TABLESEARCH are:

"0": no table search; table is not shown in **VERIFY**

"1": normal table search

"2": table search only in background as support for footer search; table is not shown in **VERIFY**

7.16 Master_DateFormat.csv

It is possible to define custom date formats to improve the recognition of the document date.

Column/Field name	Field description
CalendarShift	Number for the year differences according to the used calendar
ID	Country code as defined in "*Master_EU.csv*" or "*Master_Creditor.csv*"
NumOrder	Date format to search for
Separator	Separator characters that are allowed between date parts
Type	"Country" or "Creditor"

The date finder uses information from this table to extract dates from the documents. The custom date format search depends on finding the creditor on the document.

If an entry exists, matching the creditors country code definition in "***Master_Creditor.csv***", the date search is done regarding to this entry. If an entry exists that matches the creditor ID, this entry is used for the search. Entries matching the creditor ID are always used over of those having a country code match.

The "NumOrder" column describes the format structure (in sequence) of the date ("Y": Year, "M": Month, "D": Day).

Example:

"DMY" is the normal format in Germany. Any combination of these three parts can be used in this column.

The Separator column describes which characters can occur as separation of the date parts.

Definitions in this file do not have any influence on other date searches like service and due date. Date formats for such fields are defined in the respective search configurations.

7.17 Master_Debitor.csv

The addressee search checks whether the invoice was sent to the correct address. For this reason the presence of the corresponding character string (e.g. company name) is checked for the document.

Column/Field name	Field description
DPRO1	Addressee search information 1 (perhaps the name)
DPRO2	Addressee search information 2
SIMPLE*	Filter value, generally “J”
COMPANYCODE	Company code
DRE	RegExp for German address
DPRO3	Addressee search information part 3
DPRO4	Addressee search information part 4
DPRO5	Addressee search information part 5
NAME1	ZUGFeRD specific - Name
NAME2	ZUGFeRD specific - Name line 2
STREET	ZUGFeRD specific – Street
POSTCODE	ZUGFeRD specific – ZI P code
CITY	ZUGFeRD specific – City
COUNTRY	ZUGFeRD specific – Country code**

* The value corresponds to the definition in parameter “Receiver_Search:SimpleValue”

** Code corresponds to the ISO 3166-1 alpha-2 standard

The addressee search depends on the parameter “search for invoice recipient” settings accordingly (see also *chapter 5.2.20 “Company Code / Debtor”)*.

7.18 Master_EU.csv

The file “***Master_EU.csv***” contains the country codes (ISO 3166-1 alpha-2) of all EU member states as required by tax audit regulations.

Column/Field name	Field description
KEY	Country code
COUNTRY	Country name (in German within the example project)

* COUNTRY is for information only and is not used.

7.19 Master_OwnVatRegNo.csv

The table "***Master_OwnVatRegNo.csv***" is for determining the “own” VAT registration numbers of the debtor.

Column/Field name	Field description
VATREGNO	VAT Identification number
COMPANYCODE	Company code

7.20 Master_Transaction.csv

An extract from the ERP transaction master data table (SAP r/3: “Ekpo”) is used to compare invoice and position data. The following fields are necessary:

Column/Field name	Field description
ARTICLENUMBER*	Material number
CREDITORID	Vendor number
ORDERNUMBER	Order number for the position
ORDERITEM	Position number
PRICINGUNIT	Number of items per package; see *cxkPricingUnits.csv*
QUANTITY**	Quantity
QUANTITYUNIT	Units for the quantity
SINGLEPRICE	Net price
SHORTTEXT	Article text

* The columns ARTICLENUMBER can be used, if parameter also “*Use the article number from Master_Transaction*” is set.

** The data field QUANTITY contains the ordered amount, which has not yet been accounted for, and this may differ from the original ordered amount..

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