



b-Wize

Automatic Invoice Processing

From Informed Imaging

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b-Wize INVOICE from Informed Imaging

The first choice for invoice processing

b-Wize INVOICE is a system for automatically processing mixed business documents such as supplier invoices, credit notes, and delivery sheets.

Using scanning technology, pattern recognition algorithms, workflow, and the best OCR engines available, b-Wize INVOICE offers a single solution to reduce the cost of invoice processing and to speed up the invoice approval process.

Interface to Oracle Applications

Because b-Wize uses an underlying Oracle database, connectivity into your Oracle system is very much simplified. B-Wize writes directly into Oracle tables; therefore, data is immediately available for upload to the e-business application suite.

Benefits of b-Wize INVOICE

Faster invoice processing

With b-Wize INVOICE, processing speeds approaching 10 times that of manual input are readily achievable. The system is completely modular, so stages of the work (scanning, and on-screen validation) can be logically directed to the most appropriately skilled members of staff. All other processes - classification of invoices, data extraction, and automatic validation checking - are done automatically and can be run without operator attendance.

Reduced labour time and costs

Up to 90% of all invoice data can be captured automatically; therefore, staff spend less time keying data and checking sum totals. The b-Wize data completion screens are set out in a logical and easy-to-follow manner; therefore, less skilled staff can be assigned to data completion work, freeing experienced staff to attend to more complex tasks.

Meeting guidelines on supplier payments

By speeding up the invoice matching and posting process Councils can maintain good payment terms with suppliers and improve their days-to-pay for invoices. Furthermore, Councils can take advantage of supplier discounts that may be offered for prompt payment.

Quicker access to detailed information

Capturing data up to 10 times faster means that greater invoice details can be captured and stored in time available. This gives better information for buyers when contracting for further goods or services.

b-Wize - faster than full page OCR.

B-Wize does not require a full-page OCR (Optical Character Recognition) approach, which, although effective, can be slow. b-Wize uses a unique form-feature classification system known as 'Dispatcher', which sorts mixed documents into similar types before applying a template. The result is fast sorting, fast image routing, and fast, accurate data extraction.

Handles multi-page invoices

b-Wize is able to use the next invoice to be scanned as a page separator enabling it to accept and process multi-page invoices such as utility and phone bills. Now there is no longer any need to pre-sort multi-page invoices from the single page invoices or to add in document separator sheets.

Double-sided documents

It may be necessary to store both sides of the document as an image. Examples include double-sided invoices such as phone bills and invoices containing terms and conditions printed on the reverse. b-Wize can be set to capture double-sided invoices as necessary.

Data

Data captured via b-Wize can be delivered in any format required by the ERP system, database or application receiving the data. Data can be structured as XML, CSV, or fixed length and images are output as CCITT 4 compressed Tiff files.

b-Wize Overview

Operating System and database

Runs on Windows® clients running Win 2000 or XP and uses an underlying Oracle database to hold data at all stages of processing. Output to Oracle is greatly simplified because data is already held in a standard Oracle table.

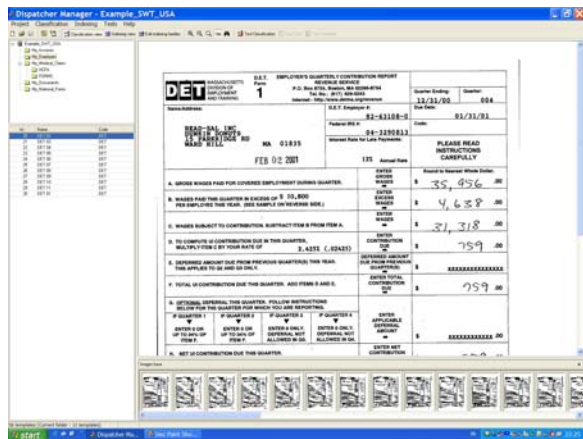


Enhanced images

Informed Imaging recommends the use of a high-quality auto-feed scanner that supports image enhancements. Many business invoices are printed on very thin paper and may be second copy. b-Wize provides a powerful image utility, which can be used to great effect to 'clean up' and de-skew images of low quality, thereby reducing the amount of manual correction needed by accounts staff.

Form pattern recognition beats full page OCR

Unlike many other forms processing systems, which rely on a process of 'full page OCR', b-Wize uses an advanced module known as 'Dispatcher' to pre-sort mixed documents into similar categories or 'Classifications' before a template is applied. The result is fast sorting, fast image routing, and fast, accurate data capture.



Classification view – showing mixed scanned images making up a classification

The b-Wize process

Project file or knowledge base

All scanned documents are processed through a 'knowledge base', which holds feature definitions of the documents. When documents have similar features they are categorised into a 'Classification'. Clearly, basic 'template' style matching cannot be applied, as invoices from the same supplier will almost always look slightly different as the items on order vary or the distribution point changes. B-Wize is able to accept these differences yet still classify 'same supplier' invoices – much as a human administrator would do.

Self-learning system - Auto-classification

When setting up a 'knowledge base' b-Wize provides a quick learning utility, which automatically analyses new documents and builds rules about those documents for the future. When subsequent documents from that supplier are scanned b-Wize will use its knowledge-base to classify them correctly.

On-going learning refinement

In a typical production environment new suppliers will be added each month. b-Wize will route these 'unknown' images to a manual keying station and hold images of these new supplier invoices in a pending folder ready for learning. After running the auto-learning utility the new supplier invoices become part of the knowledge-base and are automatically processed from thereon.

Defining classifications

A key strength of b-Wize is its ability to automatically classify documents of similar style. While setting up the knowledge-base it remains for the administrator to set up a name for each classification, which, in most cases, is the name of the supplier, and any sub-category such as depot, location, or specific reference number.

Tree hierarchy

The knowledge base uses the familiar Windows Tree hierarchy structure, which allows the user to simply create sub-folders and organize them by dragging-and-dropping. This makes maintenance and updates to the knowledge-base very easy to administer.

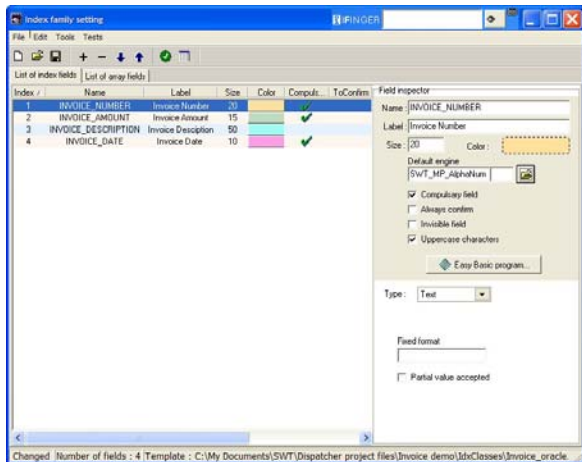
Indexing families

Business documents, such as invoices, always contain key information that must be captured. An indexing family is a generic set of index fields that may be applied to the type of document being processed, e.g. Invoices. The family contains the total set of all index fields that may be used for that document type. In most cases not all documents will require every field in an indexing family to be applied.

An example of an indexing family for invoices may contain - Date, Supplier name, Invoice number, PO number, Supplier reference code, Item number, Item amount, VAT number, Sub total, Total before VAT, VAT rate applicable, Gross amount, discount etc. However, every invoice may not require all of these fields to be applied in order to fully process it.



A different indexing family can be quickly built for other types of documents, for example; Health Claims forms. In the case of a Health Claim form, fields such as Health Claim reference number, Date, Name, Hospital reference code, Case number, Doctor name, Signature, subtotal, total, VAT etc might be more appropriate.



Index definition – setting up an Indexing Family

Index Field rules

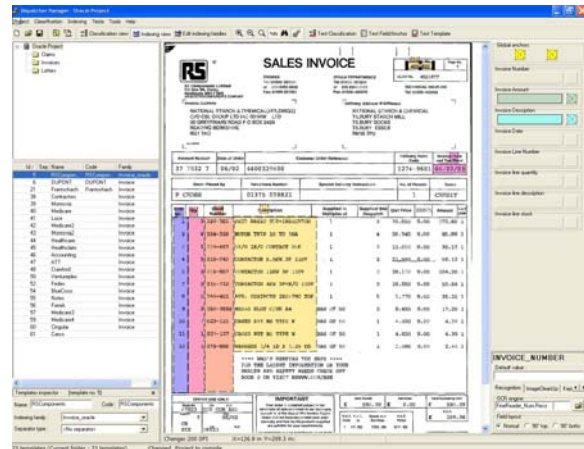
Each index field has associated rules attached to it. These rules are set up once in the knowledge-base and will define field length, data type, range, mask, OCR/ICR engine used, image-clean-up, date structure, cross validation checks, VB scripting, and any database look-ups.

VAT calculations for standard and non-standard rates

b-Wise allows varying VAT amounts to be defined and applied depending on the type of invoice and the rates applicable for the goods or services. This is particularly useful when dealing with contracts that attract varying rate VAT.

Array fields for line items

An array field is the term applied to a field used to capture lists of line items, which will be of varying length. Capturing line item information is essential for full invoice analysis but distinguishing between irrelevant information and vital line item data is a problem for automatic invoice processing systems. With b-Wise, rules can be added to array fields to remove unnecessary information like marketing banners and special offers that are often added to supplier invoices.



Index definition – setting up an array field for line items

Optional full page OCR

In cases where the forms being processed do not have any vaguely discernable underlying layout (e.g. a typed page of data) b-Wise offers an option for full page OCR, thereby giving users the maximum flexibility in processing approaches.

Invoice definition - indexing view

Setting up a template is quick and easy with b-Wise. The following sections outline the main stages involved in setting up a new template and testing it before adding it to the knowledge base.

Drag and drop set-up

To define a template the user simply selects the required fields available from the Indexing Family and drags them onto the scanned base image. Colour coding of individual fields makes it easy to identify fields during set-up and easy for data completion staff to recognise a field at later stages during production.

Index Fields

The powerful zoom features of b-Wise allow fields to be precisely positioned using the mouse. Cutting, re-sizing and moving fields is all done via the mouse with a few clicks. If necessary, deleting the field allows the user to begin again by dragging the field from the Indexing Family display screen.

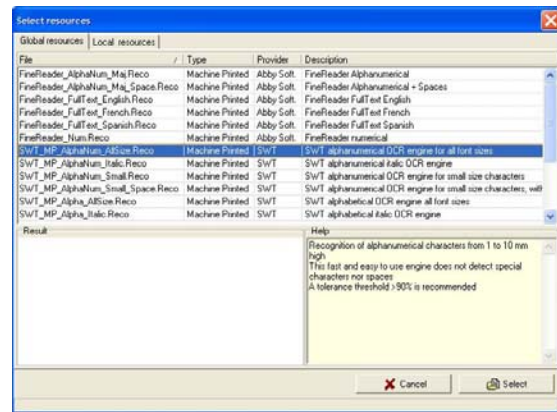
Anchors

When dealing with a supplier's invoices, information will not always occur in exactly the same location on each sheet of paper. To deal with this problem, b-Wise uses an advanced data locator known as an

Anchor, which is associated with every index field. This Anchor searches pre-defined areas of the image for shapes it expects to find – this could be a word, part of a word or even just a shape such as the supplier logo or a pound sign. Using the Anchor the index field is then accurately located onto the correct data. This method allows data to be found and captured even though its physical location on the page may move considerably.

Global Anchors

It may be necessary to deal with images that have been badly distorted such as faxes or photocopies. The corresponding image may differ in size by several centimetres compared to the original template. In this case global anchors can be used to re-scale the image before index fields are applied, therefore greatly improving the automated capture of data from badly skewed or distorted images.



OCR engine selection screen

Filters masks and logic rules

Suppliers will often enhance and customise invoices with the use of colour logos or coloured paper. To read the information on an invoice it may be necessary to eliminate the background under or around a piece of data so that OCR engines can work efficiently. b-Wize offers a range of standard masks and customised masks to remove backgrounds or rebuild poorly defined characters (e.g. dot matrix printing).

Dates

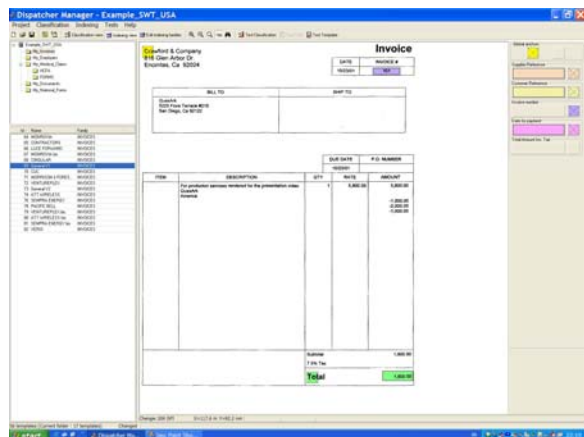
Dates on supplier invoices may be written in many different ways. However, your ERP system requires a fixed date format to be entered. b-Wize can automatically read mixed date formats and convert them to your chosen standard, including any separators.

Range Checks

Invoices over pre-set financial limits or outside of agreed date ranges will require authorisation by the relevant authorising executive or department. b-Wize can be programmed to flag and route invoices breaking any definable rule to an Oracle Workflow routine for authorisation approval.

Financial tolerance checks

Suppliers may often round up subtotals to produce a grand total, which may differ slightly from the sum of the line items. b-Wize can be set to accept a pre-defined tolerance that can be applied to a specific supplier or a range of suppliers, thereby avoiding unnecessary manual checking.



Invoice templating screen

Instant Tests

During set-up, an administrator needs to quickly test that the index field is working. b-Wize provides a simple 'button-click' tool to test the index field on all images within the classification. There is no need to save or publish the work beforehand so system set-up and tuning becomes an iterative process with immediate feedback of results.

OCR Engines

Supplier invoices are printed in a wide variety of fonts, styles, and character formats. b-Wize offers a range of in-built OCR engines from SWT and other leading suppliers to meet most eventualities. Also, b-Wize offers an ICR (handprint) recognition engine for the capture of hand printed text, which may be necessary for application forms or claims forms.



VB scripting for customised rules

For more advanced index validation checking and cross referencing b-Wize supports EZBasic scripting at index field level. Users with BASIC programming knowledge can quickly build advanced rules and checks to validate content. Alternatively, data can be delivered to Oracle Financials and all checks and rules run within the ERP system.

Updating the knowledge base in b-Wize

Modifying the knowledge base of b-Wize is a straightforward process. The administrator incorporates new invoices into the knowledge base by re-running the learning module. How often this happens depends on the occurrence of new suppliers but from that point onwards those invoices are automatically classified.

Workflow

b-Wize includes an internal workflow engine which tracks work presented to the system and automatically moves it through subsequent stages of processing or, if necessary, directly to Oracle Workflow. If, for example, it was not possible to match an invoice to a purchase order number, then the image can be routed to Oracle Workflow for invoice authorisation by the relevant buyer, ensuring no invoice is left outstanding.

Reporting Tools

It is important at any time to be able to identify and locate any invoice passing through the process. b-Wize provides in-built reporting tools to quickly show the numbers of invoices scanned and the stage within the process for each invoice, so that no document is lost or left requiring attention.

For departments looking at productivity, b-Wize enables the administrator to view processing rates by date and by operative, enabling department heads to quickly identify areas of poor productivity with practical evidence.

Image store Management

Although documents scanned as black and white images generate quite small files, in the order of 50Kb, a typical accounts department may find it is necessary to handle several hundreds of thousands of images. b-Wize provides a number of useful tools to set data storage spaces and to re-allocate physical space if it becomes necessary. Other administrative tools include options to archive off to tape or CD for backup purposes.

Invoice processing in a working environment (local government site)

PO recognition

Incoming invoices are counted into batches of 25 mixed documents ready for scanning. There is no requirement within the system to use batches but this has been part of the previous manual process and remains a preferred option in the new process. Scanned images are automatically classified and the invoice number captured on every sheet.

Visual confirmation of invoice number

To meet the quality control measures laid down by the customers' chief accountant each invoice number on every sheet is automatically read and then presented to an operator for visual confirmation. Although this visual confirmation is unnecessary as the validation rules require the number to be read and matched across separate pages this additional step was added to double check the system. In future it may be removed, as processes are refined.

Data extraction

Invoice data is extracted according to the template rules set up within the knowledge base. Invoices are checked for completeness and matched to a valid PO number before being passed for posting to Oracle Financials for payment clearance.

Invoice/PO matching

Invoices without matching valid purchase orders are automatically routed to Oracle Workflow for authorisation by the appropriate buyer.

Data output

Data is posted to the Oracle tables for transfer into Oracle Content Management or Oracle Financials along with the invoice images.



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