QS-DocumentAssembler
Examples of Use

Content

1. Abstract

QS-DocumentAssembler is a software to read barcodes from image files.
The following examples of use will demonstrate how our clients use this general function of barcode recognition.

Barcode recognition is normally used for the **identification of documents or products**. Barcode recognition is faster and more accurate than typing data manually.

Note: The sections below discuss scanning and scanned documents. Currently scanning of documents is the most common process of producing image files. **QS-DocumentAssembler** also processes image files which are produced via fax or by photographing. Additionally processing of “Adobe PDF” files which are produced by “printing” from programs is supported.

By scanning documents, the **barcode** is used **for identification and indexing**. For fast access, images are archived with additional information. The search key can be a simple number or be composed of different fields.

In addition to document identification, it is also possible to code **object identification** using barcodes. For clear identification of objects, labels with barcodes are often used. If many small labels are pasted to forms or to protocol sheets, **QS-DocumentAssembler** can help to record barcode data fast and reliably, thereby saving your time.

QS-DocumentAssembler offers many different features to manage these tasks. Selected features will be demonstrated below.

In addition, some **special customized solutions** will be described which demonstrate some of the adapted solutions found in collaboration with our clients.

Three cases will be examined:

- indexing documents
- reading many barcode data
- special solutions

The archive file docasm_samples.zip contains directories with example image files for three cases. There are also short descriptions of the **QS-DocumentAssembler** settings and results of operation recorded. Image data and descriptions can serve as a tutorial for **QS-DocumentAssembler** or as instructions for tests using your own images.

Both Docasm_samples.zip and the evaluation version of **QS-DocumentAssembler** can be downloaded from the internet: http://www.qualitysoft.de/en/download_eval_form.htm

2. Discussion of examples

2.1 Indexing documents

Read barcode and rename image files (scenario: “archive“)

Paper documents should be scanned and archived as an image file. Using digital copies of the paper documents (image files) is much more effective than handling the papers themselves when performing standard processes such as searching, displaying, printing and sending these documents.

Storage of images is often used. Today, the capacity of hard drives, compact disks and DVDs is extremely high and prices are low. This allows paper archiving systems to be replaced by scanning and archiving of images in many cases. At the same time a huge amount of work time used for sorting and searching can be reduced.
For multi-user-systems in particular, central documents can be accessed from many workplaces simultaneously.

For many work processes, having access to scanned data is only necessary for a short time. This is referred to as “short-term archive“. Transformation of files into a “long-term archive” can be performed easily, for example if legal regulations require that documents be stored for a long-term.

Example time sheet

Employee’s time sheets and activity reports should be scanned and archived after recognition. Images of the documents should quickly be available to handle discrepancies in the sheets data.

Each employee will receive a series of barcode labels with his/her employee number. A label should be attached to each time sheet. You can print these labels by yourself or you can purchase them in bulk from print shops.

Completed time sheets are scanned and re-named by **QS-DocumentAssembler** automatically, so that the files have the employee’s number as their file names.
As a result, time sheets can be archived automatically. This not only saves costs by eliminating the use of paper, but the time sheets can be found much more quickly.

Example delivery note

Note	The file ”DocAsm_Indexing.pdf“ in the folder “Indexing_Documents“ contains details for processing of delivery note examples with **QS-DocumentAssembler**

An additional barcode is printed on the delivery note which contains the delivery note number. In addition, printing other information (e.g. client number and date) is also possible.

The client acknowledged the receipt of products on the delivery note by signing them upon delivery.

The delivery notes are returned and scanned with a document scanner in a batch. The image files are automatically written by the scan program. A consecutive number is normally given as file name. The files in the scan folder (“source“) are arranged in sequence by **QS-DocumentAssembler**. Barcodes are recognized from the images. The image files are re-named and receive the delivery note number as their file name. Files are moved into a result folder (“dest“).

Searching for an image can be performed using a system program like Explorer. **QS-DocumentAssembler** can also produce index files which can be used for individual further processing or archive systems.

On clients request images of the delivery notes can be searched. This eliminates a deposit of sorted papers since as a general rule access to the paper documents never occurs. The scanned image can be shown and printed by system utilities. In addition, the scanned image can be sent to the client by fax or email.

Documents often have more than one page. With **QS-DocumentAssembler** it is possible to automatically summarize pages which were individually scanned. This “binding” is controlled by barcodes, which are on the first page of the document or on “separator sheets”.

The folder “Indexing_Documents” of docasm_samples.zip demonstrates this task. In the subfolder “Processing_Samples\linear_barcodes\version1” we see 10 files which each show separate pages. Each file has a “delivery note number”. For demonstration purposes, the number is printed as a linear barcode as well as a 2D barcode data matrix.

2D barcode
data matrix

common linear barcode
code 39

both barcodes contain the same data: 471100-110306-0089

Normally only one barcode type is used. For safety (for example if the barcode’s environment is very vulnerable to dirt) printing two identical barcodes next to each other can increase reading reliability. The image also shows how small the required space of the modern two dimensional data matrix barcode is.

QS-DocumentAssembler sequentially re-names one-sided, scanned files according to the delivery note number that is given by the barcode. This allows files identified correctly.

The folder “Processing_Samples\linear_barcodes\version2” also contains 10 files showing how the scanner produces them. These are multipage delivery notes.
QS-DocumentAssembler produces multipage TIF-files (“multi-TIFF”), which each contains the first page (with the barcode) and the following pages (without barcodes).

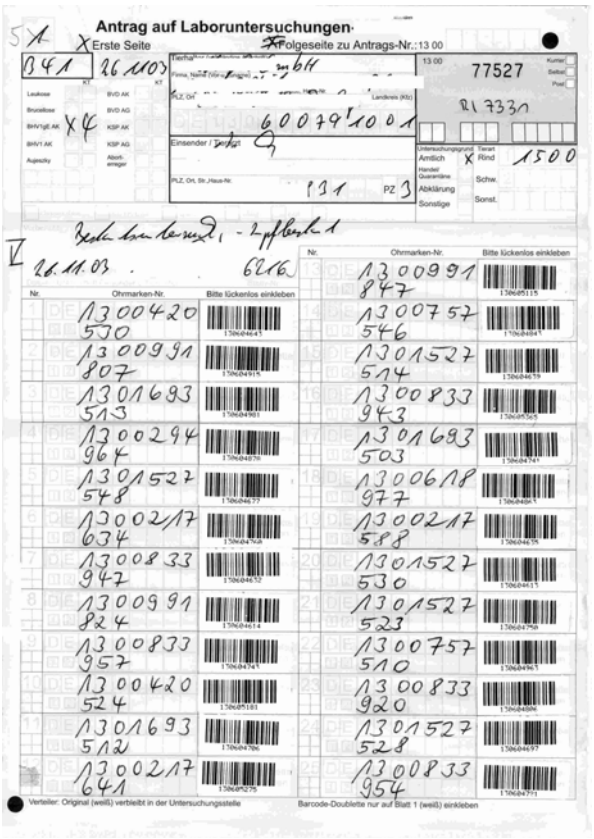
The folder “Processing_Samples\linear_barcodes\version3” shows the same task under slightly different conditions. Here it is accepted that all pages are written in **one** file during scanning. This is often the way that scanning is done when using network scanners or Adobe Acrobat for creating Adobe PDF-documents.

To achieve the same results as in the second case, **QS-DocumentAssembler** does not need to merge the separated pages, but must divide the large scan-file into logical multipage delivery notes.

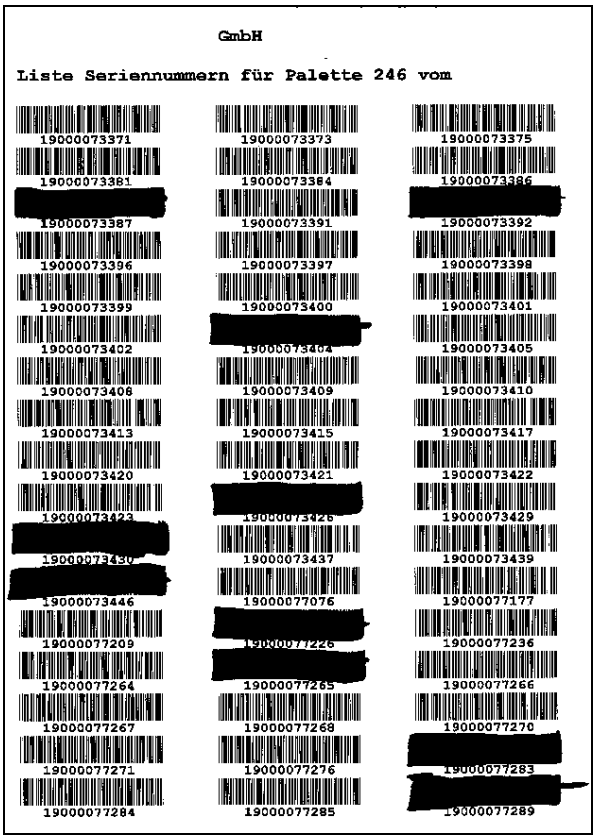
The folder “Processing_Samples” documents settings of **QS-DocumentAssembler** as well as the result files and protocol files.

2.2 Reading many barcode data

Barcodes labels are often attached to objects to identify them. Examples are serial numbers or product numbers.



Laboratory task with 25 test samples



serial numbers in the shipment protocol

Laboratory or test material is often kept in small vials. These vials are identified by small barcode labels with a unique order number. A second label with the same number is attached to a sample data sheet. The data sheet contains master data and order details. One test can be assigned to many test samples. For each sample a barcode label is attached to the sample data sheet. The data sheets are scanned. By reading the barcodes the sample numbers are recorded and assigned to the task.

A shipment protocol of high-quality goods is recorded similarly by printing the serial number on barcode labels and attaching them to the outgoing record. Protocols are archived optically by scanning. By reading the barcodes with **QS-DocumentAssembler**, a register of delivered product and serial numbers is produced which can be quickly searched.

Sometimes it is also possible to photograph objects and read barcodes from the image:

Microtiter plates in shipment box

Compared to reading with hand-held scanners, reading multiple barcodes is faster, the results are not only shown but written to a file and the image can also contain other hand-written information which will be included in the image file.

The folder “reading_many_barcode_data” of docasm_samples.zip contains example images and information on the settings of **QS-DocumentAssembler** according to this task. Result files of the reading also exist in different formats.

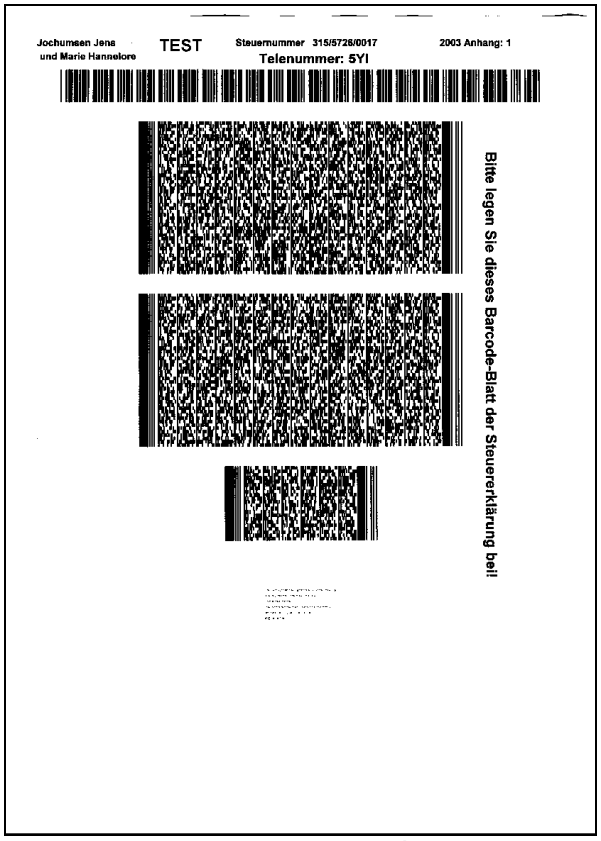
Note	For further details please consider the ”DocAsm_Reading_many.pdf“ file in folder ”reading_ many_barcode_data“.

2.3 Special solutions

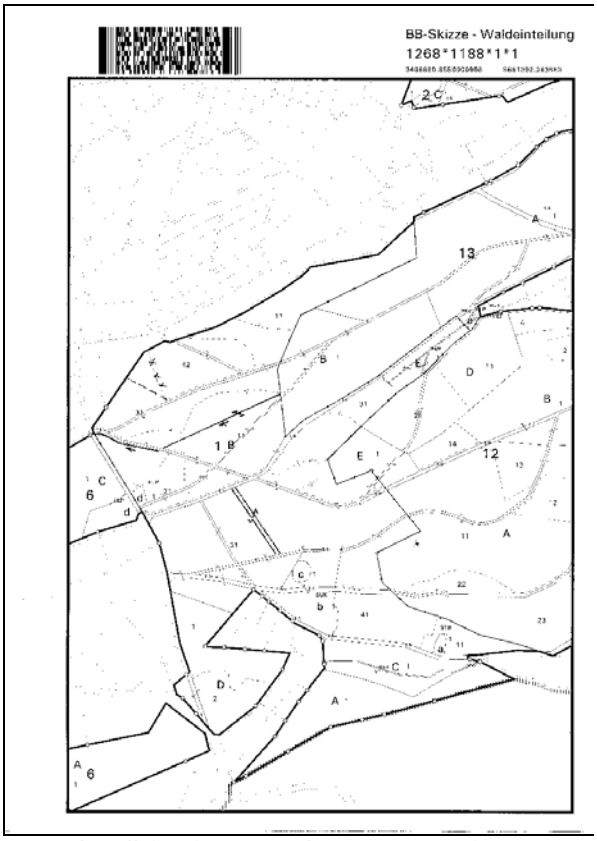
We design and implement **special customized solutions** with our clients using barcodes for fast and safe data recognition.

An ELSTER barcode contains the input data of the “**electronic tax computation**”. These data are printed as two dimensional barcodes on an additional page. This page is sent to the tax department together with tax forms. The barcode sheet is scanned and the coded data are read accurately from the barcode. This allows the client to save costs in data recognition and tax calculations can be processed faster at the tax department.

Together with the **Forestry Department** in Hessen/Germany, small details of maps are printed on DIN A4 sheets for the federal state forestry registry. The exact coordinates of the map detail (GPS coordinates) are coded as a two dimensional barcode. Map details are updated in the forests. After scanning the updated map details can be assigned quickly and accurately.



ELSTER - Barcode



Map detail for forestry department of Hessen

QS-DocumentAssembler provides the basis for the solution in both cases.

Please talk to us if you are interested in implementing similarly innovative ideas for your company.