

## ABBYY® FineReader Engine 10

The Most Comprehensive SDK for Recognition and Document Conversion



### What is FineReader Engine 10?

FineReader® Engine 10 for Windows is the newest Software Development Kit (SDK) to integrate ABBYY's multilingual recognition and conversion technologies into external applications. The toolkit facilitates tight integration of ABBYY's core OCR (machine-print), ICR (handprint), OMR (check mark) barcode recognition and PDF technologies; FineReader Engine 10 is the definitive solution for creating highly accurate, scalable, efficient recognition and conversion systems. This is information transformation at its best.

### Extreme Flexibility, Precise Results and Cost-Effectiveness

#### Modular Platform

FineReader Engine combines a full range of functions with the highest quality recognition, effective processing speed, and convenient development tools in a single SDK.

#### Flexible Enough for Any Type of Application

FineReader Engine can be used in:

- Archiving and document processing applications
- Control and verification systems
- Document conversion systems
- Fax processing applications
- Content creation and management applications
- Digital mailroom applications
- Document sorting applications
- Web publishing systems
- Intranet archiving applications
- Media clipping solutions
- Reading or voice-playback systems

#### Single Supplier of all Technologies

ABBYY delivers full-range state-of-the-art technologies for document conversion and developing own Data Capture solutions thus developers don't need to source different SDKs for different tasks.

#### Scalable Enough for any Size of Application

Engine 10 can be used to build applications of any scale and complexity – from a client workstation, to a server-based solution or a large multi-million page project. Built-in multi-core support and flexible network licencing ensure flexible deployment and scalability.

#### Ease of Development

FineReader Engine offers easy access to core technologies and its COM API through development environments such as C/C++, Visual Basic and Visual Studio.NET. Optimised development profiles make easy for developers to get started with new projects.

#### Cost-Effective

A modular architecture and pricing model offers a variety of features as “add-on” modules, allowing developers to choose only the functions they need, while providing the option to add new functions at a later time.

#### Secure Investment and Flexibility

ABBYY's breakthrough technologies are permanently optimised and extended. Multi-platform support allows developers to expand their markets by choosing the appropriate OS support for their applications: Windows, Linux, FreeBSD, Mac OS and more.

### Product Overview

- High quality recognition technologies for OCR, ICR, OMR, 1D and 2D Barcodes
- Language support for more than 190 OCR and 113 ICR languages
- Adaptive Document Recognition Technology (ADRT) processes all pages of a document as a logical unit to ensure unified export results
- New recognition technology for Chinese, Japanese and Korean, also in combination with European languages
- Many supported export formats from pure text, XML, HTML, RTF ODT\*, e-book\* and Microsoft Office 2007 file formats
- PDF- & PDF/A document export for archiving, including, highly compressed MRC PDFs

### Benefits for Developers

- Ability to enhance your applications with multi language OCR and document conversion
- Full control over document processing settings and recognition results
- Document API to simplify processing
- Integrated Scalability through built-in multi CPU core support
- Visual Components for fast and easy integration of user interface elements
- Qualified technical support

# Processing & Feature Overview

## Document Recognition and Conversion Step-by-Step

### Step 1) Document Input

FineReader Engine 10 can acquire documents and images from different sources:

- Load images from disc or memory
- Scan images via TWAIN
- Load images from digital cameras
- Open PDFs

Engine 10 accurately converts all types of PDFs. The SDK can access internal PDF information like annotations, meta-data, font dictionaries, and content streams.

### Step 2) Image Preprocessing

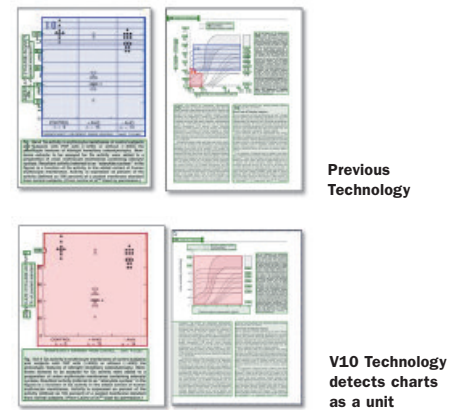
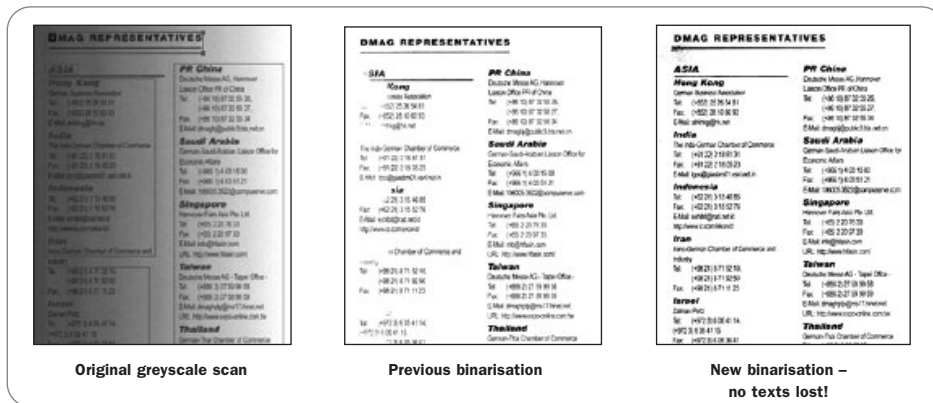
Once document pages are loaded, FineReader Engine offers a variety of image processing options which prepare document images in a way to deliver the best OCR results:

- Image cleaning routines to remove noise and garbage
- Optimisation of images from digital cameras, e.g. straighten curved text lines
- Dual-page splitting
- Different algorithms for skew correction up to 20 degrees
- Adaptive binarisation (optimised in V10) and texture filtering

### Step 3) Document & Layout Analysis

After image pre-processing, the recognition areas have to be defined. Developers can choose 3 different modes for automatic document analysis (DA) based on artificial intelligence:

- Full text DA recognises all text on documents, including text embedded in pictures, charts and diagrams
- DA with layout retention brings auto-detection of blocks, tables, barcodes, and pictures
- Invoice pre-processing DA with a focus on numbers and tables
- Manual block creation is mostly used in Field Level/Zonal Recognition scenarios

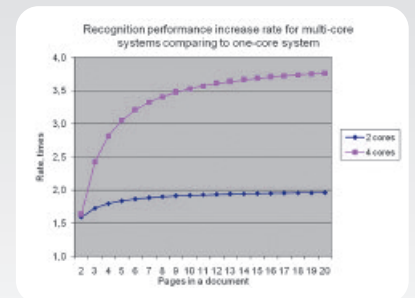


## Document API & Multi-CPU Recognition Architecture

The Engine 10 Document API allows easy processing of multi page documents. The pages will be processed as a logical unit and not isolated from each other. The new recognition architecture utilises all CPU cores during analysis and recognition of multi-page documents. This function combines and executes the distribution of pages, it coordinates recognition and the synthesis.

The SDK is designed to scale depending on the number of CPU cores, providing a significant increase in processing speed with each new core added to the system. For example, it can deliver up to 90 percent\*\* increase on dual-core, up to 250 percent\*\* increase on quad-core processors.

\*\* Numbers quoted are based on internal ABBYY testing.

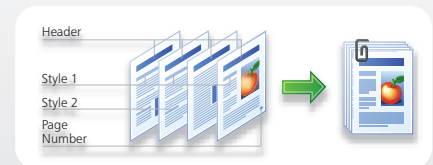


## Adaptive Document Recognition Technology (ADRT®) with Document API

ADRT is ABBYY's unique recognition technology that uses a set of innovative document analysis algorithms. Based on the layout and formatting information generated during the OCR process, a logical model of the document structure is generated. This includes:

- Elements like headers and footers, footnotes, page numbers etc.
- New in Version 10: Reconstruction of the tables of contents (TOC)

Multi-page documents are processed as a unit so the documents generated by ADRT have consistent formatting across all pages. The results can be automatically exported to DOC(X). In FineReader Engine 10 developers can access the ADRT® results and re-use the information in own applications, for example: clipping software or book conversion.



# Processing & Feature Overview



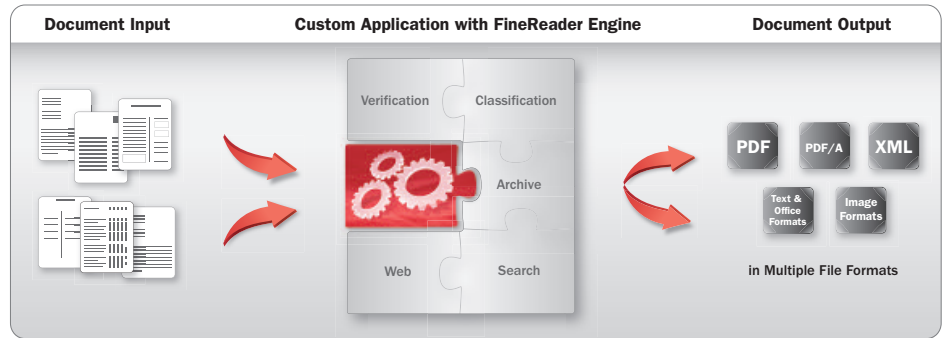
## Step 4) Recognition

Once the recognition areas are set up, character and word recognition are executed. The SDK supports over 190 OCR and over 110 ICR languages and has a built-in omnifont OCR Engine. So it is capable to recognise a large variety of font types and objects:

- **Standard fonts** used in office environments, magazines, newspapers
- Documents printed with **dot-matrix** printers or **typewriters**
- **Special fonts** like OCR-A, OCR-B, MICR (E13B) and CMC7
- **Old fonts** such as Fraktur and Schwabacher
- **Hand-printed characters** (ICR) in various field borders and frames
- **Checkmarks**
- **1D & 2D Barcodes**

### FineReader Engine gives developers full processing control:

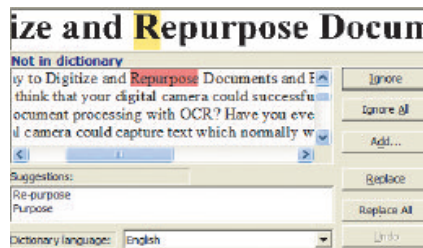
- **Recognition modes** normal, fast or balanced mode options for OCR, ICR, and barcodes
- **Intelligent processing of PDFs.** Engine 10 determines on a block-by-block basis when to apply full recognition or if the text layer can be used
- **Core recognition parameters tuning** allows the switching on/off of certain algorithms for pre-processing, document analysis and recognition
- **Sophisticated definition** of field content, by setting alphabets, dictionaries, regular expressions, types of segmentations, handwriting styles, etc.
- **Voting API,** gives developers access to word-level and character-level hypotheses. This information can then be used in external voting systems
- **Pattern training,** e.g. for special characters, or decorative fonts
- **Own language definitions and dictionaries** can be used to improve the recognition results



## Step 5) Verification & User Interaction

Developers have full access to internal recognition results. Engine 10 provides basic information like the character coordinates, but also very advanced attributes, including:

- Font and formatting information
- Word and character recognition hypotheses



The information is available via API and XML Export, so that they can be used for automated correction. For simplified, user driven correction and verification, visual components (ActiveX controls) are available\*\*. So layout analysis results and uncertainly recognised characters can be changed, but also the page order within a document. Available components are:

- Scan Interface
- Document Viewer
- Image Viewer
- Text Editor
- Text Validator

## Step 6) Export/Document Output

FineReader Engine 10 offers multiple export options and formats:

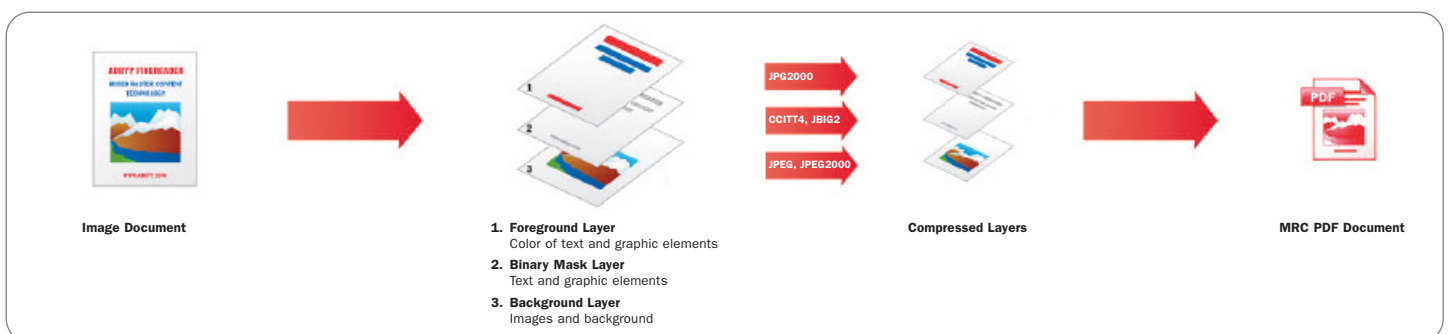
- TXT, CSV, DBF – contain text in reading order, but no formatting and layout information
- XML – different levels of layout and formatting
- HTML, RTF, DOC(X), XLS(X) and PPT(X) – allow direct usage and editing
- New Open Office Text Format: ODT\*
- PDF, highly compressed MRC PDFs, PDF/A – direct usage in business processes and archiving
- New E-book Formats EPUB (.epub)\* and FictionBook (.FB2)\*

### MRC (Mixed Raster Content) Compression for PDF and PDF/A

MRC compression achieves significantly better file compression without visible degradation of document representation. Significantly reduced file size, up to 10 times smaller compared to JPEG compression. Ideal when colour documents are scanned and processed. The parameters of compression for background, colour and text mask can be set.

For simplified fine tuning FineReader Engine 10 offers six new high level parameters, in addition to the 40 low level ones.

\*\* Still under development, planned to be released in a maintenance release of FineReader Engine 10 (Q1/2011)



# Specifications and Licencing

## Specifications

### System Requirements

- PC with x86-compatible processor (1 GHz or higher).
- Operating System: Microsoft® Windows 7, Microsoft® Windows Server® 2008, Windows Vista®, Windows Server® 2003, Windows® XP, Windows 2000, and 64-bit versions of Windows Server® 2008, Windows Vista®, Windows Server 2003, Windows XP
- Memory:
  - for processing one-page documents – minimum 400 MB RAM, recommended 1 GB RAM
  - for processing multi-page documents – minimum 1 GB RAM, recommended 1,5 GB RAM.
- Hard disk space: 800 MB for library installation and 100 MB for program operation plus additional 15Mb for every processing page of a multi-page document.
- 100% TWAIN-compatible scanner, digital camera, or fax modem
- Video card and monitor (min. resolution 1024\*768)

### OCR

Multilingual OCR 199 languages (including Latin, Greek, Cyrillic alphabets, Chinese, Japanese and Korean), thereof 55 languages with dictionary support.

### Text Types

Normal, Matrix, Typewriter, OCR-A, OCR-B, CMC7, MICR, Fraktur/Gothic, mixed text type support processing with auto detection on a word-level.

### ICR

On digits, digits combined with letters of one language, and digits combined with letters of several languages, even if fields contain both upper and lower case letters. Separates field content from borders and frames. 91 languages, 22 with morphology, field-special dictionaries; 22 handwritten styles including English, American, German, French and Russian.

### Barcodes

Including processing of barcodes that are damaged or printed at any angle and fast barcode extraction, more than 16 most popular 1D industrial types, 2D PDF 417, Aztec, Data Matrix, QR Code.

### Check mark (OMR)

Simple, grouped, model check marks, marks with "corrections" made by hand.

### Input Formats:

BMP, PCX, DCX, JPEG, JPEG 2000, PNG, GIF, TIFF, DjVu, PDFs (Version 1.6 or earlier).

### Output Formats

DOC, DOCX, ODT\*, XLS, XLSX, PPT, PPTX, CSV, TXT, XML, EPUB\*, FB2\*, searchable PDFs, PDF/A, compressed MRC PDF/As, BMP, PCX, DCX, JPEG, JPEG 2000, PNG, TIFF, image snippets.

### Development

FineReader Engine API supports the COM standard and can be easily used in Microsoft Visual Studio.NET (VB.NET, C#); Microsoft Visual Basic 5.0, 6.0; Microsoft Visual C++ 4.x and above; VB Script, and other scripting languages; Borland Delphi 2.0 and above; Any other development environment that supports COM and ActiveX objects correctly.

Further information online: [www.ABBYY.com](http://www.ABBYY.com)

\* Planned for a maintenance release of FineReader Engine 10

## ABBYY Licencing Policy

ABBYY FineReader Engine is sold via a flexible, modular licencing policy that allows developers to select the best combination of tools and pricing options for their project. Licencing is offered as:

### Developer Licences

Providing rights to develop and test applications based on FineReader Engine technology. The licence bundle includes three hardware licence dongles or a concurrent network licence. Each licence allows processing of up to 10.000 pages per month.

### Runtime Licences

Grants right to distribute applications with FineReader Engine functions incorporated. Runtime Licences (RTL) differ by functionality, page volume, and network support (Network Runtime Licence). The Professional Runtime Licence provides access to core recognition technologies. Additional RTLs oriented to specialised functions include the Barcode Runtime Licence and FineReader XIX Runtime Licence.

### Add-on Modules for Runtime Licences

RTLs can be enhanced by adding one or more of the following functionalities offered as add-on modules: PDF export, CJK (Chinese, Japanese, Korean) OCR, Thai OCR, Hebrew OCR, Vietnamese OCR, ICR, OMR, document analysis for invoices.

### Support, Maintenance and Upgrade Assurance (SMUA), Certification Trainings and Professional Services

To secure the success of your projects ABBYY offers additional support, training, and certification programs on all products. If you need to speed up your project, contact ABBYY for Professional Services. Upgrade Assurance guarantees that you always have access to the latest technologies.

## More ABBYY Developer Products

### FineReader Engines for Other Platforms

ABBYY offers its recognition technology also for other operating systems like Linux, Mac OS and Free BSD. This cross platform approach allows customers to follow market trends and to secure the investment that was made.

### Mobile OCR Engine

ABBYY's "compact code OCR" is optimised to deliver a highly accurate conversion of image files into text using a small amount of memory and system resources. Platform independence ensures support for such operating systems as Android, Linux, MacOS, iOS, Symbian, Windows (PC, x86) and Windows Mobile®.

### Recognition Server

Recognition Server is a robust, scalable, server-based solution for automating optical character recognition and PDF/document conversion in enterprises. It can be integrated via API. Recognition tasks can be outsourced to Recognition Server since the SDK can reuse the internal file format with all results.

### FlexiCapture Engine

ABBYY SDK for Data Capture scenarios allows document separation, classification, template matching for fixed forms as well as intelligent data extraction via FlexiLayouts from all kind of document types. FlexiCapture Engine functionality can also be combined with FineReader Engine API.

# ABBYY®

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