

## ABBYY® FineReader® Engine 9.0

The Most Comprehensive SDK for Recognition and Document Conversion



### What is FineReader Engine 9.0?

FineReader® Engine 9.0 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 9.0 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 9.0 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 Deployment

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.

#### 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 Benefits

- 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 up to the latest 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

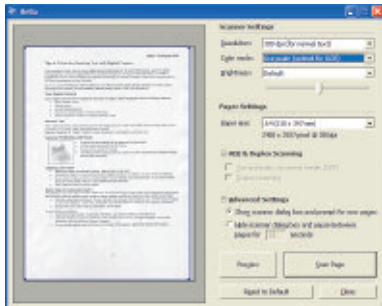
FineReader Engine 9.0 is based on a sophisticated platform supporting the latest document conversion and recognition technologies. From document or file input, to processing and export, the SDK gives developers access to a broad range of functionality across each step in the recognition process.

### Step 1) Document Input

FineReader Engine 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 9.0 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

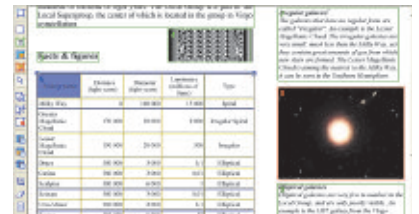


- Optimisation of images from digital cameras, e.g. straighten curved text lines
- Dual-page splitting
- Different algorithms for skew correction up to 20 degrees
- Built-in adaptive binarisation and texture filtering

### 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

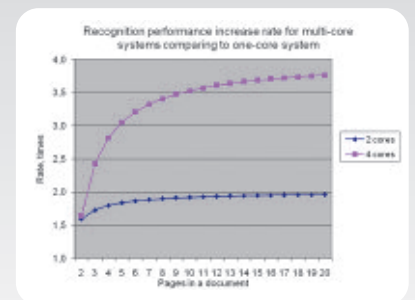


## Document API & Multi-CPU Recognition Architecture

The new Engine 9.0 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.

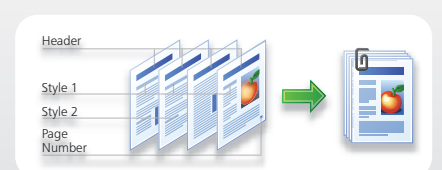


## Adaptive Document Recognition Technology (ADRT®)

ADRT is a new recognition technology based on an innovative set of document synthesis algorithms developed by ABBYY. It automatically builds a logical model of the document structure and identifies:

- Formatting purpose of elements like headers and footers, footnotes, page numbers etc.
- How document elements should be reconstructed

Documents generated by ADRT have consistent formatting across all pages of a document because they are processed as a unit. ADRT preserves integrity with logical relations between elements, for example, during the export to DOC(X) page numbers, headers and footers are automatically formatted and linked in an intelligent way.



# Processing & Feature Overview

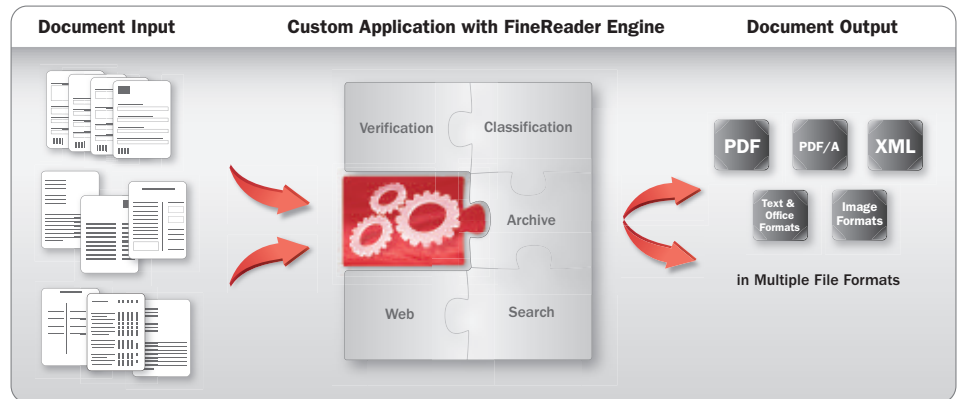
## Step 4) Recognition

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:

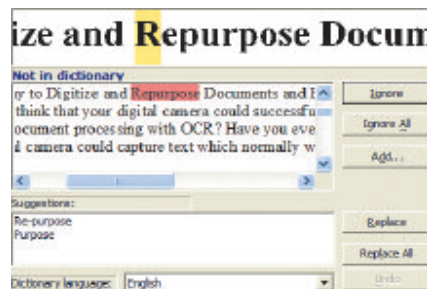
- **Recognition modes** normal, fast or balanced mode options for OCR, ICR, and barcodes
- **Intelligent processing of PDFs.** Engine 9.0 determines on a block by block basis when to apply full recognition or if the text layer can be used
- **Core recognition parameters tuning** allows switching on/off 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 the internal recognition results. Engine 9.0 provides basic information like the character coordinates, but also very advanced attributes, like:

- 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, version 9.0 offers visual components (ActiveX controls). 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

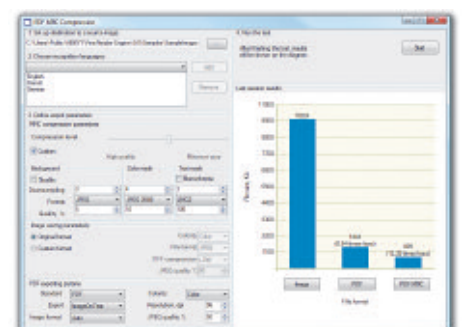
## Step 6) Export/Document Output

FineReader Engine 9.0 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
- PDF, highly compressed MRC PDFs, PDF/A – direct usage in business processes and archiving

### 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.



# Specifications and Licencing

## Specifications

### System Requirements

- PC with Intel® Pentium® / Celeron® / Xeon™, AMD K6/Athlon™/Duron™/Sempron™ or compatible processor with a minimum clock speed of 200 MHz
- Operating System: 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: 128 MB RAM plus an additional 110 MB for each recognition process.
- Hard disk space: 350 MB for full developer installation and 70 MB for program operation
- 100% TWAIN-compatible scanner, digital camera, or fax modem
- Video card and monitor (min. resolution 800x600)
- Keyboard, mouse or other input device

### OCR

Multilingual OCR 195 languages (including Latin, Greek, Cyrillic alphabets, Chinese, Japanese and Korean), thereof 47 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, XLS, XLSX, PPT, PPTX, DBF, CSV, TXT, XML, 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 9.0

## 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, they allow 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, pages processed per month, 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, 2D barcode recognition, 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, Mac OS for iPhone, 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®

#### ABBYY UK Ltd.

Abbey House, Grenville Place,  
Bracknell RG12 1BR, United Kingdom  
Tel: 0800 028 4515  
Fax: 0800 028 4526  
sales\_uk@abbyy.com  
[www.abbyy.co.uk](http://www.abbyy.co.uk)

#### ABBYY Europe GmbH

Eisenheimerstr. 49  
80687 Munich, Germany  
Tel: +49 89 511159 - 0  
Fax: +49 89 511159 - 59  
sales\_eu@abbyy.com  
[www.ABBYY.com](http://www.ABBYY.com)