



MST Viewer for C++ and .NET

A Document Imaging Solution



Overview

- **Supports wide range of File Formats**
(PDF, TIFF, JPEG, DICOM etc...)
- **Support enabled for IBM proprietary formats**
(MODCA, IOCA, PTOCA)
- **Customizable User Interface**
- **Optimized for rendering large documents at high speed.**
(Retain recently traversed pages)
- **Working Set**
(Support for creating a custom set of working documents, which can be further merged to one or multiple documents)
- **Connectors available for multiple ECM solutions**
(IBM Content Manager, MS SharePoint, Oracle Universal Content Management, etc...)
- **Scanning Documents into working sets.**



Overview

- **Fast First Page Display**
(Asynchronous download capabilities)
- **Multi-Threaded Application**
- **Document Conversion to various formats**
(PDF, TIFF, JPEG, GIF etc...)
- **Annotation Layers**
(Line, Arrow, Rectangle, Circle, Text, Note, Highlighter, Pen, Stamp, Eraser)
- **Image Editing Tools** (Zoom, Rotate, Crop, Cut, Copy, Paste, Clipboard support)
- **Image Processing Plug-In**
(Enhance, Brightness / Contrast, Sharpness / Smoothness, Red Eye Removal, Gamma Correction etc...)
- **Web Enabled** (View MODCA, IOCA documents in MST Viewer embedded in Internet Explorer)



Support File Formats

- ASCII
- BMP_COMPRESSED
- BMP_UNCOMPRESSED
- DCX
- GIF
- GIF_INTERLACED
- IMG (PURE IOCA)
- JPEG
- PPM
- PGM
- WBMP
- MO:DCA_G3
- MO:DCA_G4
- MO:DCA_JPEG
- MO:DCA_MMR
- IOCA(MO:DCA)
- PTOCA(MO:DCA)
- PCX
- DCX
- TIFF_G3-2D
- PBM
- PNG
- RTF
- TIFF_G3_FAX
- TIFF_G4_FAX
- TIFF_HUFFMAN
- TIFF_JPEG
- TIFF_LZW
- TIFF_PACKBIT
- TIFF_UNCOMPRESSED
- SUN RASTER

Image Compressions

Decoding

- JPEG
- CCITT G3
- CCITT G4
- HUFFMAN
- PACKED BITS
- BMP RLE
- LZW
- IBM_MMR
- JBIG-2
- ABIC
- JPEG2000
- G3-2D

Encoding

- FLATE
- CCITT G3
- CCITT G4
- LZW
- HUFFMAN
- PACKED BITS
- BMP RLE
- G3-2D
- JPEG

User Interface

- ENHANCED THUMBNAIL VIEW
- TOOLBAR ALIGNMENT
- DISPLAY PREFERENCES
- ADD / REMOVE TOOLBAR PREFERENCES
- TREE VIEW BROWSING DOCUMENTS OF WORKING SET.
- MULTI PANE VIEW FOR COMPARISONS





Optimized Rendering Techniques

➤ FAST FIRST PAGE DISPLAY:

Document is downloaded in an asynchronous mode from the provided location & in a multi-threaded environment allows for fast downloading and rendering of the pages after the first page is downloaded.

The average time for the first page getting rendered is 2 sec.

➤ RETAIN A PERCENTAGE OF RECENTLY TRAVERSED PAGES:

On user preference the pixel data of only the most recent traversed pages is stored in memory, which reduces the overall memory consumed by the application hence improving the overall performance of traversing between pages.



Optimized Rendering Techniques

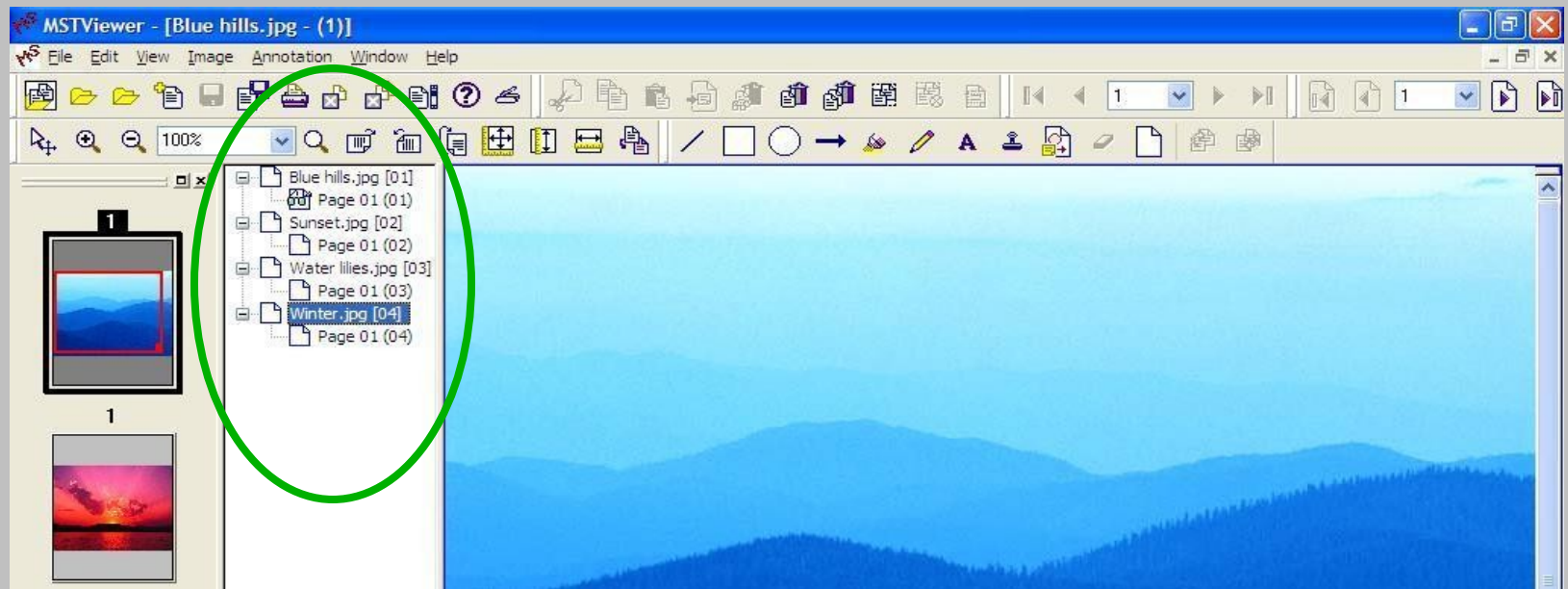
➤ IMAGE QUALITY:

FOLLOWING TECHNIQUES ARE USED TO PRODUCED THE HIGHEST LEVEL OF IMAGE QUALITY:

- IMAGE ENHANCE FOR NOISE REMOVAL
- BI-LINEAR INTERPOLATION FOR BI-LEVEL IMAGES
- BI-CUBIC INTERPOLATION FOR COLORED IMAGES

Working Sets

- Viewing multiple documents in a single document window.
- Browse documents & pages in a working set from Tree-View, Thumbnails or Toolbars.
- Creating Custom documents in a working set which can be converted to single or multi-page documents.
- Scan documents and add them to your working set.














Connectors For ECM

- **Automation enabled**
- **Capable of working as a Automation Server in an In-Place environment.**
- **Embedded into ECM Client applications**
(e.g. IBM Content Manager Client or MS SharePoint web based client)
using Object Linking & Embedding for downloading and viewing document.

Annotations

- **Line** 
- **Arrow** 
- **Rectangle** 
- **Circle** 
- **Text** 
- **Note** 
- **Highlighter** 
- **Pen** 
- **Rubber Stamp** 
- **Current Date & Time Stamp** 
- **Image Stamp** 
- **Eraser** 
- **Audio Annotation**

(Available in MST Viewer 15)

- **Annotations drawn on top of each document are saved as an separate MODCA annotation document, which are overlaid on top of the document each time it is rendered.**
- **Base document is never modified unless the user merges the annotation with document.**
- **Multiple Annotation properties**



Document Conversion

- **Converting MODCA, IOCA, PTOCA documents to PDF, TIFF etc...**
- **PDF Annotation Conversion**

MODCA ANNOTATIONS PRESENT IN SOURCE DOCUMENTS ARE CONVERTED TO PDF ANNOTATION OBJECTS, AND THEREFORE CAN BE EDITED & MODIFIED AFTER CONVERSION.
- **Merging of Annotations with the Document**

(MODCA ANNOTATIONS ARE MERGED WITH THE DOCUMENT WHEN CONVERTED SUCH THAT THE BECOMES PART OF THE DOCUMENT.)
- **PTOCA to PDF Searchable Text:**

(PTOCA IS CONVERTED AS PDF TEXT OBJECTS, HENCE CAN FURTHER BE SEARCHABLE IN AROBAT READER.)



Image Editing Tools

- **Clipboard (Cut / Copy/ Paste)**

(SUPPORT OF WINDOWS CLIPBOARD FOR EDITING DOCUMENTS USING MULTIPLE APPLICATIONS)

- **Annotation (Cut / Copy / Paste)**

- **New Document**

(CREATE A NEW BLANK DOCUMENT, ADD IMAGES OF MULTIPLE FILE FORMATS TO IT AND THEN SAVE IT AS PDF OR TIFF OR MODCA ETC...)

- **Crop Image**

- **Magnifier**

- **Print Image** (WITH & WITHOUT ANNOTATIONS)

- **Print Selected Area of Image** (WITH & WITHOUT ANNOTATIONS)

(PRINTS THE USER SELECTED REGION OF IMAGE)

- **Flipping Image (X & Y Axis)**

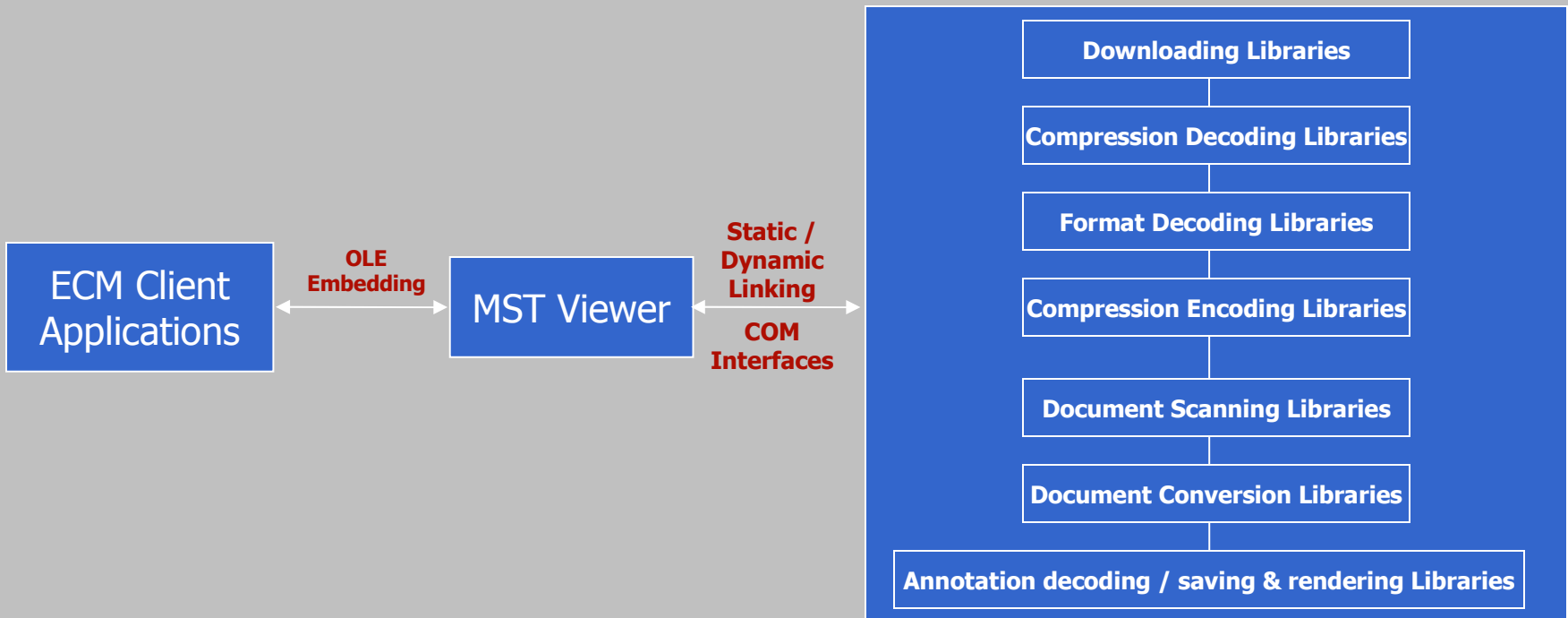


Image Processing Tools

- **Invert**
(INVERTS THE COLORS OF IMAGE)
- **Brightness & Contrast**
(SLIDER CONTROLS FOR INCREASING / DECREASING BRIGHTNESS & CONTRAST LEVEL)
- **Sharpness & Smoothness**
(ON & OFF MENU OPTIONS FOR APPLYING SHARPNESS OR SMOOTHNESS)
- **Red Eye Removal**
- **Edge Detection**
(LAPLECIAN & SOBEL EDGE DETECTORS)
- **Deskew & DeSpeckle**
- **Gray Scale Conversion**
- **Image Cleanup**
- **Image Enhance**

Architecture

- Document decoding libraries are built C++. Wrapped up by MFC DLL's & ATL COM DLL's.
- User Interface is designed & developed in VC++ MFC (MDI Application with automation support).
- Built on Microsoft Visual Studio .NET 2003





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