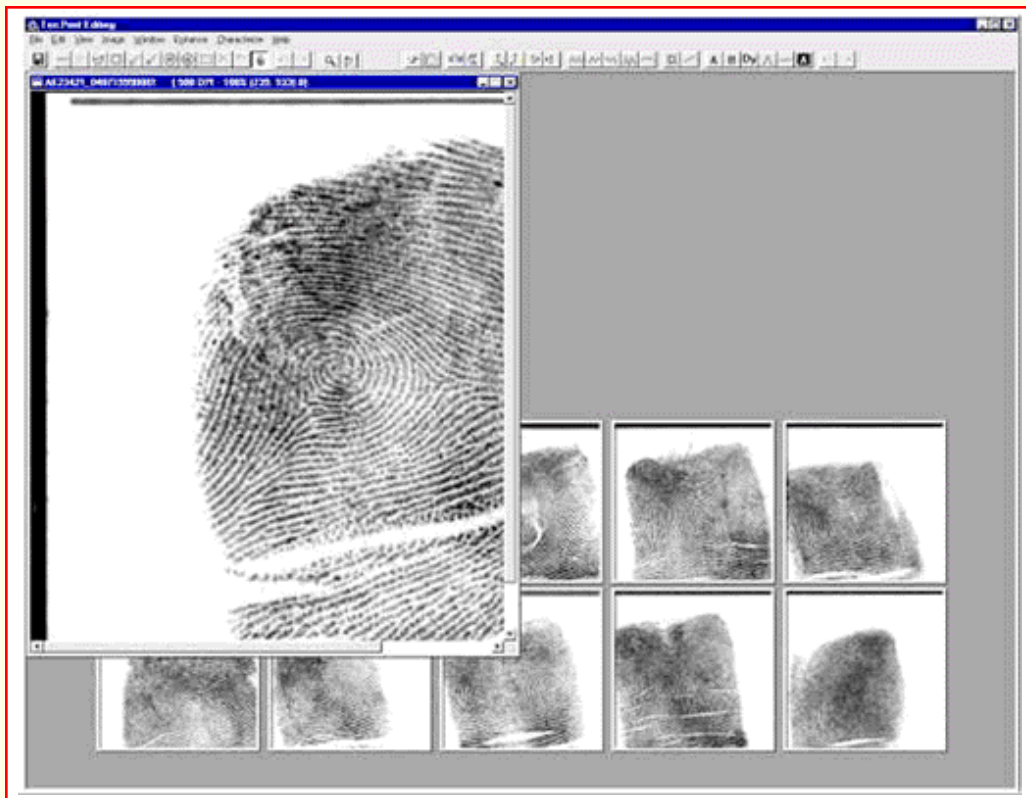**The Remote Fingerprint Editing Software (RFES)** provides the fingerprint identification community with a free and complete software package to perform remote searches into the FBI's IAFIS.   RFES supports all remote IAFIS transactions to include image and features-based searches for both latent and ten-print fingerprints.   RFES editing and human interface capabilities were developed based on use and advice of both local law enforcement and FBI latent specialists.

An Effective Tool for Solving Crime

Features:

- *Latent & Ten-Print Image Import/Scan/Search*
- *Latent & Ten-Print Features Search*
- *Advanced Image Enhancement Tools*
- *Automatic Fingerprint Characterization*
- *Manual Fingerprint Characterization*
- *Side-by-Side Image Comparison*

- *Unsolved Latent File*
- *Case Management*
- *User Defined Preferences*
- *On-Line Multimedia Help and Training*
- *Back-up/Archive to Compact Disk*

FUNCTIONALITY

Fingerprint Acquisition to File
- Scan grayscale evidence
- Scan ten-print card at 500 ppi
  - Finger chase
  - Sequence check
  - Substitute flat for flawed rolled
- Scan latent document at 1000 ppi
  - Full page scan (8.5 x 11 inches)
  - Extract one or more latents
- Accept externally digitized/enhanced images at 8 bits per pixel and 500 to 1200 ppi
- Accept .bmp, .tif, and/or .jpg image formats
- Save window as an image with/without symbology

Full 256 Shades of Gray Image Display
Independent Color Symbology Overlay
- Personal preferences to change color of each symbol type – persists from session to session
- Personal preference to hide or show each symbol type– persists from session to session
- Maintains precise synchronization of image and overlay
- Symbol color change when mouse pointer comes within command proximity
- Manual toggle overlay on and off
- Symbols include:
  - Lines
  - Boundaries
  - Minutiae
  - Cores
  - Deltas
  - Skeletons

Hosted on PC under Microsoft Windows NT™
- Familiar Windows GUI environment
- Status window presents ordered log of work

Backup and archive work to CD-ROM
Image Manipulation (256 grayscale only)
- Enhance individual fingerprints
- Rotate latent and ten-print images
- Draw region of interest
- Crop (extract) latent images
- Invert intensity
- Flip vertically and horizontally
- Magnify image
- Resize image window
- Translate image window
- Scroll image within window
- Apply WSQ compression and expansion

Image Enhancement
- Independent of characteristics overlay
- Independent of characteristics editing
- Whole image or within region of interest
- Histogram display
- Adjust brightness/contrast
- Adjust gamma
- Adjust sharpness (high-pass filter)
- Suppress background (low-pass filter)
- Logarithm
- Histogram equalization
- Re-scale image intensity
- High and low thresholds
- Subtract local background

Characteristics Modification
- Operator selection among characterization styles
- Automatic pattern classifier
- Automatic feature extractor
- Automatic neighborhood association
- Automatic inter-minutiae ridge count

(continued)

Manual Editing of Characteristics
- Display minutiae, cores, and deltas
- Add or delete minutiae, cores, and deltas
- Translate and rotate minutiae, cores, and delta
- Change minutiae type
- Verify and change inter-feature ridge counts
- Pattern classification

History Logging
- Unlimited Undo and Redo for Symbology/ Features
- Automatic and Manual Saving of Work-in-Progress
- Records operator image enhancement actions

Fetch Ten-Print Images from IAFIS

Side-by-Side Comparison of Search Print and Candidate Prints
- Display Fetched Images
- Enhance Fetched Images
- Synthesize pseudo card image from fetched images
- Package Characterization into ANSI/NIST Records

Supports IAFIS EFTS Messages
- Image and feature ten-print search
- Image and feature latent search
- Local and remote estimate of latent search penetration into CMF
- Manage IAFIS latent search queue status
- Process IAFIS Response Messages

Work Management
- Assign User control/access to fingerprint work
- Assign Primary, Supervisor and alternates

Non-Compile Provision for adding fields to ANSI/NIST records

Operator Selection among AFIS system ANSI/NIST records (future capability)
- API interfaces to alternative characterization functions
- Automatic feature enhancement
- Automatic classification
- Automatic neighborhood definitions
- Automatic ridge count
- Automatic ANSI/NIST record generation

System Requirements

The following are considered the minimum host requirements for appropriate operation of the RFES software:

- Pentium II™ (or later) CPU (233 MHz or greater)
- RAM Memory (192 Megabytes minimum, 256 preferred)
- Video Card capable of computing a new image (size 1600 x 1200 pixels) in less than 100 ms (8 MB video RAM, 75 Hz)
- 20-inch Monitor, 1280 x 1024 pixels (21 inch, 1600 x 1200 recommended) at 75 Hz refresh rate
- Sound card with speakers or headphones
- Re-writable CD-ROM drive with software
- 6 Gigabytes capacity hard drive
- Flat bed scanner and NT driver(s), (UMAX® PowerLook III or equivalent)

The host system must have the following commercial software packages or their equivalent:

- AWARE WSQ compression and decompression
- Microsoft Windows NT™ version 4.0 with Service Pack 4

RFES Installation

RFES auto installs from the provided CD and support is available from rfes@leo.gov

RFES Training and Documentation

THE RFES documentation is included on the distribution CD. Contact rfes@leo.gov for support.

RFES Costs

You will have to provide your own PC, scanner and compression software as detailed in the system requirements section.

Connectivity to IAFIS

You will need e-mail connectivity to IAFIS to run your search and retrieve your search results. Connection is through the CJIS WAN or through a FBI provided dial-up capability. The CJIS Programs Development Office will provide details on the various options, as well as planning support.