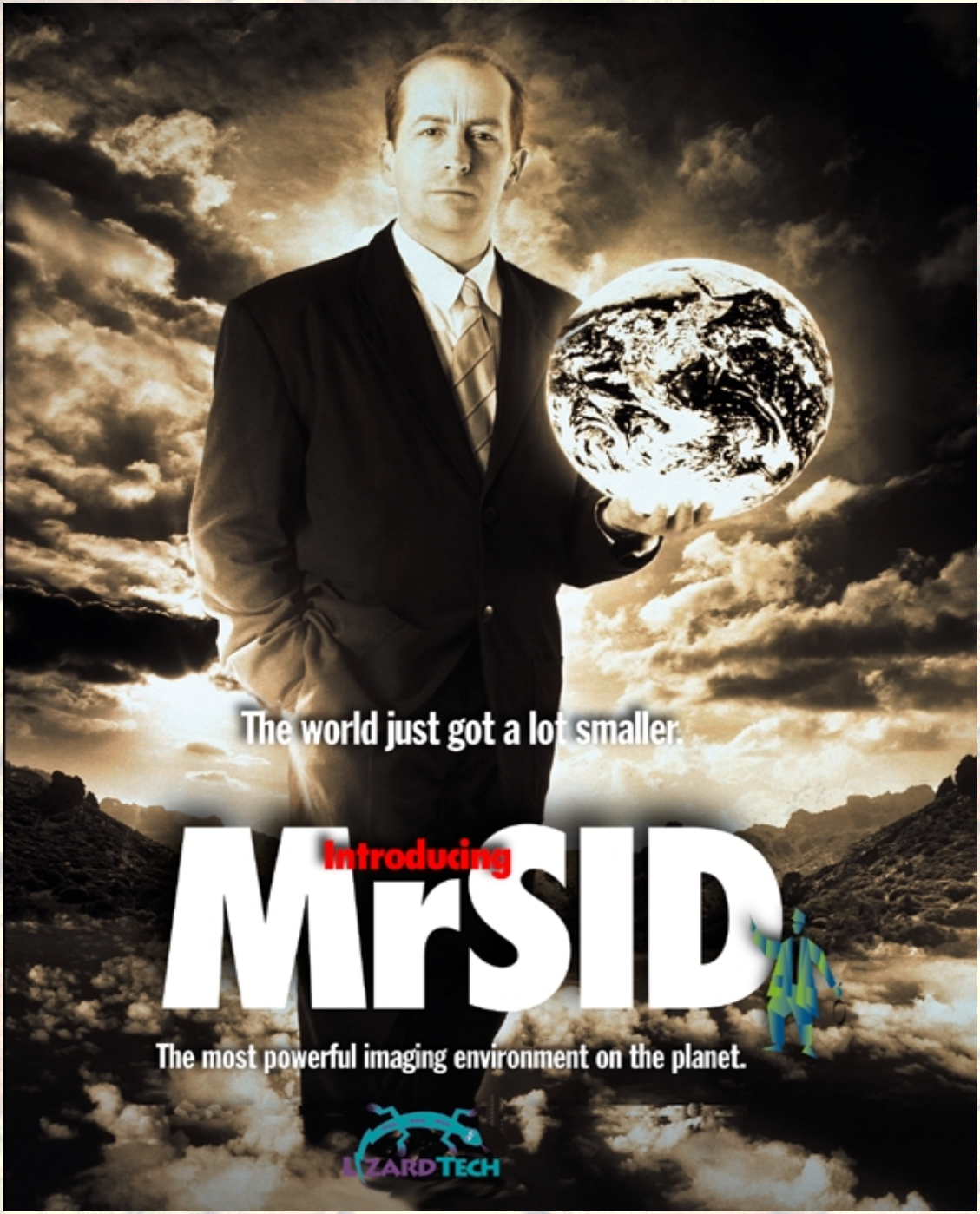
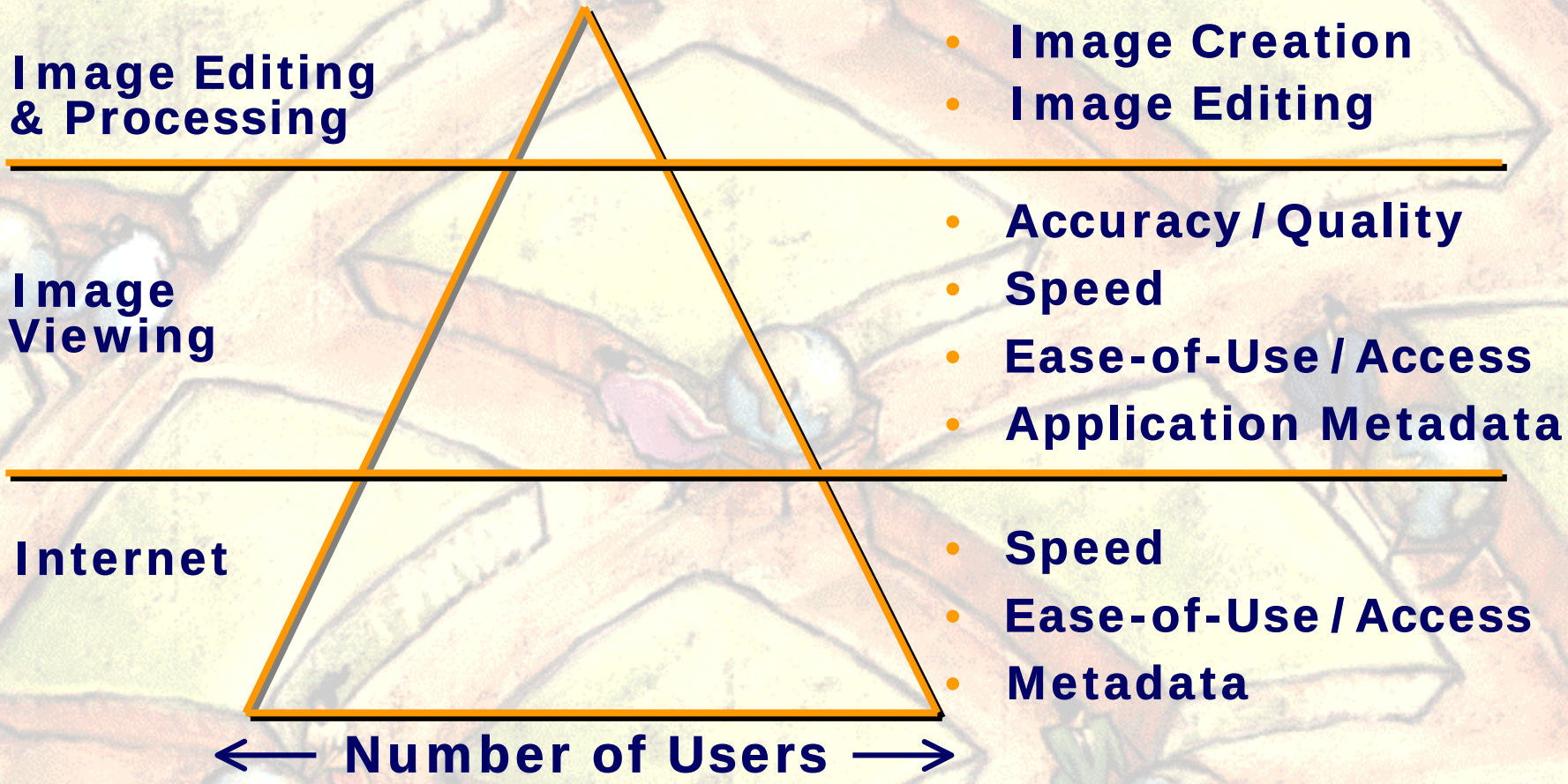

The world just got a lot smaller.
Introducing
MrSID
The most powerful imaging environment on the planet.
LIZARDTECH

The Problem with Raster Images

- **Raster images are large making them hard to use and manage.**
- **Why not make raster imagery as easy to use as any other type of data?**
  - **What you want,**
  - **When you want it,**
  - **In the form best suited to your needs.**

Raster Imaging Environments



..what's needed is an image format that can support any application environment..

Introducing MrSID

- **MrSID stands for Multi-resolution Seamless Image Database**
- **MrSID is a powerful wavelet-based compressor, viewer, and Portable Image Format (PIF) for large raster images.**
- **MrSID enables instantaneous viewing and manipulation of large raster images locally and over networks while maintaining maximum image quality.**

History of MrSID

- Originally developed at Los Alamos National Laboratory.
- Years of research & development behind the technology. Same team developed wavelet-based image standard used by FBI.
- Three patents issued.
- LizardTech established as exclusive commercialization agent using U.S. Technology Transfer Act.
- LizardTech developed commercial MrSID application.
- First commercial product introduced in March 1997.

MrSID Commercialization

- LizardTech is responsible for the standardization and extension of the MrSID technology.
- Broad-based industry and user support especially in the Geospatial market.
- Goal: To be the STANDARD image format/environment for raster imaging.
- LizardTech active in JPEG 2000 effort

MrSID Market Focus

- Geographic Information Systems
  - Aerial/Satellite Imagery
  - Scanned Maps/Documents
- Publishing
- Document Imaging Systems
  - Image Archives (e.g., Museums & Libraries)
- Medical Imaging
- Devices

MrSID Features

- Next-generation, wavelet-based image compression
  - typically 15-20:1 for 8-bit Grayscale
  - 30-50:1 for 24-bit (RGB) Color
- Compress images of virtually any size with no visible loss of image quality
- Complete georeference and metadata support
- Geometrically accurate
- Inherently multi-resolution, no pyramids
- Seamless, automatic mosaicking during compression
- Pixels-on-Demand
  - fast internet/intranet viewing
  - instantaneous zooming and panning
- One file format, any platform/OS

MrSID Benefits

- Unsurpassed file size reduction
- Uncompromised image quality
- Fast viewing of massive images
- Increased storage capacity
- Fits naturally into existing workflow
- Eliminates cumbersome image tiles and resampling

MrSID Product Strategy

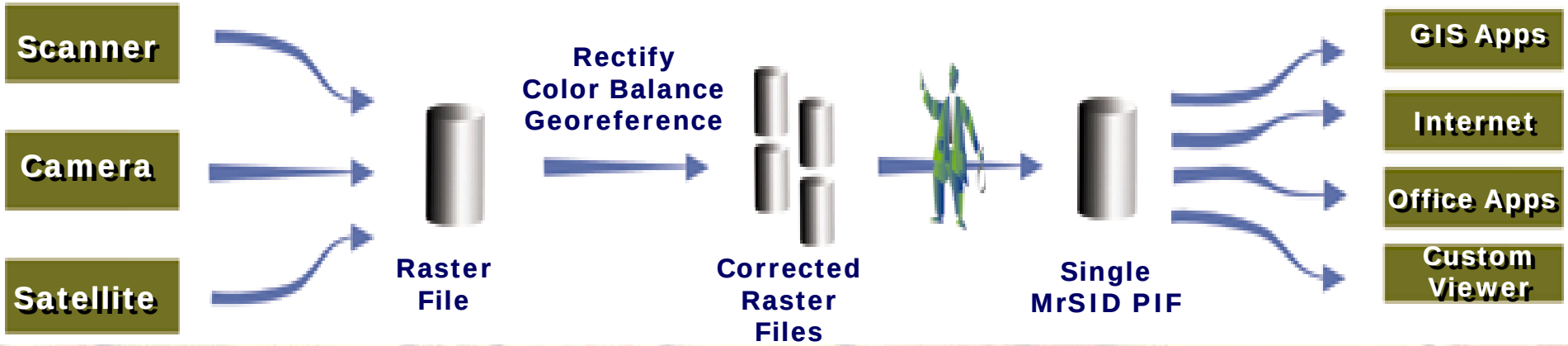
Products	Specification
• MrSID Publisher	*Virtually any image size. Multiple image seaming/ mosaicking.*
• MrSID Professional	*500 MB image size limit. Multiple image seaming.*
• MrSID Viewer(s)	*Internally, OEM, and partner developed viewers.*
• MrSID Web Developers Kit (WDK)	*Client/Server architecture. Large images over Internet, FAST.*

All MrSID Viewers are free

MrSID Geospatial Workflow

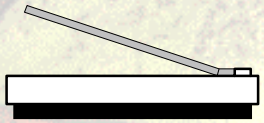
MrSID Workflow for GIS

Create → GIS Image Production → MrSID Image Encoding → MrSID Image Deployment

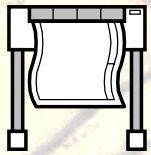


MrSID Geospatial Workflow

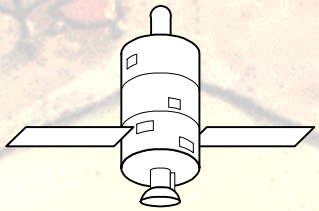
Creating MrSID Imagery



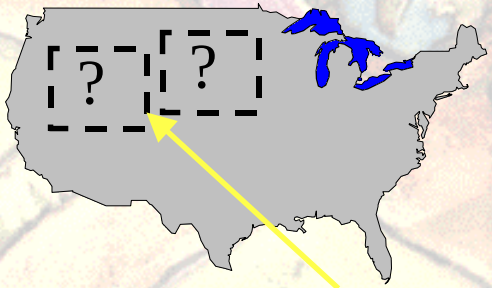
Flat Bed Scanner



Large Format Scanner



Raster image file



.tfw
.hdr

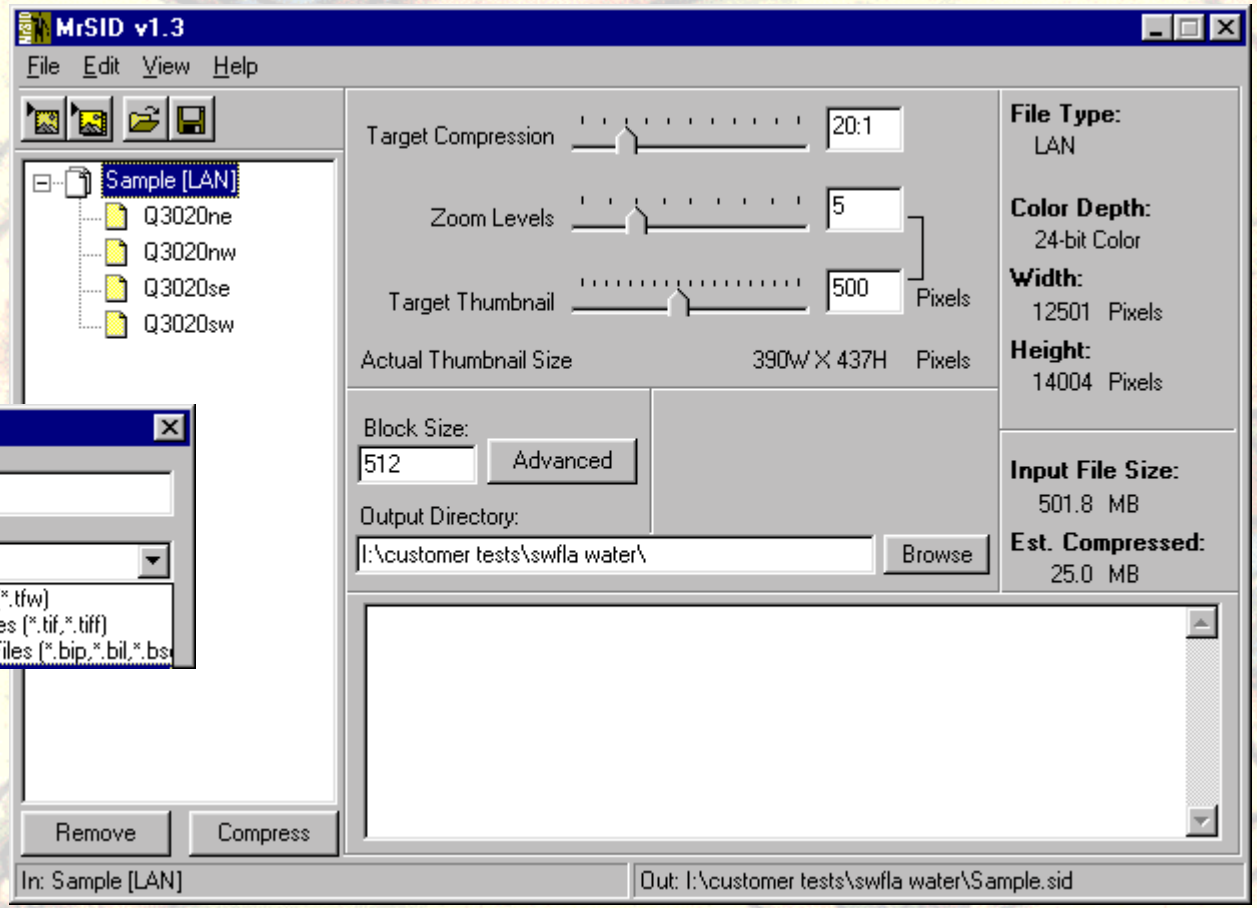
RGB, 3-band multi-spectral or grayscale raster imagery

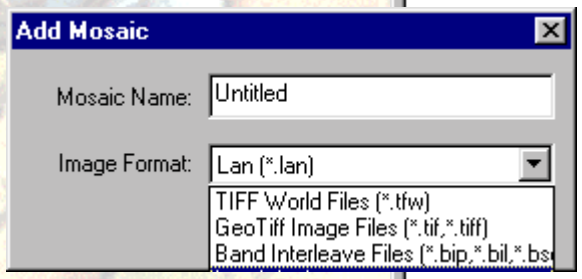
Parameters

- **Target Compression Ratio?**
  - → **20 - 50:1 or more RGB**
  - → **15 - 20:1 grayscale**
- **Resolution Levels?**
  - → **Natural powers-of-two**
- **Create seamless mosaic?**

MrSID Geospatial Workflow

Creating MrSID Imagery

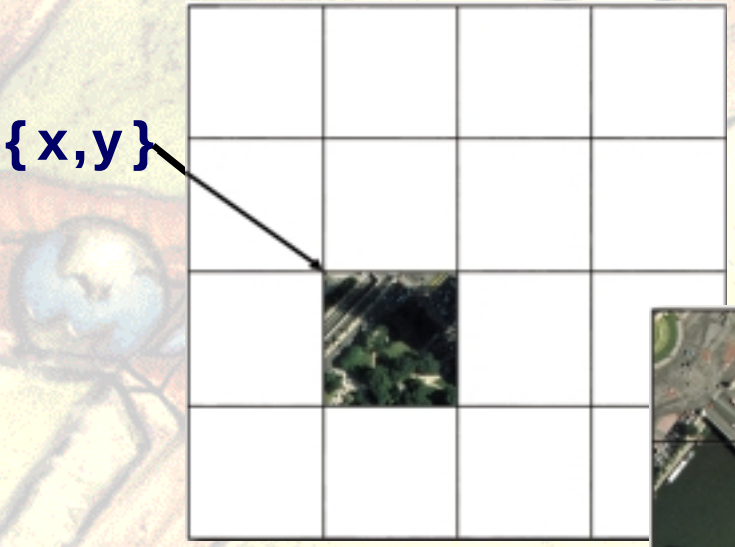




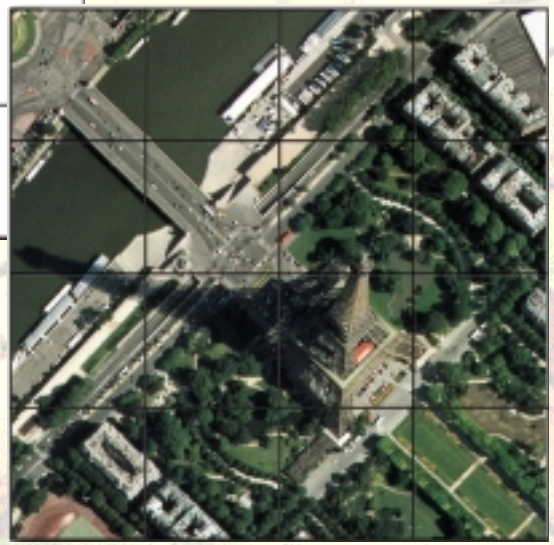
Multiple Input Formats

Easy-to-Use Interface

MrSID or Tiled Imagery?



One of many catalogued images



A single, seamless image

- Automatic mosaicking
- Single image file
- No seams
- No tiles

Image Courtesy of The GeoInformation Group

MrSID Multiple Resolutions

- Any part of the image, at any resolution, in seconds

8 meter/pixel

2 meter/pixel

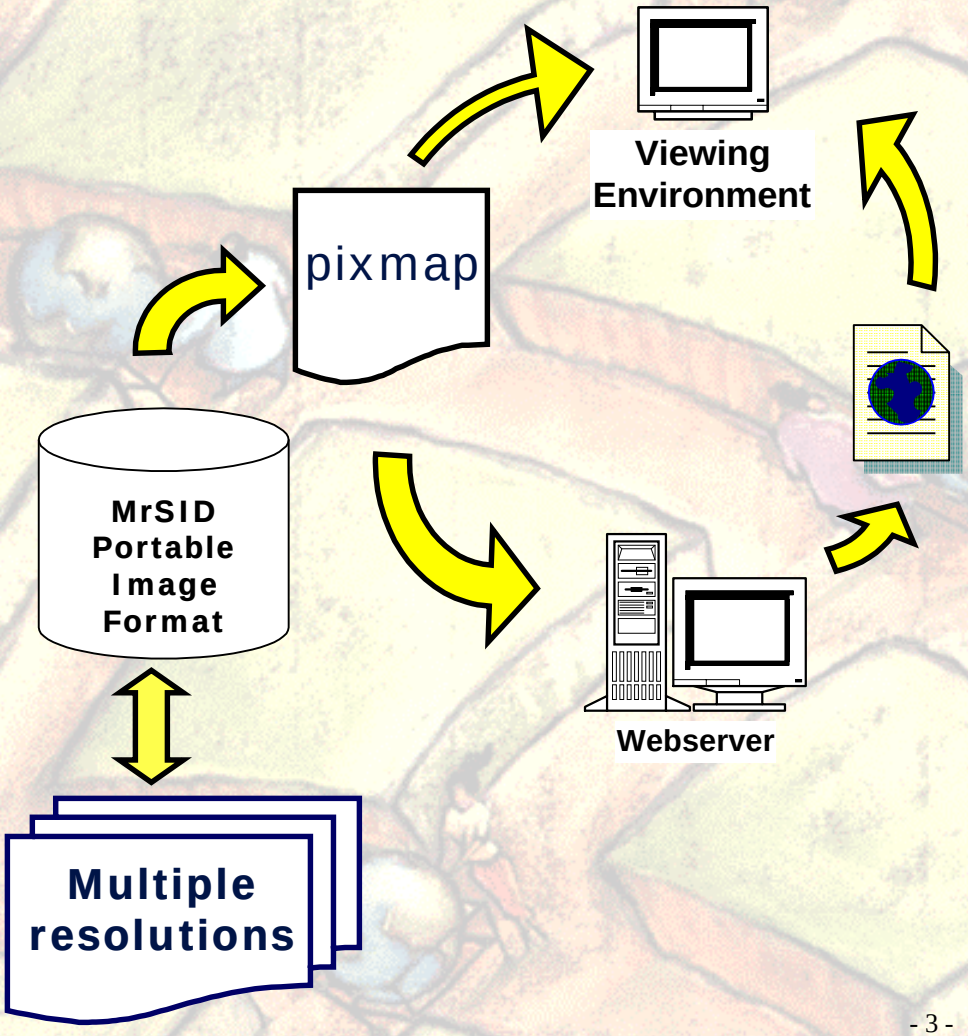
1 meter/pixel

- No pyramid
- No re-sampling
- Incremental display of imagery
- Instantaneous display

Image Courtesy of The GeoInformation Group

MrSID Geospatial Workflow

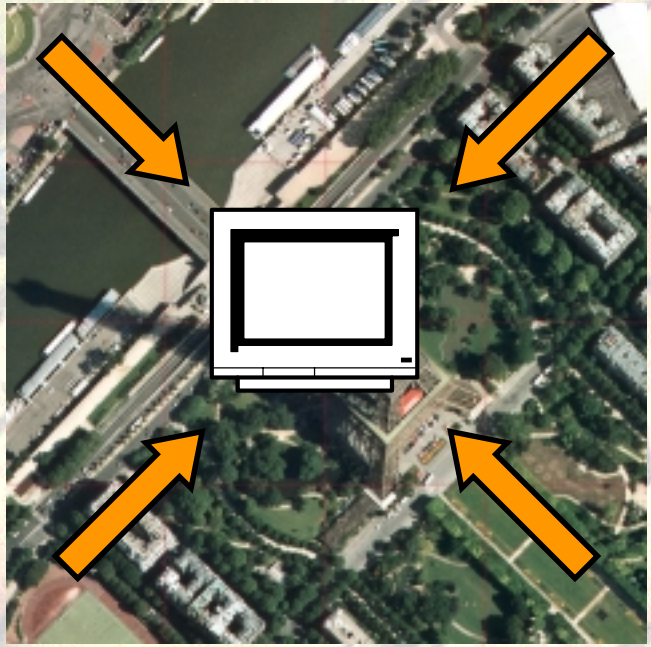
Viewing MrSID Imagery



- Pixels-on-Demand! - only decompresses what's needed
- Output to other format(s)
- On-the-fly
- Dynamic, view dependent
- Application independent
- Platform independent

MrSID Pixels-On-Demand

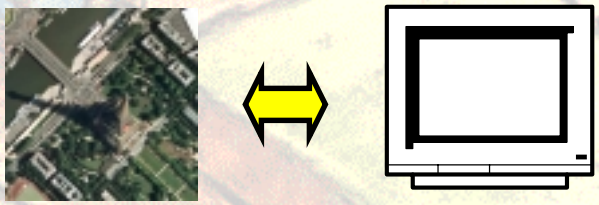
Conventional Image Technology



25 Mb Image in
a 500k display area

MrSID's Pixels-on-Demand!

- How big is the display environment?
- What resolution is needed?



500k of Imagery in
a 500k display area

Image Courtesy of The GeoInformation Group

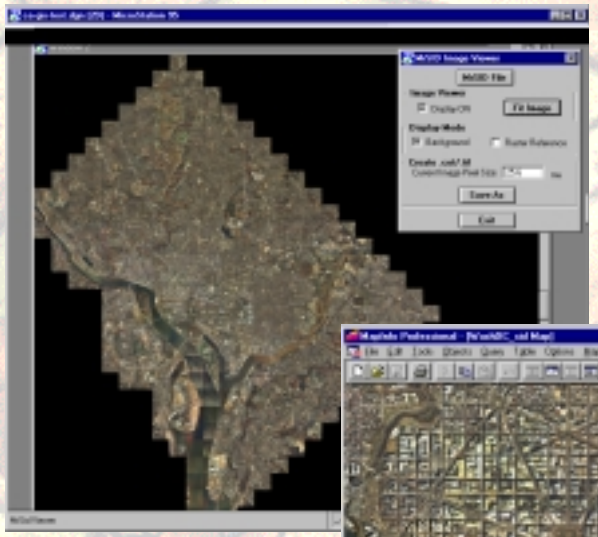
MrSID Solutions - GIS

- The goal is to make MrSID work within an integrated GIS solution just like any other image format.
- MrSID supports complete geospatial and geometric accuracy.
  - Accurately measure distances/areas
  - Existing/new vector data overlays precisely
- Automatic, seamless image mosaicking eliminates the need for creating tiles of imagery when working with large data sets.
- Same .sid image file can be used for any mapping/GIS application on any platform--even over the Internet!

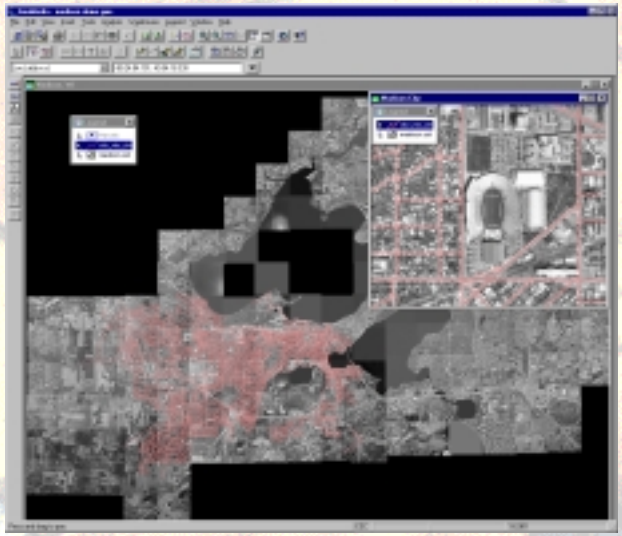
MrSID Integrated Solutions

- ESRI
- MapInfo
- Intergraph
- Oracle
- Adobe
- ERDAS
- Bentley
- Autodesk
- OLE/ActiveX

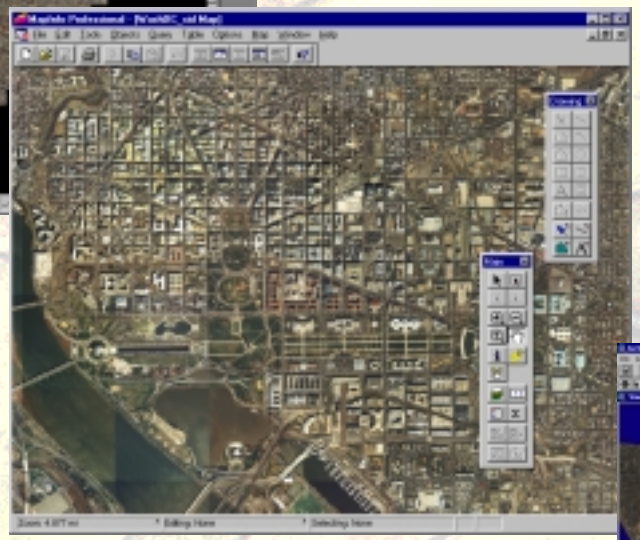
MrSID GIS Viewing Solutions



MicroStation



GeoMedia



MapInfo

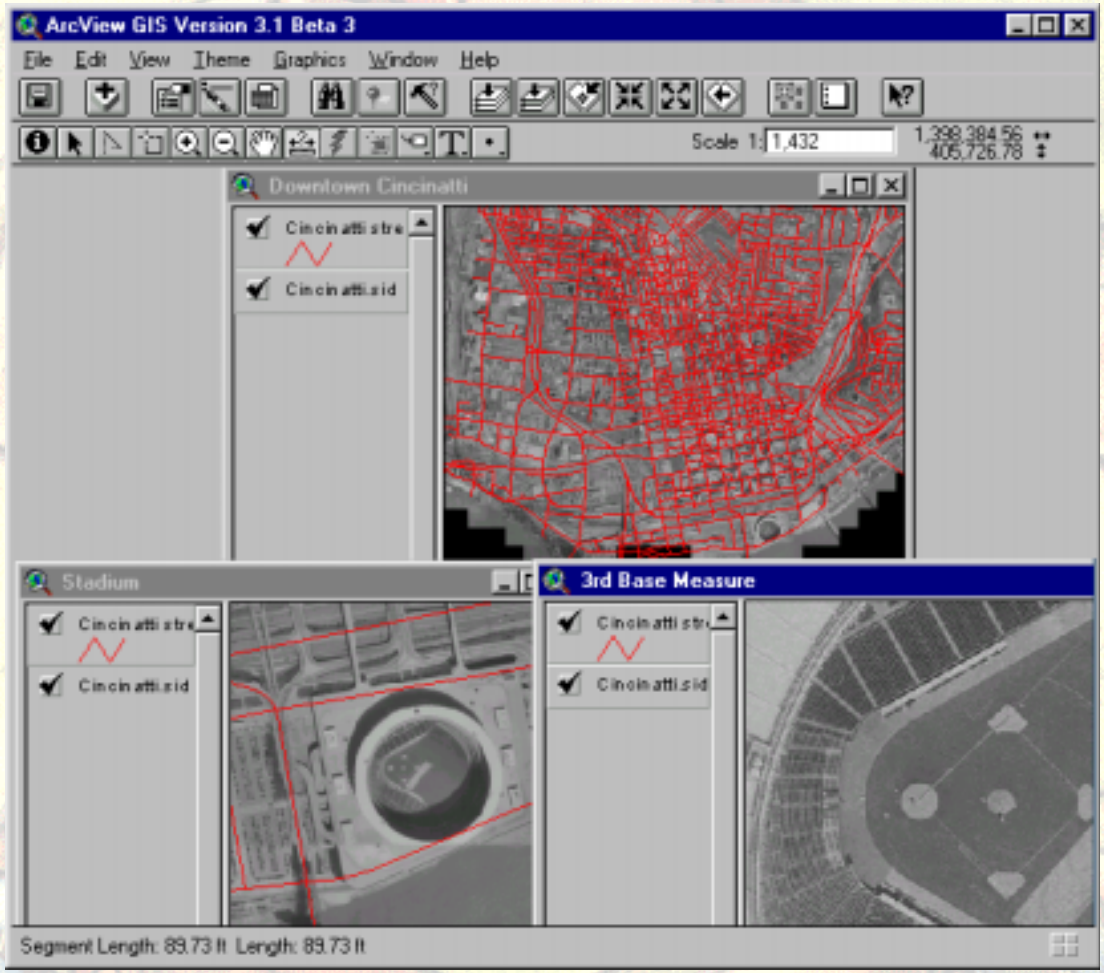
ArcView

DC Image courtesy of VARGIS/NCPC/WGIS

MrSID Solutions

Cincinnati Area GIS (CAGIS)

- Originally over 40 Gb of 1/2 foot aerial photos
- Coverage for all of greater Cincinnati
- Initial strategy - break imagery into 1 Mb tiles & use catalog
- Not portable, hard to manage, still not an internet ready solution



- Used MrSID to create a single 1.2 Gb image
- All of the coverage area is now available in one mosaic.
- All vector data overlays precisely
- Accessible by all over the Internet

Western Air Maps

Wichita Water & Sewer

MrSID Solutions

- **Location: City of Wichita and Sedgwick County, Kansas.**
- **Deliverables: 500 individual tiles and 5 mosaics**
- **Pixel Resolutions: 1’ and 2’ per pixel**
- **Compression Ratio: approximately 18:1**
- **15.6 gigabytes ~ 850 megabytes (2 CD’s)**

Western Air Maps

St Louis Corps of Engineers

MrSID Solutions

- **Location: Fort Riley, Kansas.**
- **Color imagery from both high and low altitude aerial photography**
- **78 individual tiles and 1 mosaics**
- **Pixel Resolutions: 1m and .5m per pixel**
- **Compression Ratio: approximately 57:1**
- **24 gigabytes ~ 360 megabytes (1 CD's)**

Western Air Maps

Johnson County, Kansas

MrSID Solutions

- **Location Johnson County, Kansas**
- **Black & white imagery:**
- **Files: 374 individual tiles and 1 mosaic**
- **Pixel Resolution: 2’ per pixel**
- **Compression Ratio: approximately 27:1**
- **4.1 gigabytes ~ 156 megabytes (1 CD)**

MrSID GIS Customers

- **United States Geological Survey/CRADA**
- **Space Imaging, EarthSat, RADARSAT**
- **US Military, NIMA, EPA, USDA**
- **Many city, county, and state organizations**
- **Every Major Air Photo Firm**

"A standard is something that ships in volume."
Bill Joy, Sun Microsystems

MrSID - ArcView integration demo