Database Production and Map Series Management
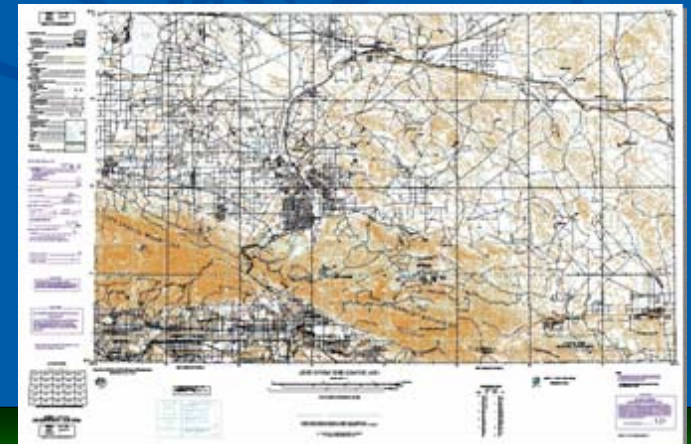
Using

The Production Line Tool Set

Dewey Marino   -   ESRI Redlands

Production Line Tool Set

- ArcGIS Solution for high volume database and map creation
- Creates maps against set specifications
- Promotes efficient end-to-end production workflow
- Eliminates "stove pipes"
- Higher map quality with less production cost

# Mapping Agency Workflow

Mapping Agency Requirements
- **Data Models**
  - Cartographic Mapping Specifications
  - Geographic Information Products
- **Geographic Datasets**
- **Maps and Globes**
- **Process and Workflow Models**
- **Metadata**

Source Data Compilation
- **Digital Data**
- **Photogrammetry**
- **Maps/Docs**
- **Survey/GPS**

Data Management
- **Models/Knowledgebase**
  - Schema
  - Rules
  - Relationships
  - Definitions
  - Behavior

Standards

Geodatabase

RDBMS
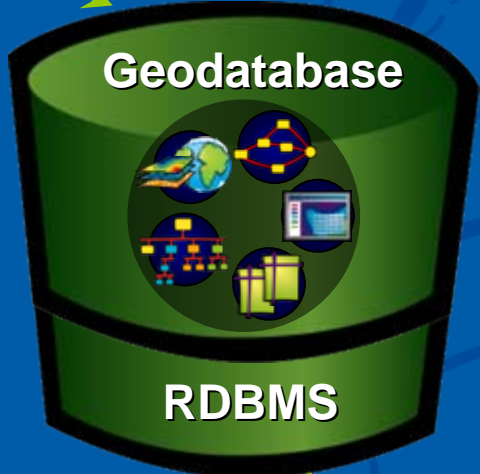
Quality Control
- **Batch QC**
- **Visual QC**
- **Find/Fix**
- **QA Verification**

Production
- **Editing & Attribution**
- **Rule Based Validation**
- **Data Fusion**
- **Data Generalization**

Data Maintenance
- **Gap Analysis**
- **Updates**
- **Validation**

Interoperability

Cartographic Finishing
- **Cartographic Generalization**
- **Symbology/Representations**
- **Text Placement**
- **Product Layout**

Cartographic Dissemination

Hardcopy Maps/Charts
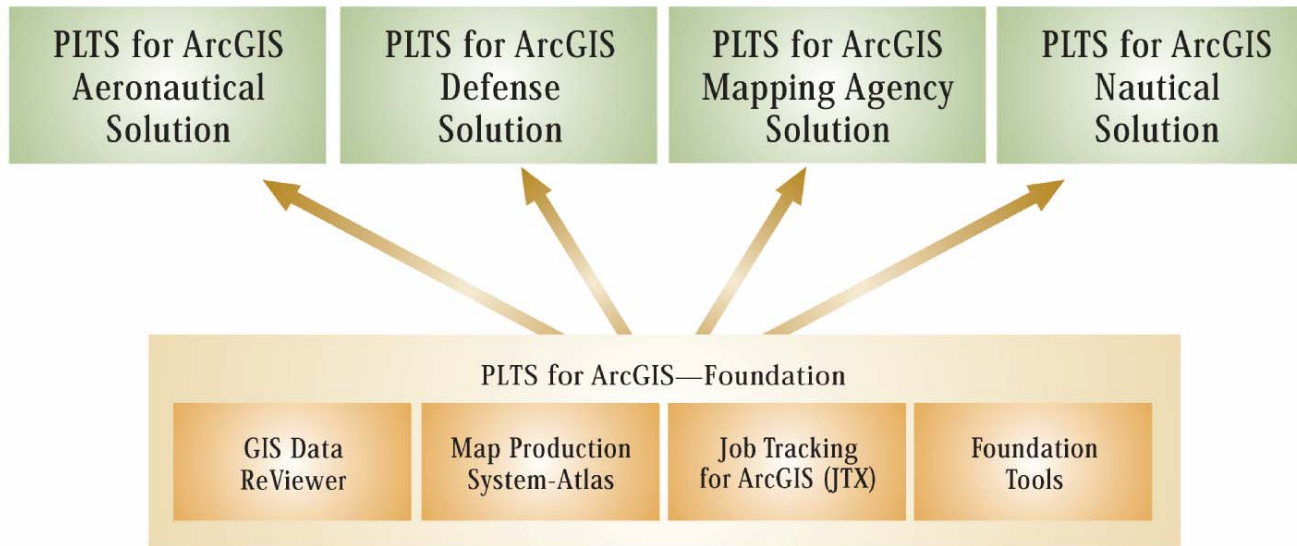
Raster Data Products

Vector Data Products

.pdf Map Products

Web Portal Map Dissemination

Web Portal Data Dissemination

PLTS Product Line

PLTS Features

- Focused, Database Production Environment
- Knowledge Base of Map Specifications
  - Valid Value Tables
  - Condition Tables
- Single Click Editing Tools
- On-the-Fly Feature Attribution, Validation and Symbolization
- Complete set of QC/QA Tools
- Digital and Hard Copy Chart Production
  - Map Series Creation and Management
- Workflow Management

PLTS Foundation and Components

PLTS Knowledge Base

- Integrated Production Rules & Procedures
- Extends GDB Attribute Domains
- Production Specific Attribute Validation & QC
  - Valid Value Tables (VVTs)
  - Condition Table (CNTs)
  - Topology
- Rule based framework

Valid Value Tables

Valid Attribute Combinations

Description

Feature Symbology

FCsub	f_code	acc	cod	dat	exs	hdi	loc	mcc	sfc	soh	vrr	description	hac_style	hac	qc_style	qc	filter_dnch
1	BD020	1	-9	26	1	15	-9	-9	-9	-9	8	Crib Cov and Uncov	HAC.style	117	PLTS_QC	23	1
1	BD020	1	-9	26	1	12	-9	-9	-9	-9	4	Crib Submerged	HAC.style	116	PLTS_QC	1	1
0	BD000	1	-9	26	1	12	-9	-9	5	1	-9	Underwater Danger Subm Prod Plat	HAC.style	108	PLTS_QC	18	1
0	BD000	1	-9	26	1	12	-9	-9	3	1	-9	Underwater Danger Fish Haven	HAC.style	105	HAC.style	18	1
0	BD000	1	-9	26	1	12	-9	-9	2	1	-9	Underwater Danger Other	HAC.style	85	HAC.style	18	1
0	BD000	1	-9	26	1	12	-9	-9	1	1	-9	Underwater Danger UNK	HAC.style	85	ESRI.styl	19	1
2	BD130	1	-9	26	1	14	-9	84	-9	1	8	Rock Cov and Uncov	HAC.style	142	PLTS_QC	31	1
2	BD130	1	-9	26	1	12	-9	84	-9	1	4	Rock Submerged	HAC.style	134	PLTS_QC	31	1
2	BD130	1	-9	26	1	15	-9	84	-9	1	2	Rock Awash	HAC.style	141	PLTS_QC	2	1
0	BD000	1	-9	26	1	12	-9	-9	4	1	-9	Underwater Danger Well	HAC.style	100	PLTS_QC	22	1

Record: 9 of 84

- There is one VVT per feature class
- VVTs are stored in the geodatabase
- Allows for automated attribution of previously created features
- Each record is unique combination of coded value attributes
- Used in rendering and batch validation of geodatabase data

Enhanced Range – Condition Table

Link to DBS_FC_VVT table   Condition Statement   Error Number Referenced in
PLTS_ERRORS Table

Attributes of PLTS_MASTER_CNT

OBJECTID*	ROWOWNERID	PLTSVALKIND	PARAMETER1	PARAMETER2	PARAMETER3	ERROR	SUBTYPEFIELD	UUID
1	2	0	PFH < 0 OR PFH BETWEEN 1 AND 14	<Null>	<Null>	132	0	{8601E9B2-B839-46FC-9402-F3DCE57815A
2	2	0	PFH < 0 OR PFH BETWEEN 1 AND 15	<Null>	<Null>	133	1	{892BEACE-4BD9-4B9E-8CE5-F3413AB0C9
3	5	0	NAM <> 'N/A'	<Null>	<Null>	138	0	{DDB3782B-F9C3-4992-B1BE-A94831EC8A
4	5	0	NAM = ''	<Null>	<Null>	6	1	{AD9581D8-989C-422A-AB3C-32398388385
5	5	0	NAM = ''	<Null>	<Null>	6	2	{3B90DC62-0508-47AD-863F-D2EF125F76E
6	5	0	ZV2 <> 29999 AND ZV2 NOT BETWEEN -4	<Null>	<Null>	139	2	{28B334C0-1319-46F8-B7E6-B11D447EC50
7	6	0	NAM = ''	<Null>	<Null>	6	0	{DDFAB7E2-A865-4786-88E6-CF97B54FA01
8	6	0	NAM = ''	<Null>	<Null>	6	2	{297D9F6E-C83D-4502-8D2E-DCB822360B
9	6	0	NAM <> 'N/A'	<Null>	<Null>	138	1	{02800955-9705-4353-B707-15AC26447259}
10	7	0	NM3 = ''	<Null>	<Null>	1	0	{D0F55AB6-E3C0-48CF-8283-E0F4F061248

- Accommodate attributes that rely on a condition
  - Discontinuous ranges
  - Character strings
  - Coded value attributes that rely on each other
- Upon Update, value(s) entered that do not comply with conditions will cause error to be generated
  - If the PFH is less than 0 or between 1 and 14
  - Error 132 returned

PLTS Selection tab

- Efficient navigation of selection
  - General functionality
    - Browse feature attributes
    - Zoom to/flash current feature
    - Easily change selection set
  - In edit session
    - Change attributes
    - Cache and transfer attributes
  - Validate feature attributes
    - Changes made can be automatically validated when you hit Apply

PLTS Target tab

- Works in edit session
- Choose target layer and subtype
  - Extension of core Target Layer
- Add pre-attributed features
  - Subtype defaults
  - User-customized defaults
- Create Favorites
  - List of common attribute combinations
  - Stored in Favorites geodatabase

PLTS Production Environment

- Focused Environment
- Single Click Editing
- Additional tools
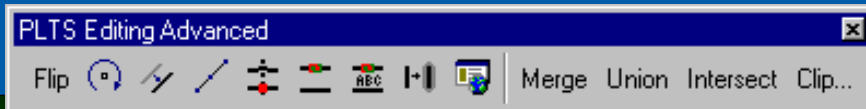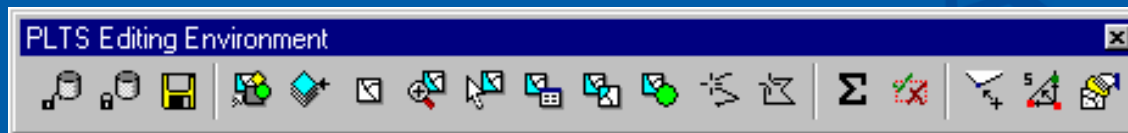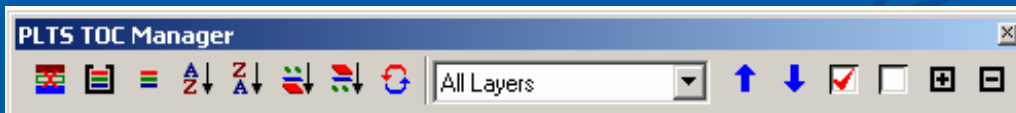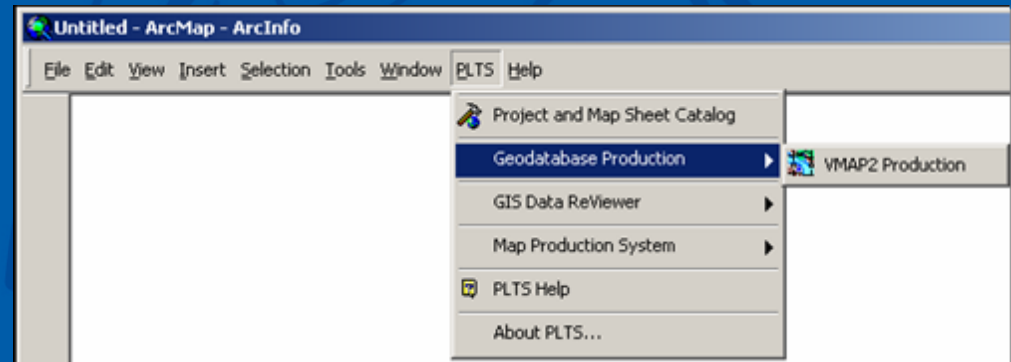
General Purpose Components

- **GIS Data ReViewer**
  - **- Visual Data Review Tool**
  - **- Data Integrity Checks**
  - **- Available Now**
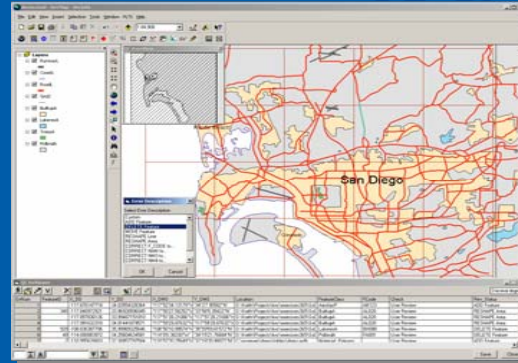
- **Map Production System**
  - **- Database-Driven Cartographic Production**
  - **- Database Driven Atlas Production**
  - **- Release: ArcGIS 9.1**
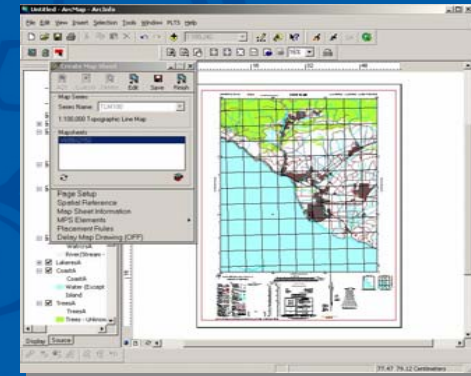
- **Job Tracking Extension**
  - **– Workflow Management**
  - **– Edit history tracking**
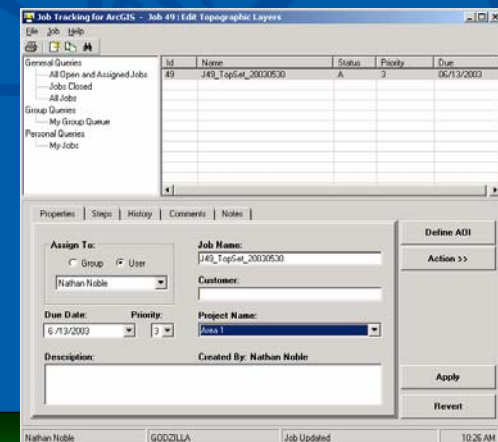
PLTS Solutions

PLTS Defense Solution

- Built for:
  - Defense Mapping Agencies
  - Military Surveys
  - Defense Mapping Contractors
- Provides database and map series tools for:
  - VMAP0
  - VMAP1
  - VMAP2
  - Foundation Feature Data (FFD)
  - Stereo Airfield Collection
  - Theater Geospatial Database (TGD)
    - Global, Strategic, Tactical, Urban
  - VITD
  - Image City Map
  - GIFD Delivery 4
  - UVMAP
  - VMAP 2 Delivery 4
  - MGCP
  - Geobase
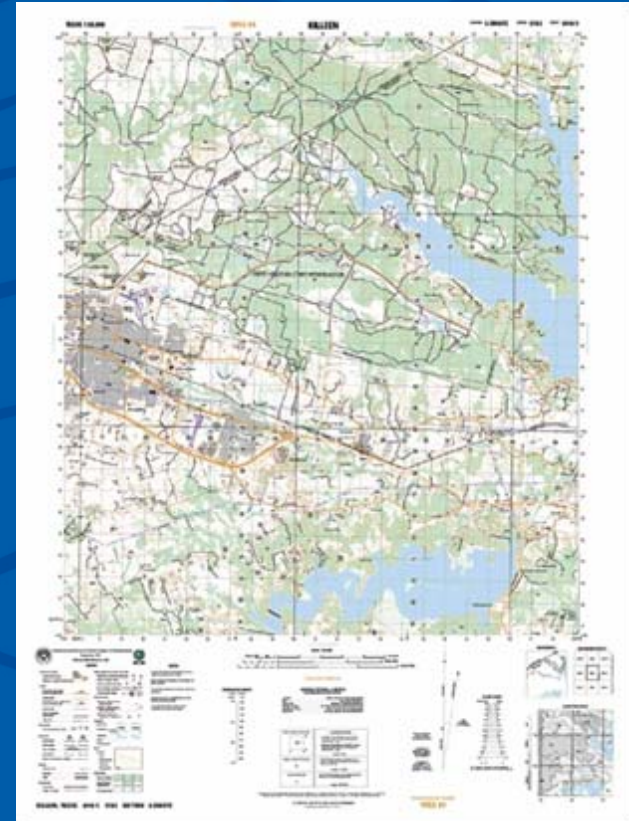
PLTS Mapping Agency Solution

- Built for:
  - Civil Mapping Agencies
  - State / Local / Provincial Mapping Agencies
  - Natural Resource Agencies
    - Land Management, Water Resources, Forestry, Ag, Soils
- Database and map series tools for
  - Topographic
    - USGS 1:24,000, 1:63,360, 1:100,000
  - Euro Regional Map 1:250K
  - Euro Global Map 1:1M (not yet released)
  - VMAP 1:250,000 JOG
  - GSDI 1:1M Globe Map
- Tools for creating a custom map series

PLTS Nautical Solution

- Built for:
  - Hydrographic Offices
  - Mapping Agencies
  - Naval Commands
  - Commercial Companies
- Provides database and map series tools for:
  - Digital Nautical Charts (DNC)
  - International S57/ ENC Charts
  - Additional Military Layers
- Tools for creating a custom map series
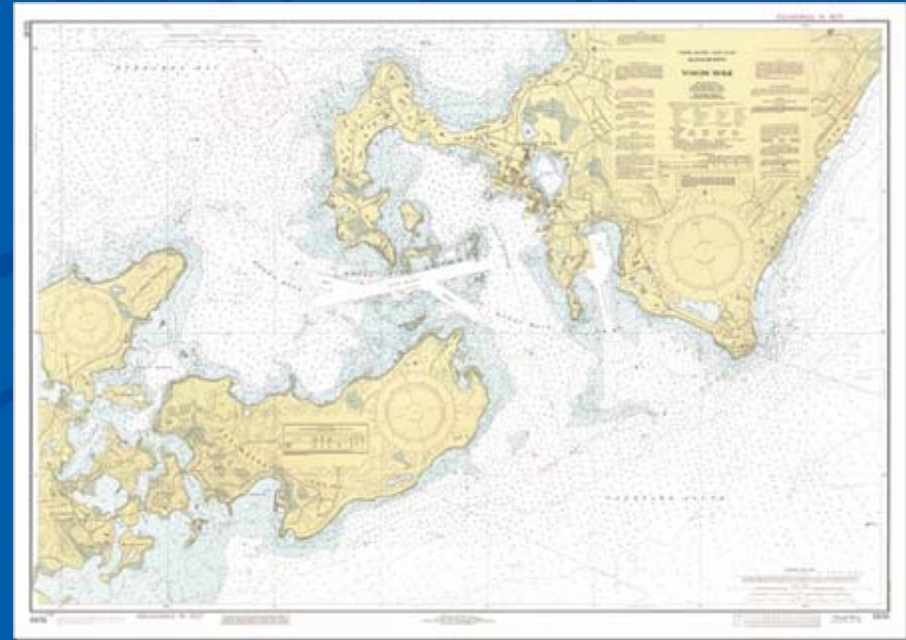
PLTS Aeronautical Solution

- Built for:
  - Aviation Administrations
  - Airlines
  - Air Forces
  - Commercial Companies
- Provides tools for
  - En Route Navigational Charts
  - Terminal Procedures
  - Database Drive Chart Maintenance
  - Chart Maintenance
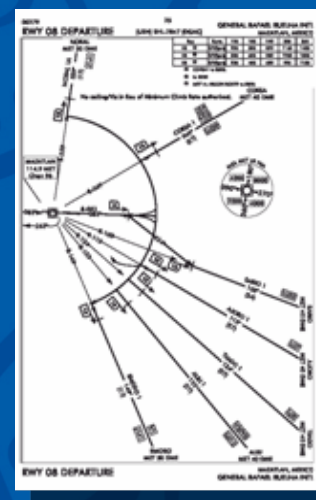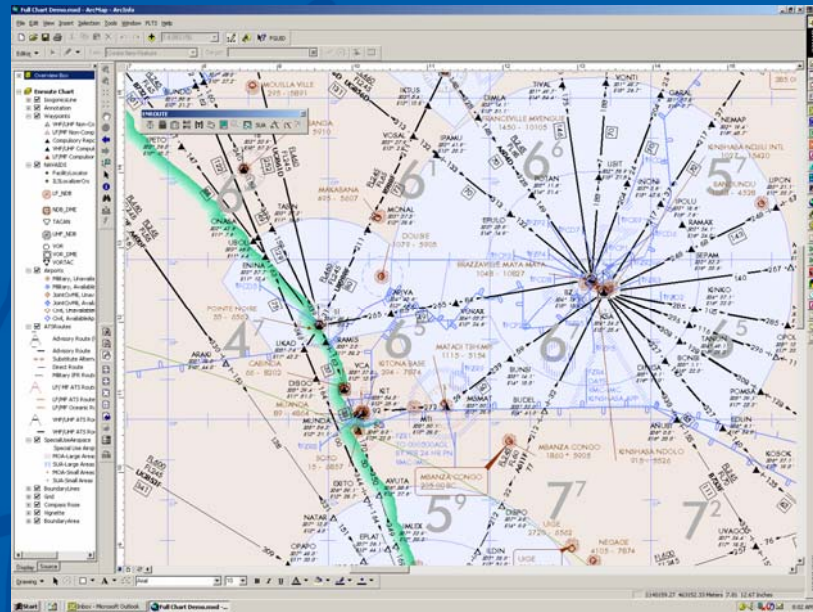
Products Required

- **ArcEditor (or ArcInfo for charting)**

- **SDE (in Enterprise Clients)**

- **Extensions***

  - **Spatial Analyst**

  - **ArcScan**

  - **ArcPress**

  - **Maplex**

* Recommended

PLTS Components

Quality Control: GIS Data ReViewer

- Visual Data Review Tools
- Batch Error Checks

Correct and Validate ReViewer Errors

PLTS GIS Data ReViewer 4.1

Flag Missing Feature
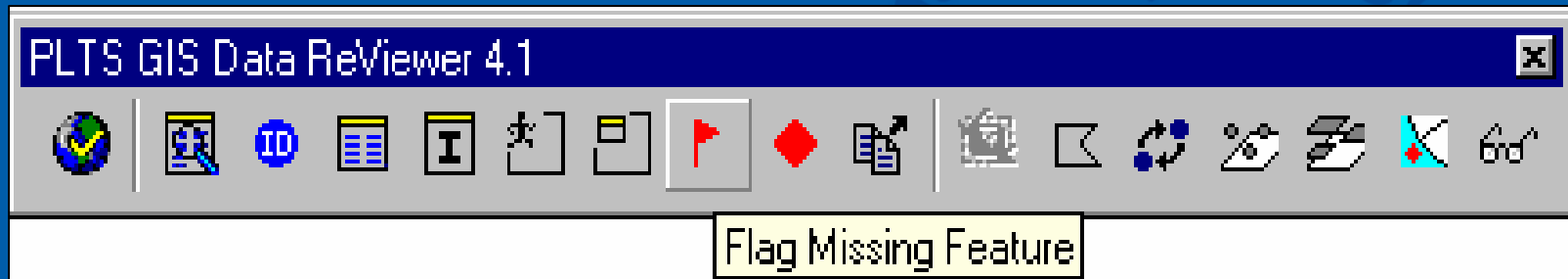
- "Drive" to the Feature With the Error
- View the Error Description
- Correct the Given Error
- Commit a Correction Status to the Error Report Class
- Validate Error Was Corrected

ReViewer Error Table

- **May Have Many Error Tables Per Project**
  - Group Errors by Reviewer, QC Checks, Region, etc.
- **Select a Record to Navigate to the Corresponding Feature in the Map**
- **Manage Error Records**
  - Add
  - Delete
  - Sort

9.2 Release
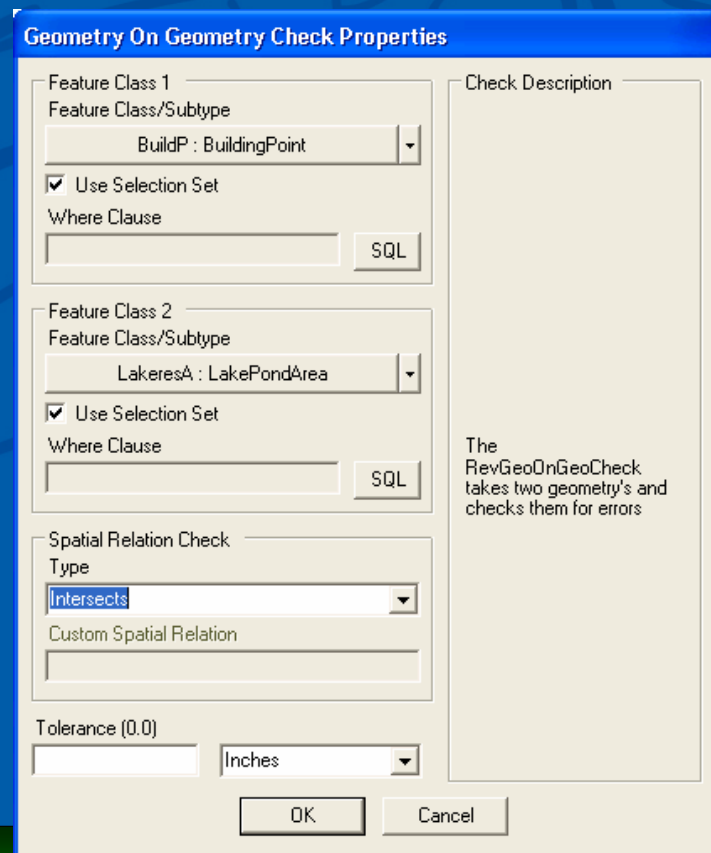# ReViewer

- Biggest effort is in a re-wright of the ReViewer
  - Batch job management
    - Create batch runs and save them as XML
    - The addition of many new checks
  - Batch Validate Enhancements
    - Run Batch Jobs
    - Major Performance improvements
  - New architecture for storing the ReViewer Dataset
    - Stored in the enterprise database or personal
    - Persist preferences from error session
    - New user interface to the errors
  - More flexible and extendable architecture
    - ReViewer will now have its own API

9.2 Release
ReViewer

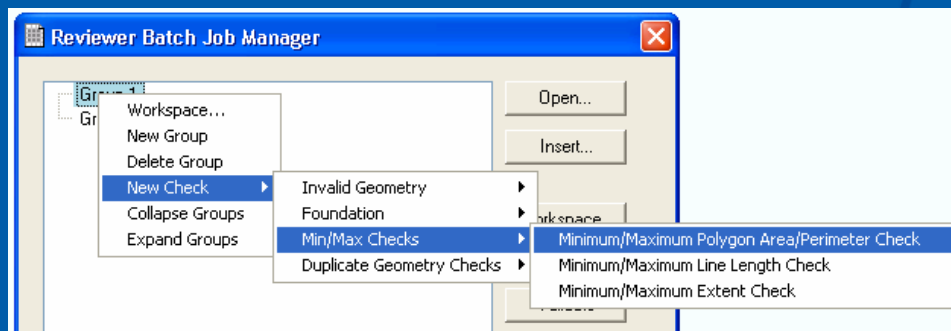Access to individual checks are through a pull down menu
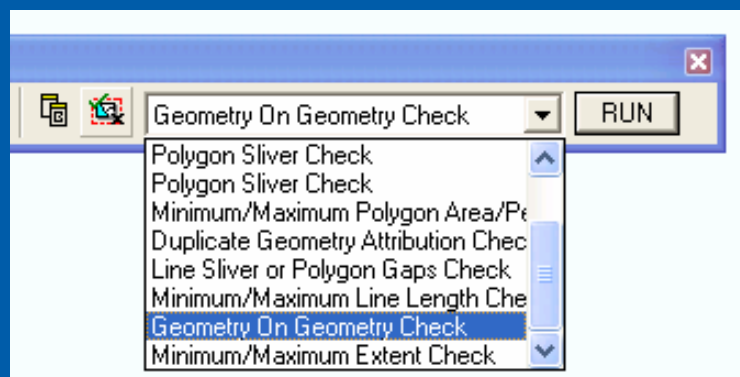
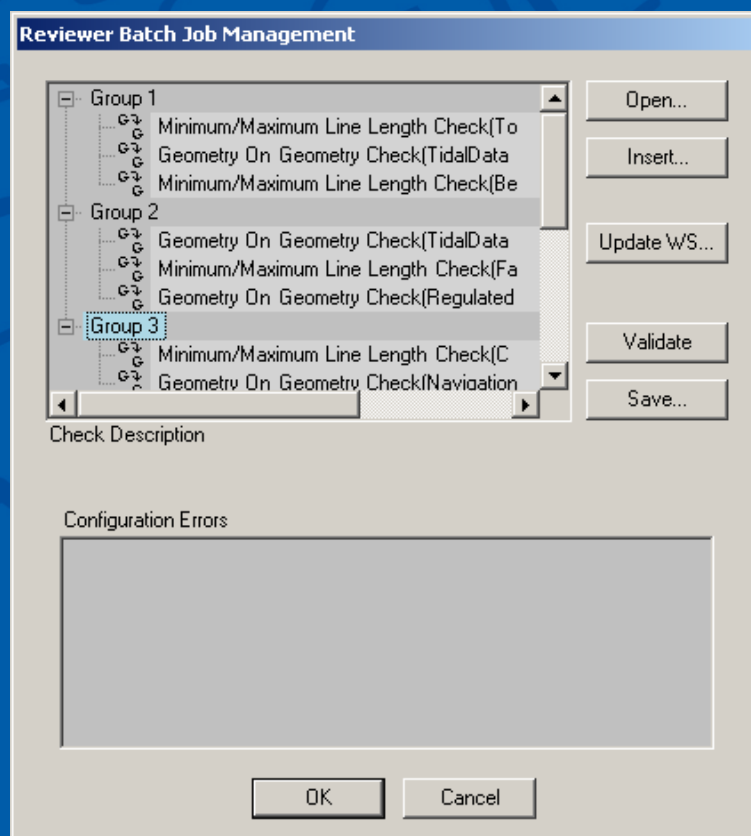Each check has its own property page for configuration

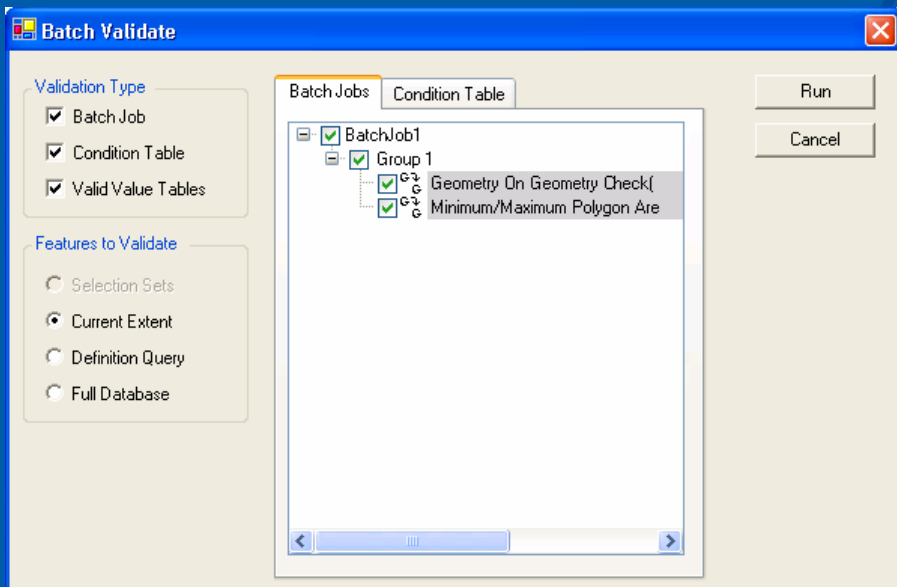# 9.2 Release
ReViewer
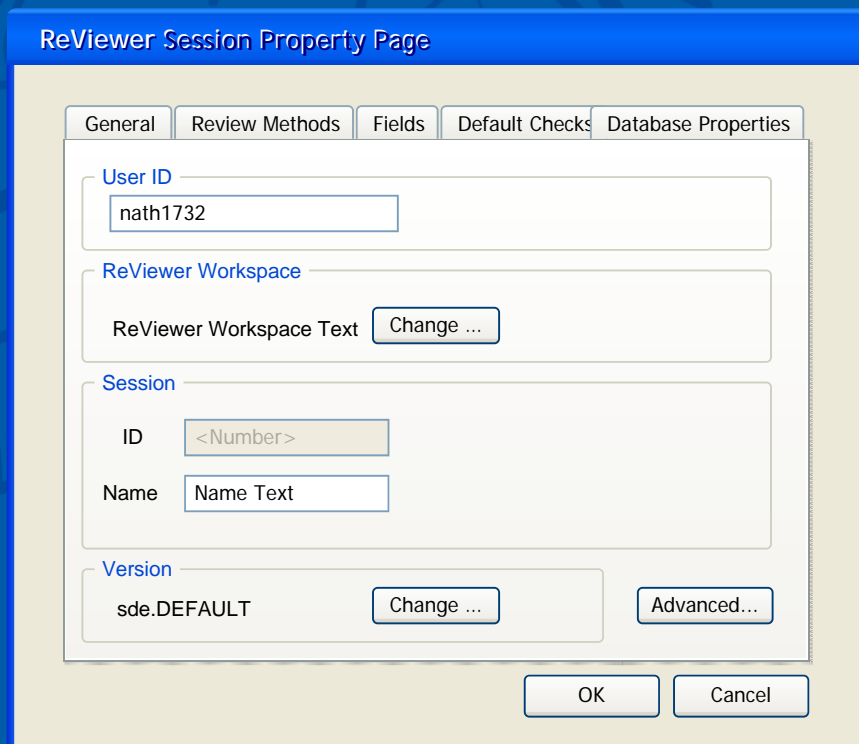
Batch Job Manager

Batch Jobs

9.2 Release
ReViewer

Batch Validate Interface changes

Session Properties

Hardcopy Map Production: MPS Atlas

- MPS Atlas provides:
  - Tools for creating a map series
  - Tools for creating individual map sheets
  - Batch printing and export
  - Dynamic text and elements
  - Element placement rules
- Available as part of MPS or with PLTS

Hardcopy Map Production: Grid Manager

- Grid Designer
  - Implement grid specification
  - Edit existing grid features
  - Export to XML
- Grid Creation Wizard
  - Loads Grid Designer's XML files
  - Batch grid creation
  - Coordinate system conversion
- Add Grid Data
  - Adds grid features into data frame
  - Retains layer properties
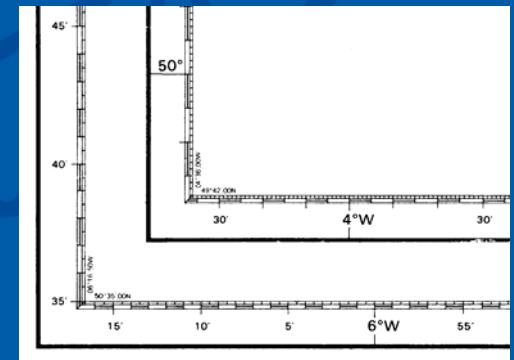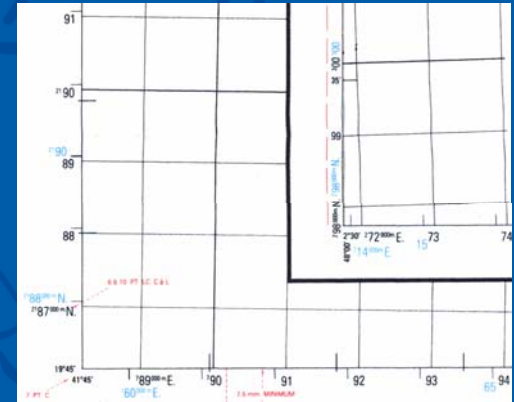
PLTS Map Production System Output

- **Multiple Export Formats**

- **PostScript CMYK Color Separation**

- **TIFF Spot Color Separation**
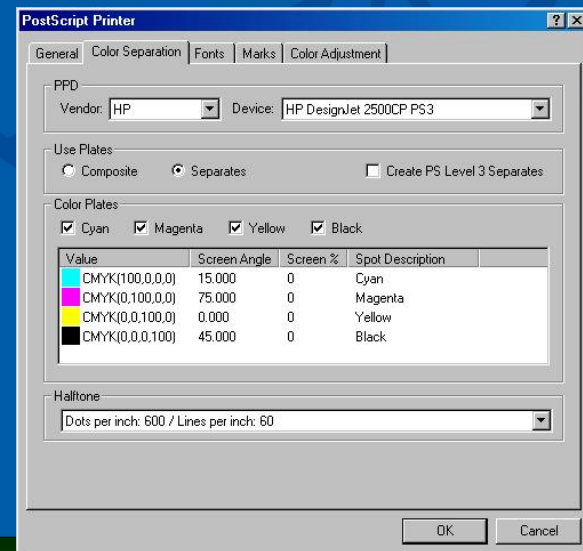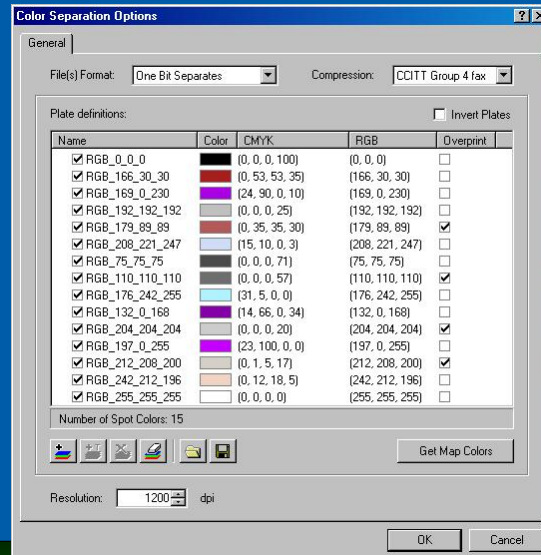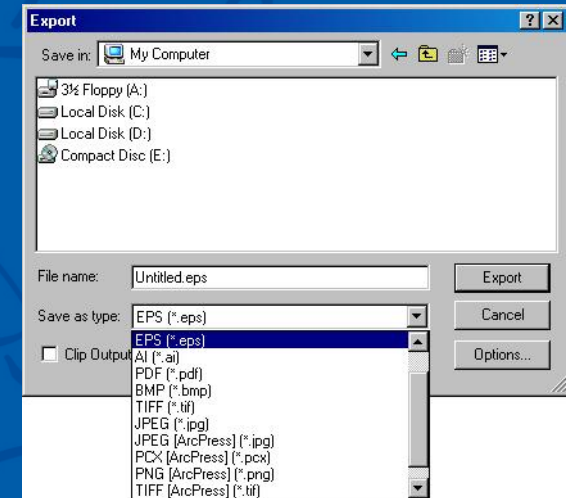
9.2 Release
MPS-Atlas

- Re-Write Dynamic text to have the ability to use expressions (like label expressions)
- Additional buffer data frame managers (Calculators)
- Additional coordinate system managers for central meridians, standard parallels and for State Plane (Calculators)
- Expand on dynamic definition queries (Specify more than one field and value)
- Expand the use of the Elements Tab

MPS Atlas vs. DS Map Book

Functionality	MPS Atlas	DS Map Book
ESRI Official Product	Yes	No
Technical Support	Yes	Limited to DSG only
Instructor led training	Yes	No
Virtual Campus Training	Yes	No
Multiple Layouts in the same map document	Yes	No
Dynamic Text	All Attributes and Map Properties	Titles only
Element Placement Rules	Yes	No
Ease of use	Easy	Programmer required
Cost	$2500	Free Download

Job Tracking Extension

- JTX is part of a System
  - Works with ArcGIS and PLTS
- Tracking Workflow
  - Establish a logical flow
  - Tract the status of jobs
- Managing jobs
  - Job properties
  - Database versions
  - Toolbars
  - AOI (Area of Interest)
  - Routing jobs
  - Documenting jobs
  - Integrate core software and applications
- Feature Tracking
  - Support multi-server replication framework
  - Track feature edit history

JTX Job Management Tools

Manager can perform simple visual inspection of where work is being done.
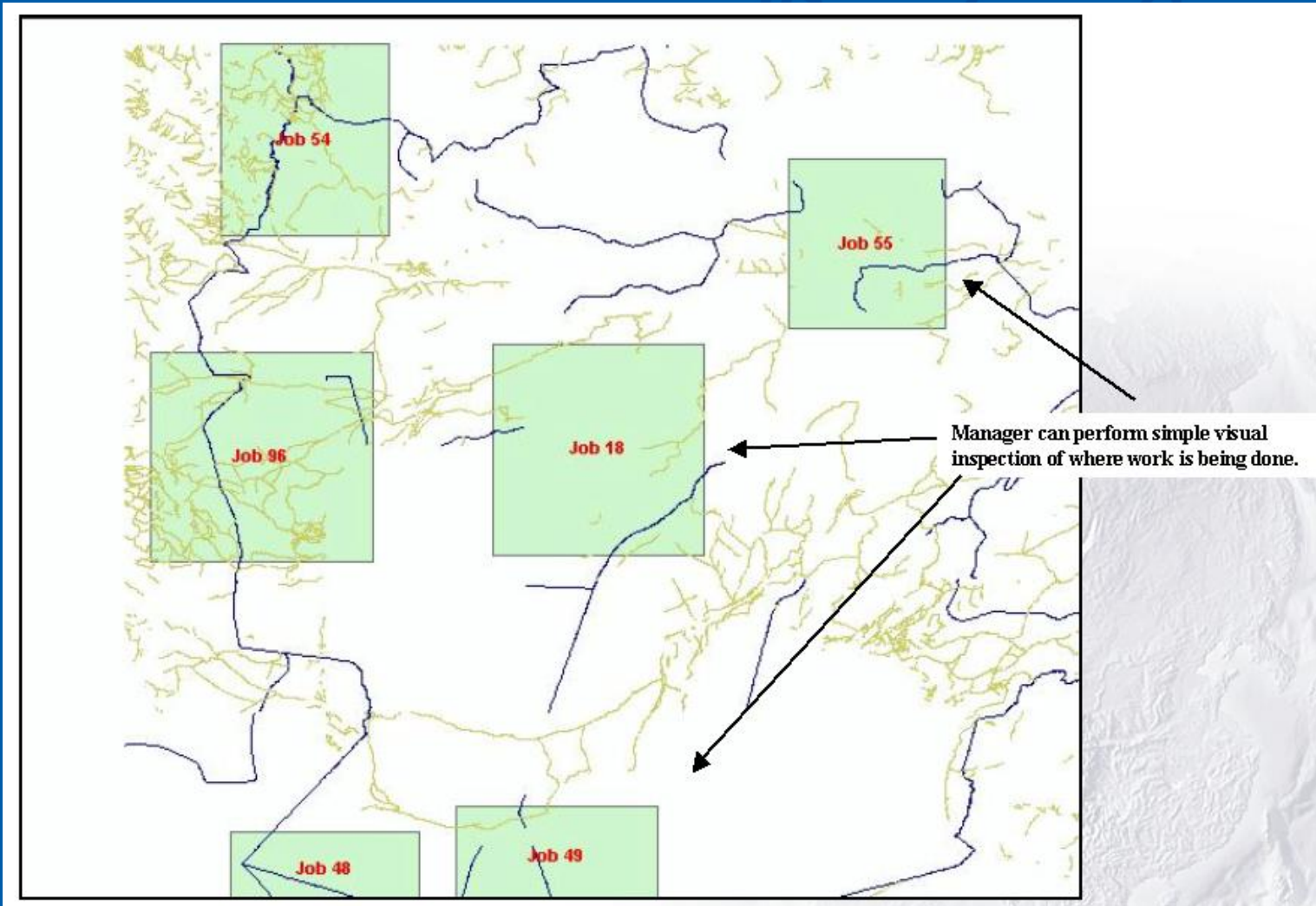
JTX Transaction Tools
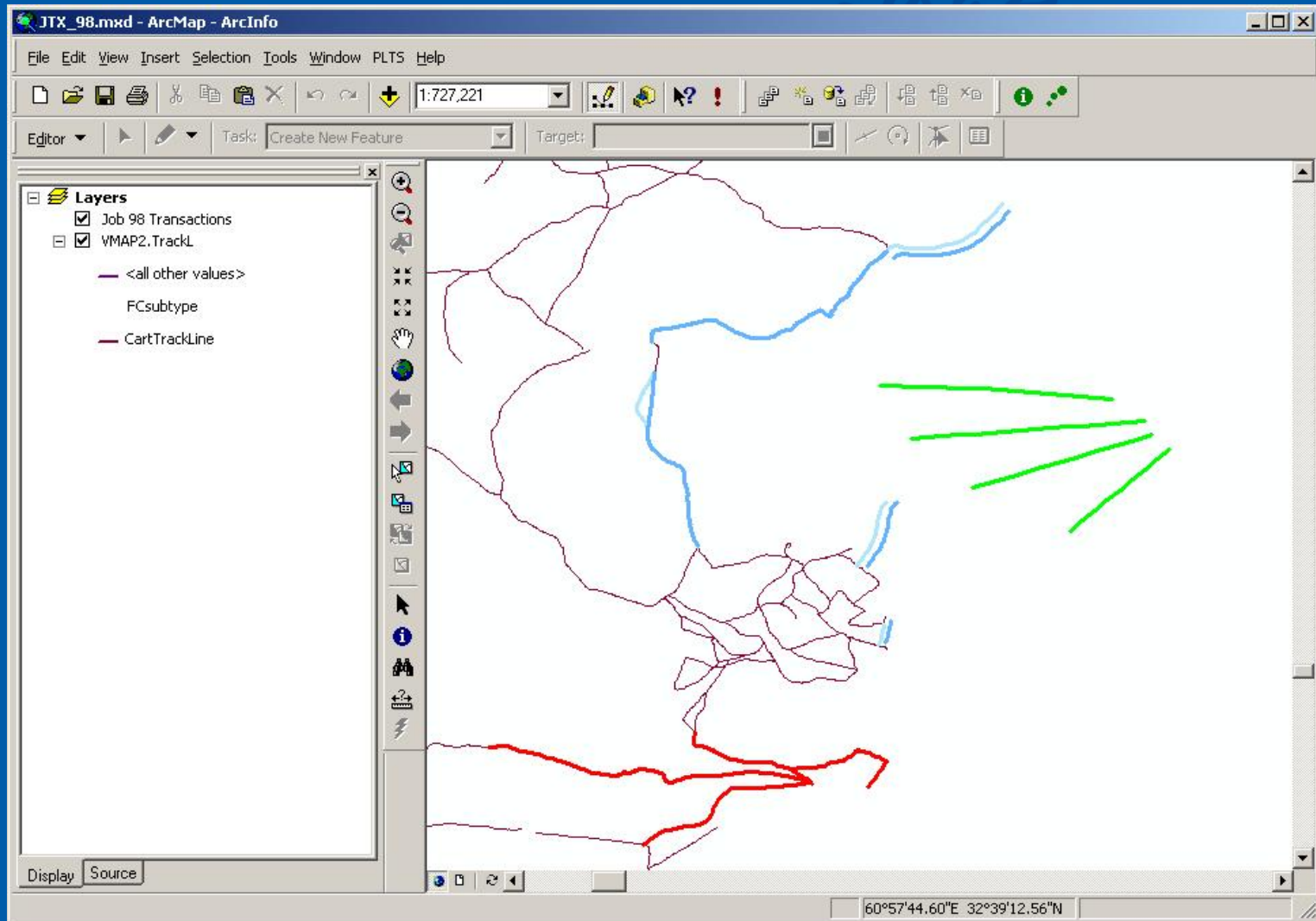
View stored transactions (adds, modifies, deletes) for Job

Demonstrations

Training/Support

- **Training**

  - **Conducted at ESRI or Any Appropriately Equipped Client Sites.**

  - **Available for Each PLTS Solution and Component Tool**

  - **Virtual Campus (Reviewer & Atlas)**

- **Maintenance**

  - **Annual Maintenance Support Plan**

  - **Standard ESRI Technical Support**

Questions?

www.esri.com/plts