



GIS

The Geographic Approach for the Nation



ESRI Federal User Conference

Washington, D.C. • February 17-19, 2010



Overview of ESRI's Mapping & Charting Solutions (PLTS)

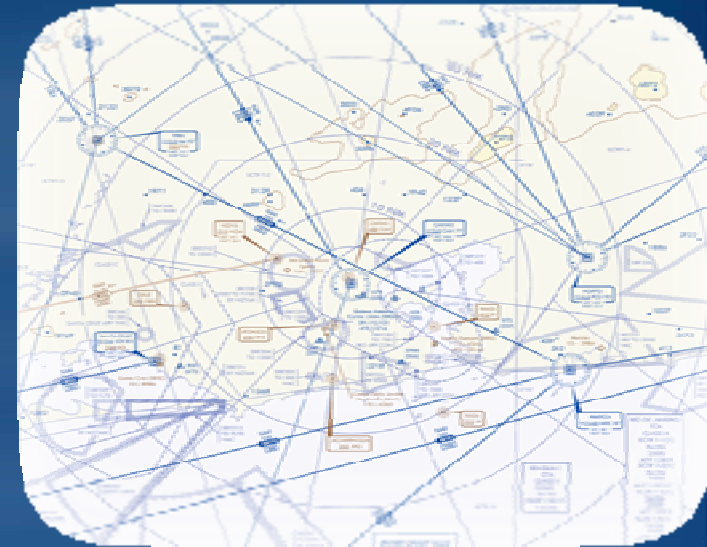
Daryl Smith
Jay Cary

-



Challenges facing modern agencies

- **Modern agencies face**
 - Challenges to centralize data
 - Reduced human/fiscal resources
 - Do more with less
 - Technology advancements
 - Take advantage of new innovations
- **Enterprise GIS provides**
 - Operational advantage
 - New opportunities
 - Secure investment



Operational Advantage

Through sophisticated solutions focused on your business

Centralized Data

- Features
- Metadata
 - Rules
 - History
- Replication
- Services
- Products

Specialized Tools

- Manage Products
- Create and Edit Data
 - Custom Callouts
- Detailed Cartography
- Variety of Chart Elements

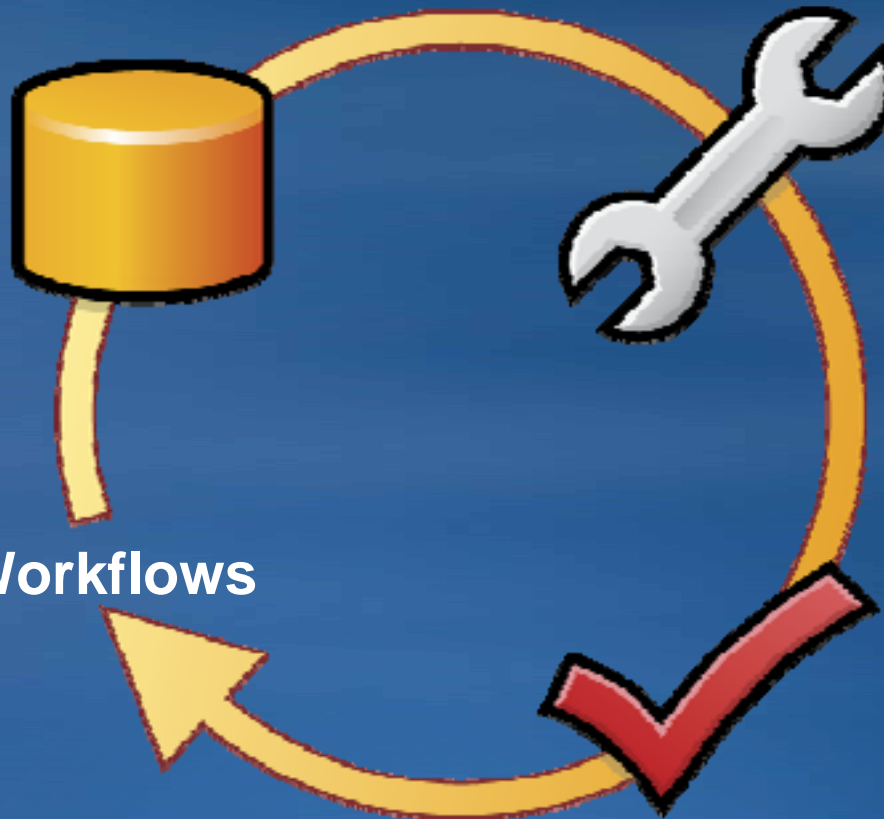
Workflows

Workflow

- Manage jobs
- Assign Jobs
- Attach Documents
- Receive Assignments
- Keep Tasks Organized

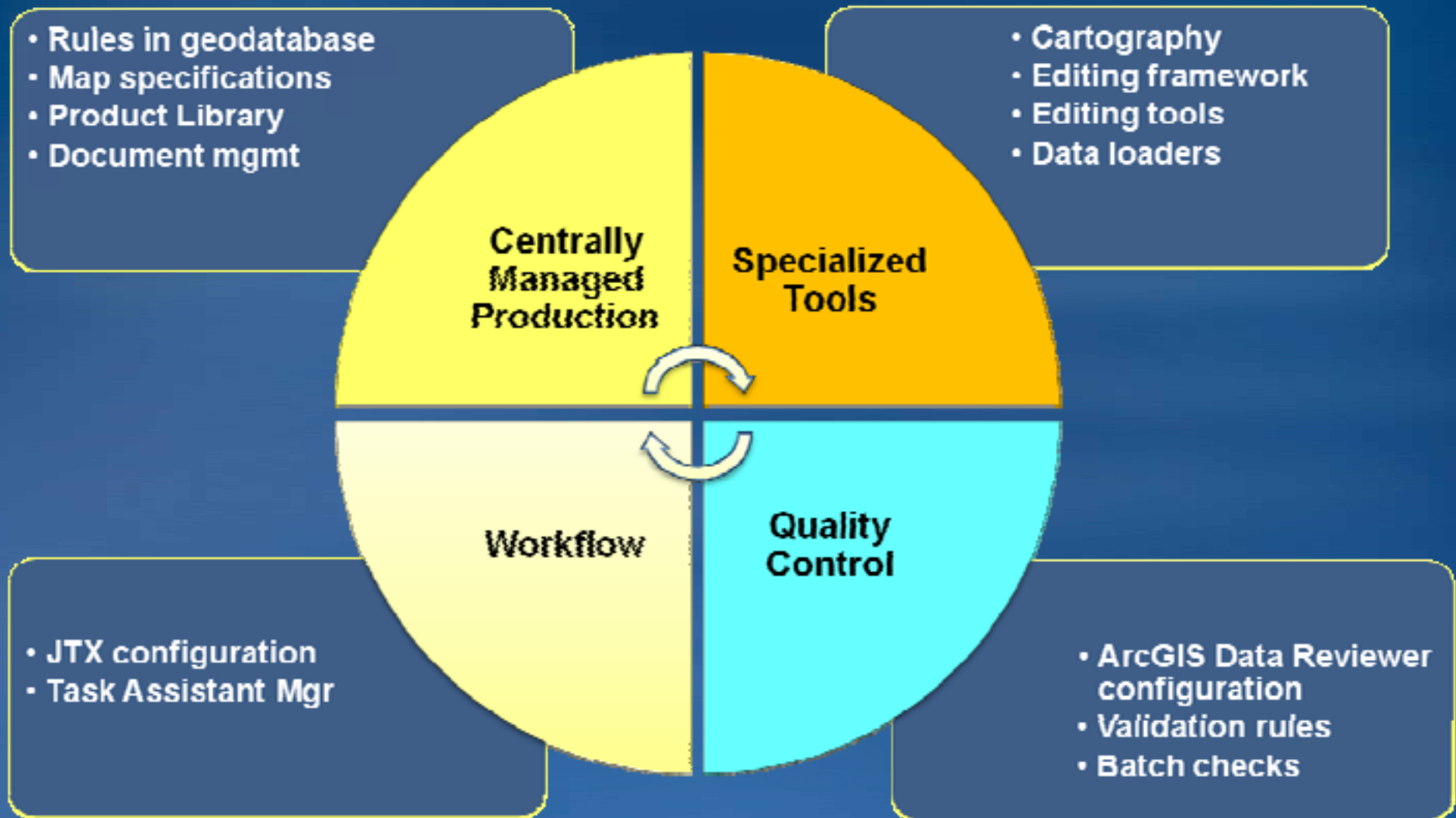
Quality Control

- Rule-Based Editing
 - History
 - Validation
- Multi-User Environment



Components

Efficiently produce standards-based products



...giving customers an operational advantage

Modular Component Concept

Job Tracking for ArcGIS



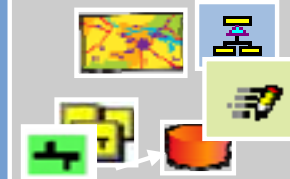
GIS Data Reviewer



Cartography



Foundation Editing Tools



Task Assistant Manager (TAM)



Data Loader



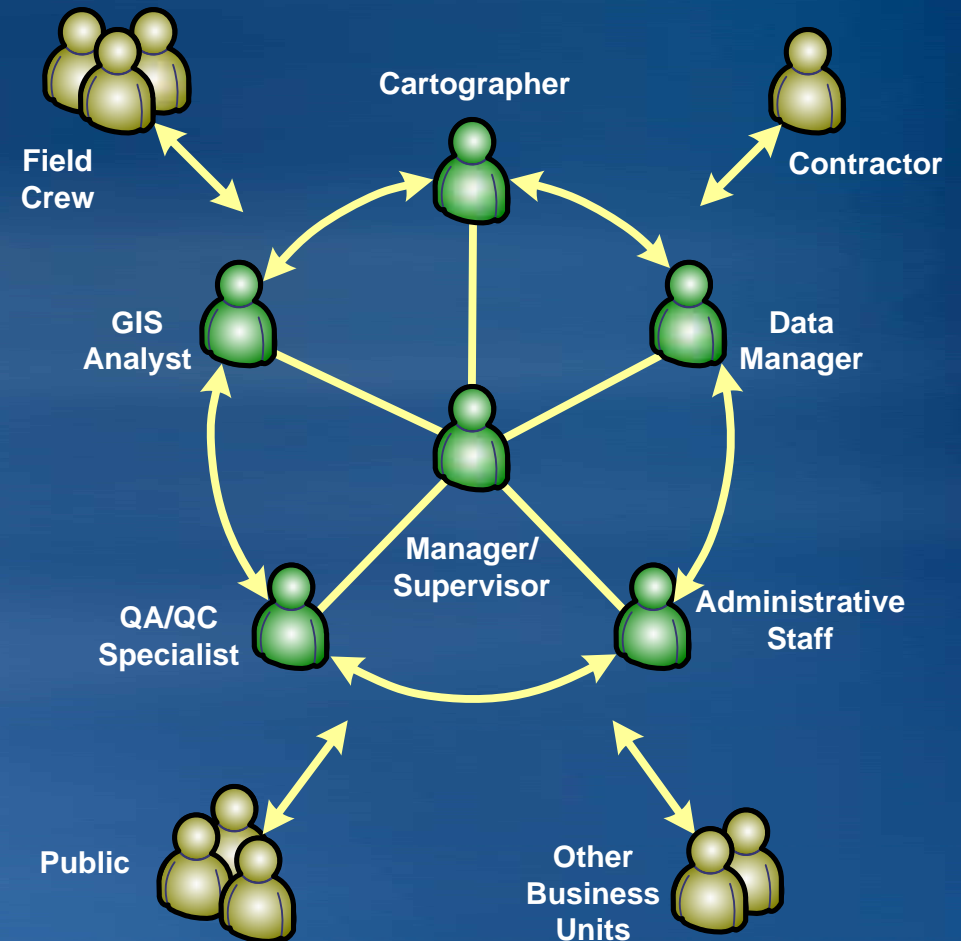
Product Library



Job Tracking for ArcGIS

Design, build, and execute workflows

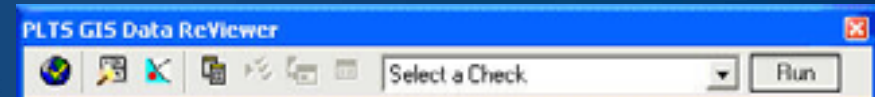
- Manages enterprise workflows
- Integrates GIS and non-GIS components of workflows
- Uses workflows to improve efficiency
- Simplifies geodata management
- Access desktop and web clients through JTX Server



Enabling standard, repeatable enterprise workflows

GIS Data ReViewer

Error detection, correction and validation



- Full error life cycle
- Manual review options
- Batch feature validation
- Robust data checks
- Reviewer table
- Reviewer sessions
- Mini browser
- Markup tools
- Zoom to feature



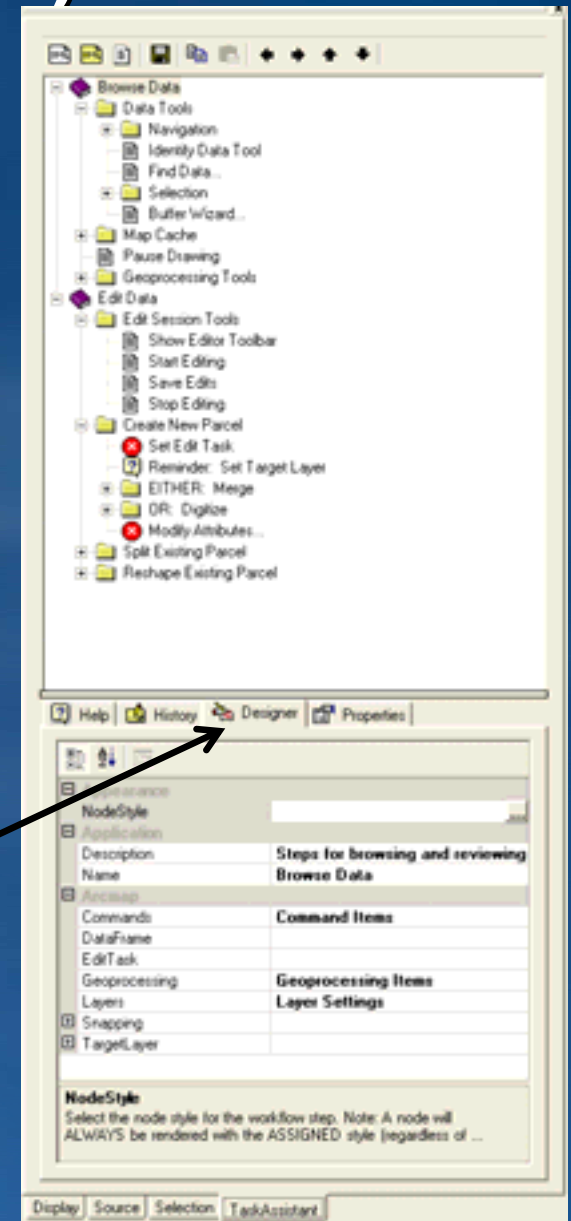
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2	112		1	100	2	Lakeshore	Multipart Polygon
3	125		1	100	2	Lakeshore	Multipart Polygon
4	144		1	100	2	Lakeshore	Multipart Polygon
5	146		1	100	2	Lakeshore	Multipart Polygon
6	8		1	207	2	Road	Cutback Check
7	21		1	207	2	Road	Cutback Check
8	402		1	207	2	Road	Cutback Check
9	3369		1	207	2	Road	Cutback Check
10	17		1	207	2	Road	Cutback Check
11	17		1	221	2	Polynoid	Evaluate Part
12	2		1	177	2	Coad	Evaluate Polyline
13	515		1	95	2	Tree	Evaluate Polygon
14	9		1	177	2	Street	Evaluate Polygon

Task Assistant Manager (TAM)

Design and execute detailed workflows

- Manages specific workflows
- Integrates ArcGIS components in workflows steps
- Step by step instructions for ArcMap commands
- Desktop tasks
- Workflows are stored as XML and can be distributed

Task Designer

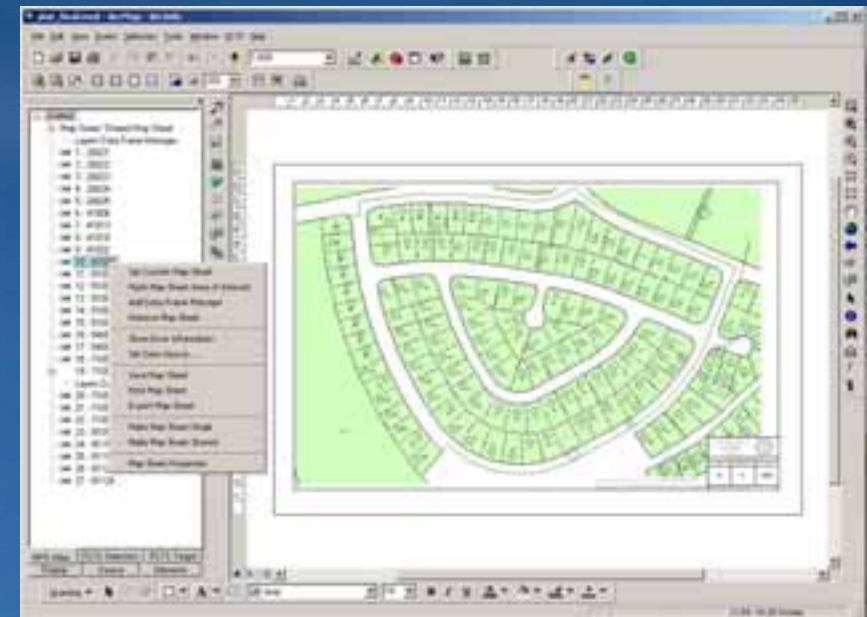


Creating and using repeatable detailed workflows

Cartography

Creating Maps and Charts fast

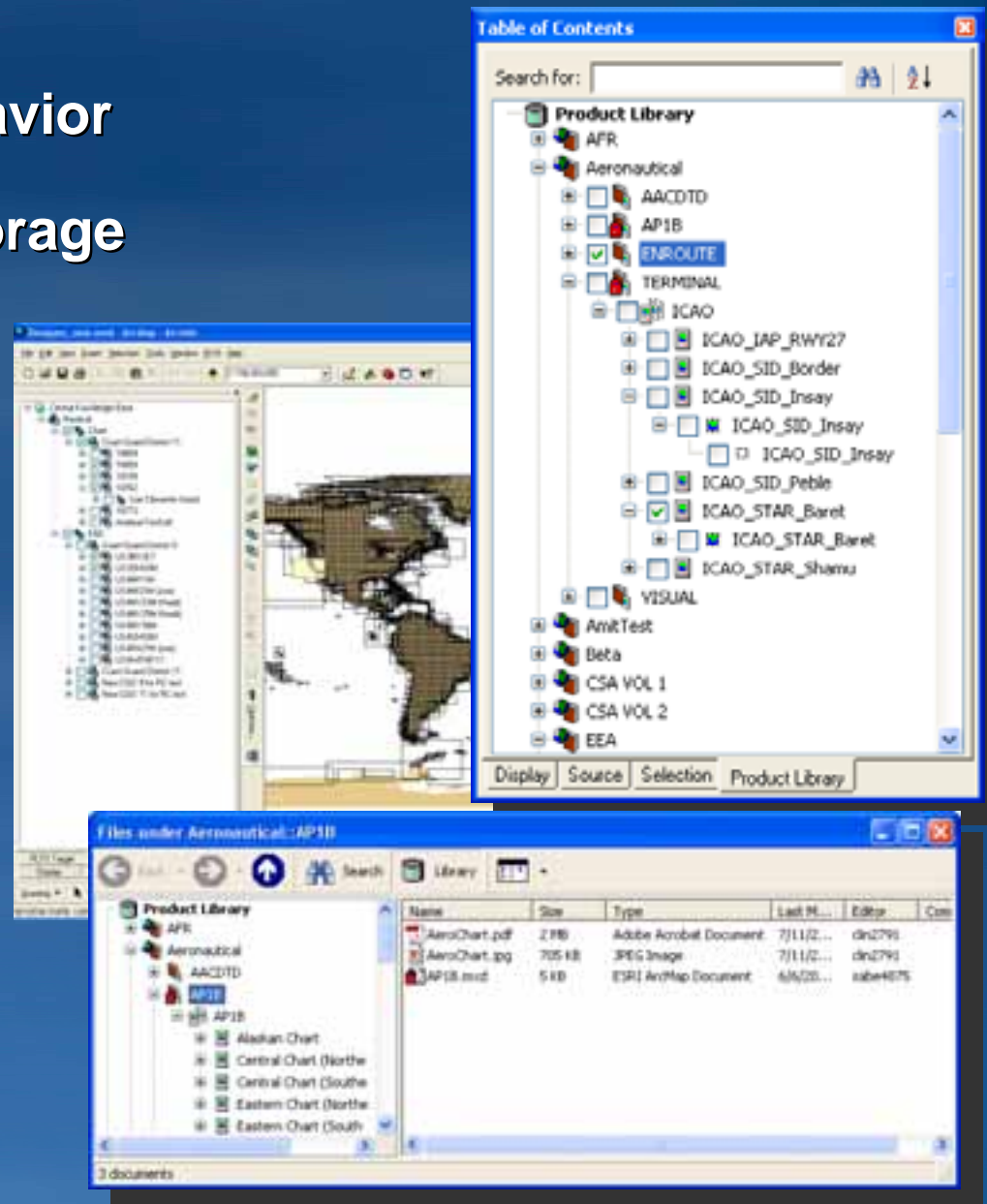
- Batch map generation
- High quality / high volume map production
- Database Driven
- Dynamic surround elements
- Automated layout placement rules
- Feature Indexing
- Grid and Graticule Designer and GP Tool
- Graphic Table Element
- Visual Specifications Tool
- Additional symbology



Product Library

Centralized management of production rules, maps, and documents

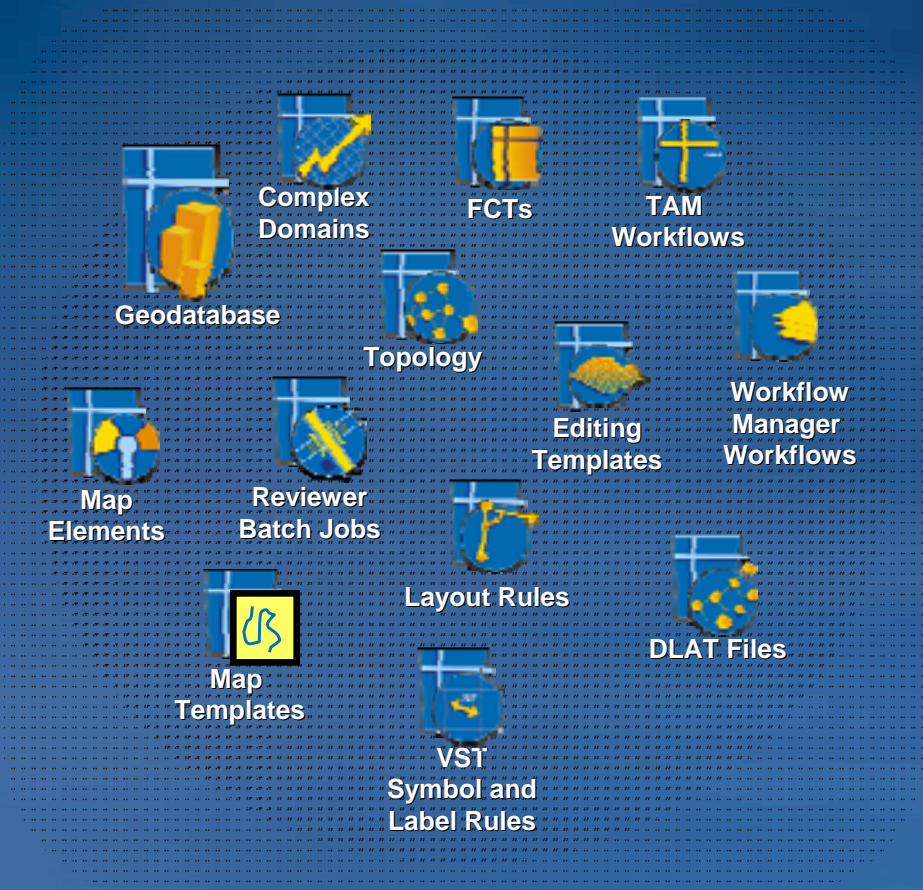
- Centralized information & behavior
- Data editing configurations storage
- Quality control rules
- Cartographic specifications
- Production life cycle
- Carto product management
- Output/publish
- Tight integration with ArcMap
- Multi-user permission control



Spatial Data Management Rules

Enterprise Geodatabase Rules and Behavior

Product Library



- Centralizes information in a DB
- Enterprise Storage
- Stores Business Logic
- Document Management
- Workflows
- Feature Validation Rules
- Map and Chart Templates
- Layout Rules
- Scalable and High Performance
- Geospatial document library

Scalable Business Rules

ESRI Solutions at 9.3.1

Solving the problems for you

- Manages enterprise data production and map generation
- Industry standards based end to end production systems
- Improved efficiency through focused predefined detailed workflows
- Simplifies data creation and management
- Preconfigured Map and Chart outputs
- Desktop based

Aeronautical
Solution

Defense
Solution

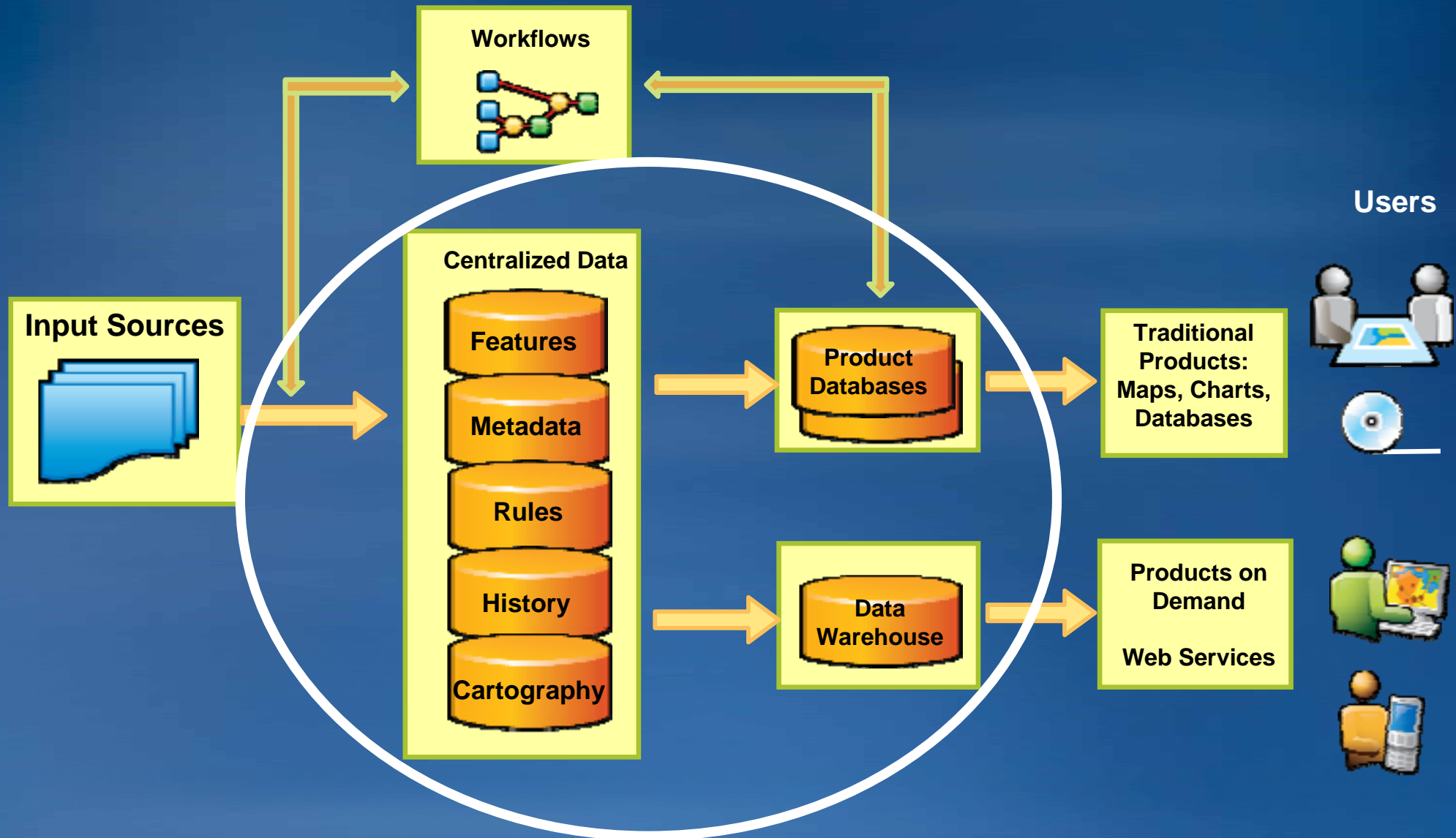
Mapping Agency
Solution

Nautical
Solution

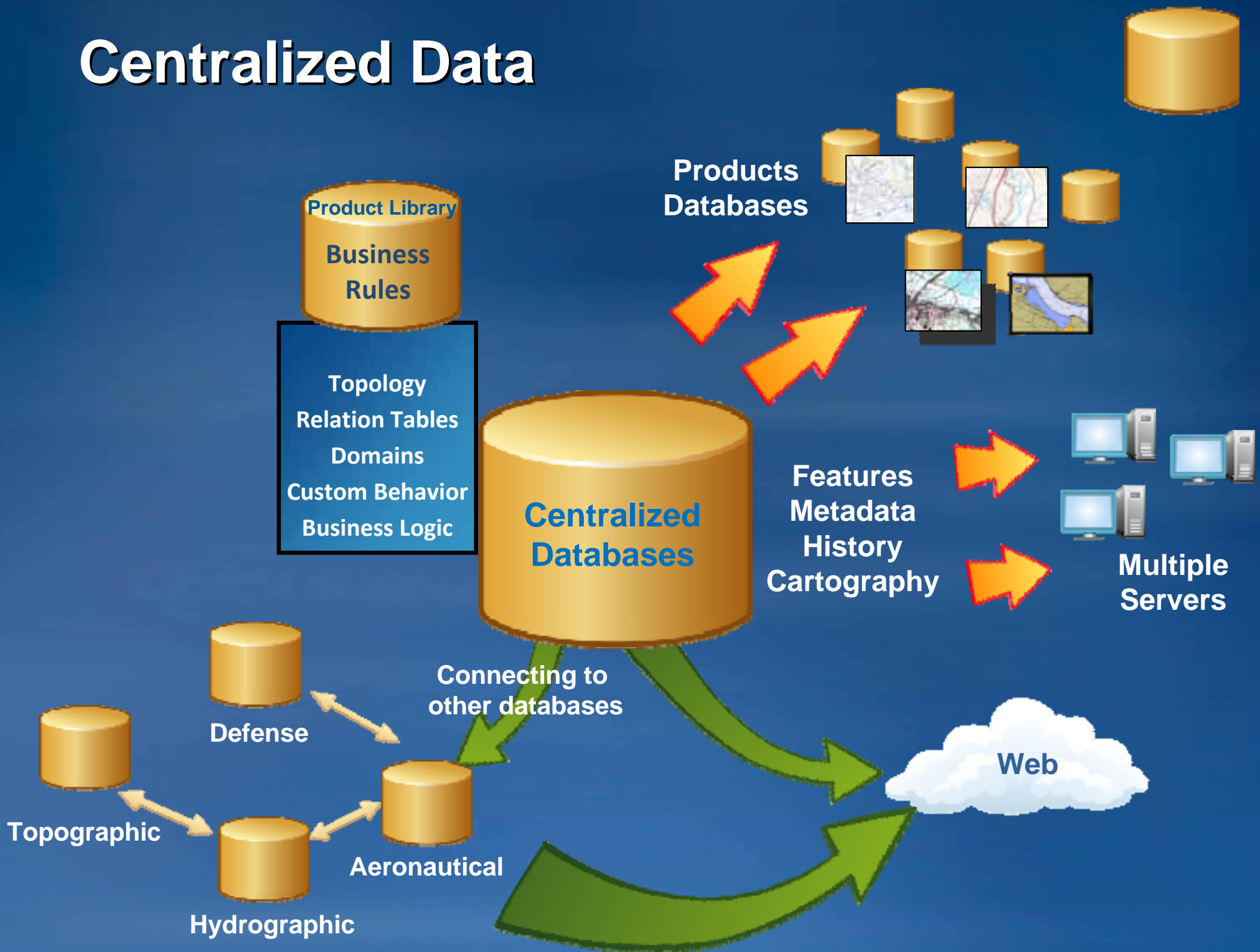
Standards based , repeatable geospatial data production

Common Themes within ESRI Solutions

Centralized Data



Centralized Data



Quality Control

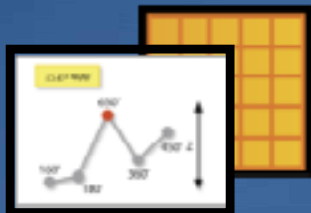


Rule-Based Editing and Validation

DATA	DESCRIPTION
000	
SEA	SEA AREA
LAND	LAND AREA
CAU	CAUTION

OBJECTID	SHAPE	FCSUBTYPE
1	POLYLINE	AQ040 BRIDGE LINE
2	POLYLINE	AQ040- BRIDGE LINE
3	NULL	AQ040- BRIDGE LINE

Topology Checks



Data

History



Validation



Multiuser Environment Control

Master

Reviewer

Editor

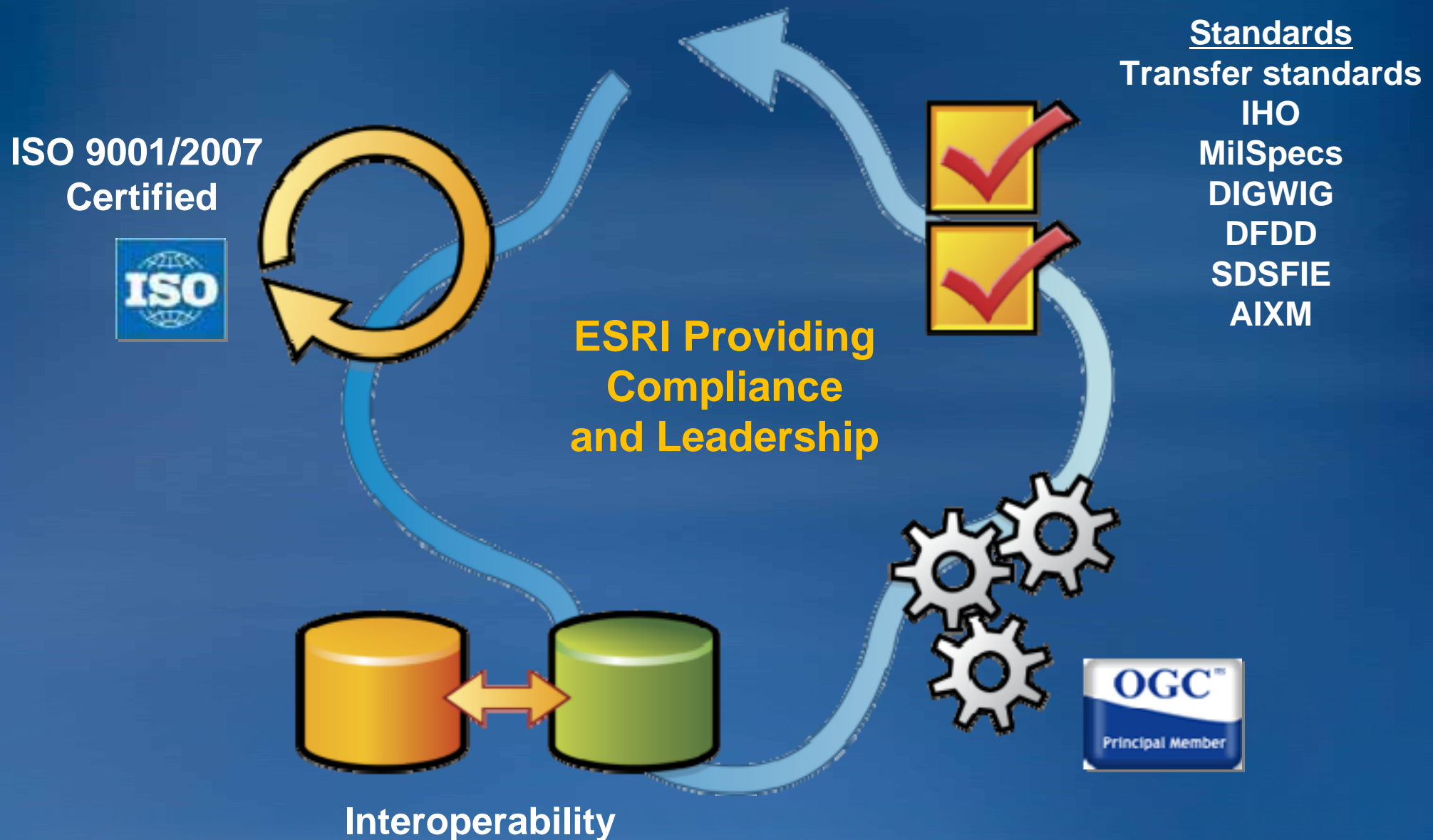
Editor

Editor

Workflow Management



Industry Standards





Solutions Overview

Aeronautical

Aeronautical data management and chart production

-



Aeronautical

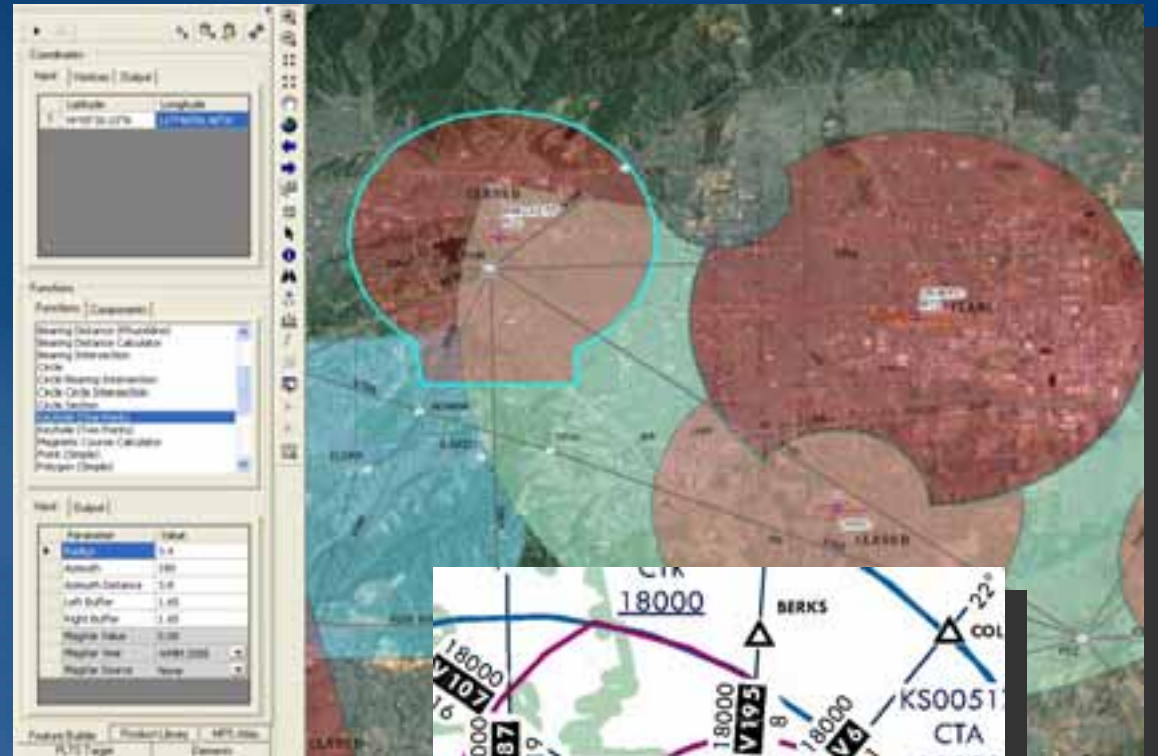
- **High transaction, rapid and unforgiving quality environment**
- **Key implementations**
 - NGA
 - FAA
 - Eurocontrol
 - Aena (Spain)
 - Avinor (Norway)
 - ICA (Brazil)
- **Related projects**
 - Terminals
 - NGA Global Navigation Services



Encapsulates ESRI technology in unified user experience

Aeronautical

- **Context**
 - New GIS users
 - Aeronautical info as spatial data
 - Data vs. product focus
 - Database driven cartography
- **Standards support**
 - Aero Info Exchange Model (AIXM)
 - ICAO and defense charts
- **Specialized capability**
 - Parameter-based data editing
 - Annotation management
 - Intelligent page elements



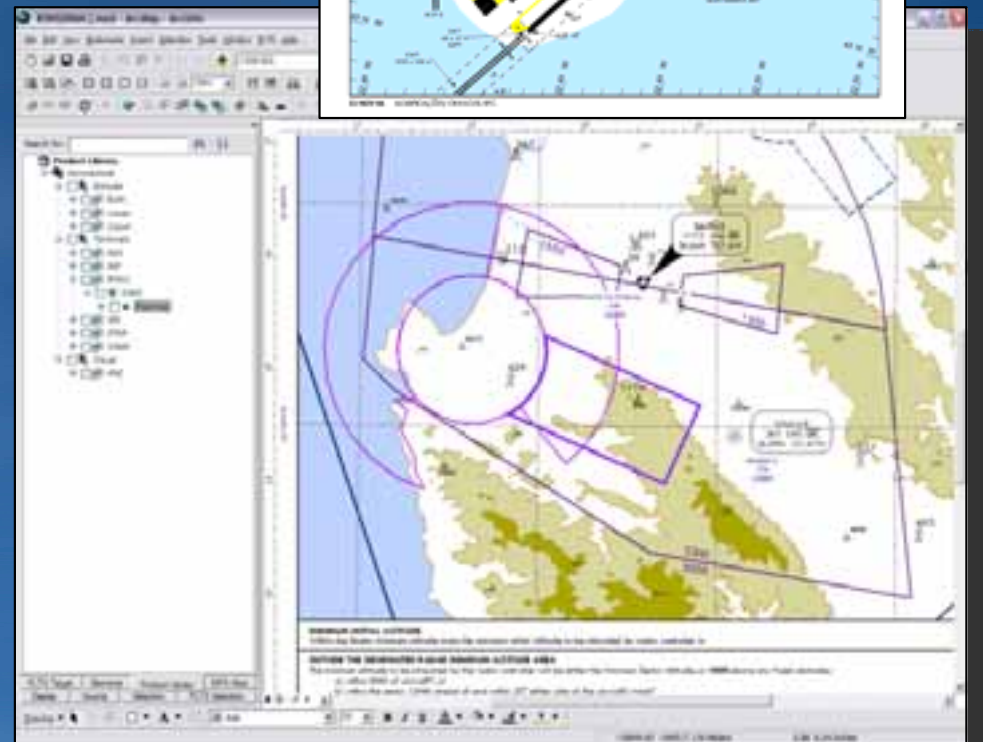
Aeronautical

- **9.3.1 Release**

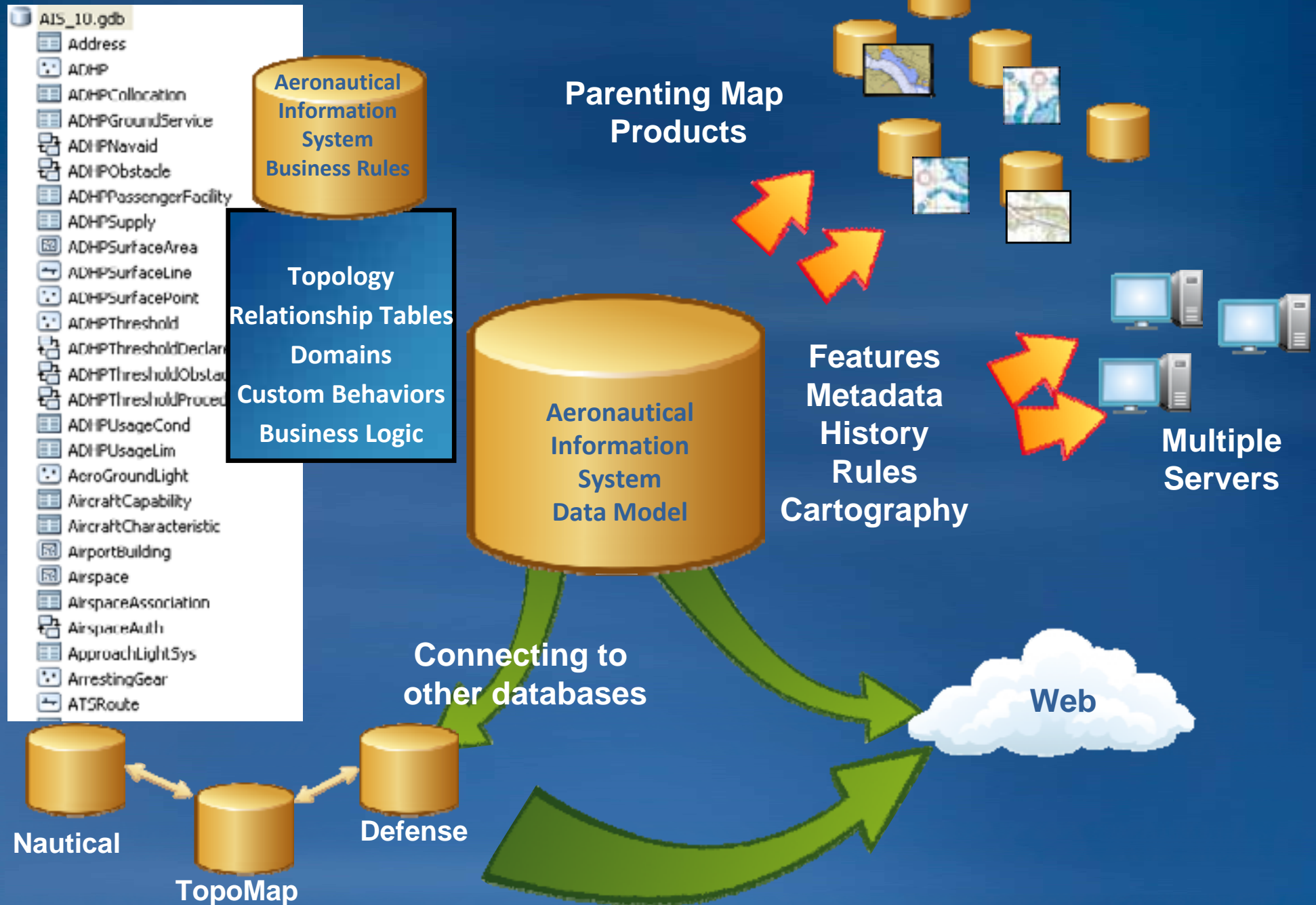
- **Electronic Terrain & Obstacle Data (eTOD)**
- **Profile View enhancements**

- **10 Themes**

- Usability and productivity
- Project driven requirements
- More products



Centralized Data

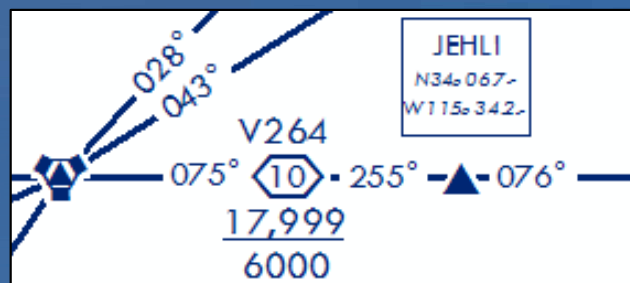


Specialized Aeronautical Tools

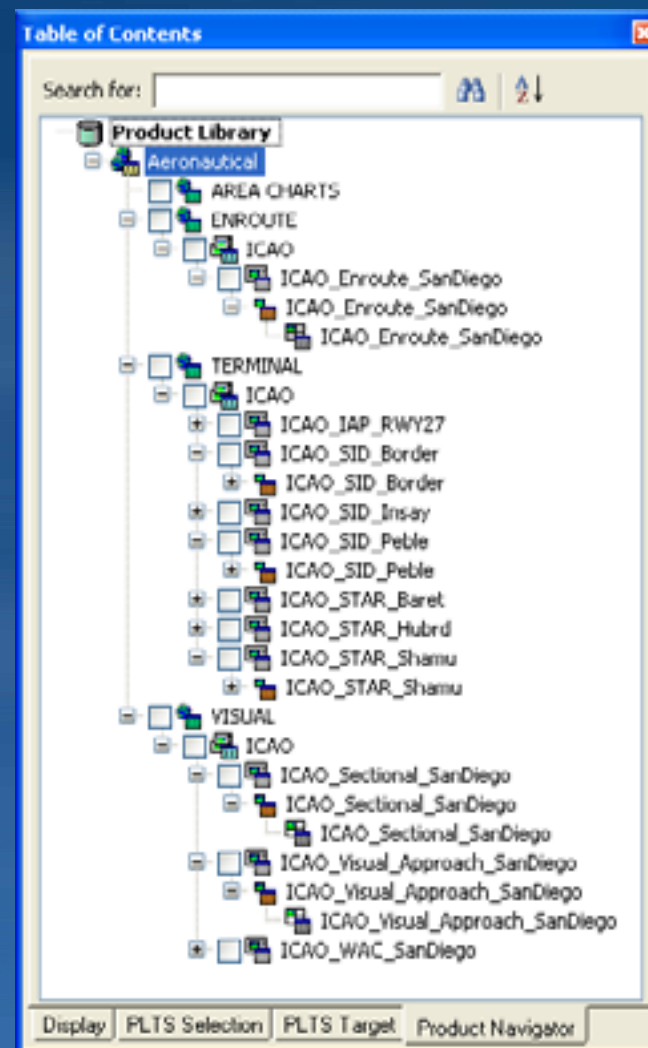


Input	Output
Parameter	Value
Radius	3.4
Azimuth	180
Azimuth Distance	3.8
Left Buffer	1.65
Right Buffer	1.65
MagVar Value	0.00
MagVar Year	WMM 2005
MagVar Source	None

Create and edit data



Complex labeling



Manage products

Specialized Aeronautical Tools



Automated text

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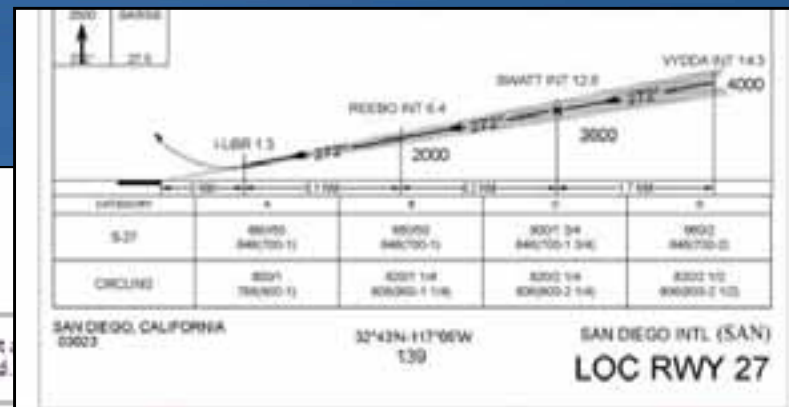


Batch cartography



Specialized chart elements

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	Apt Elev	15
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ATIS 134.8	SOCAL APP CON 119.5	



Quality Control

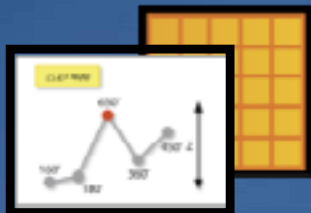


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Topology Checks



Data

History

Validation

**Multiuser
Environment Control**

Master

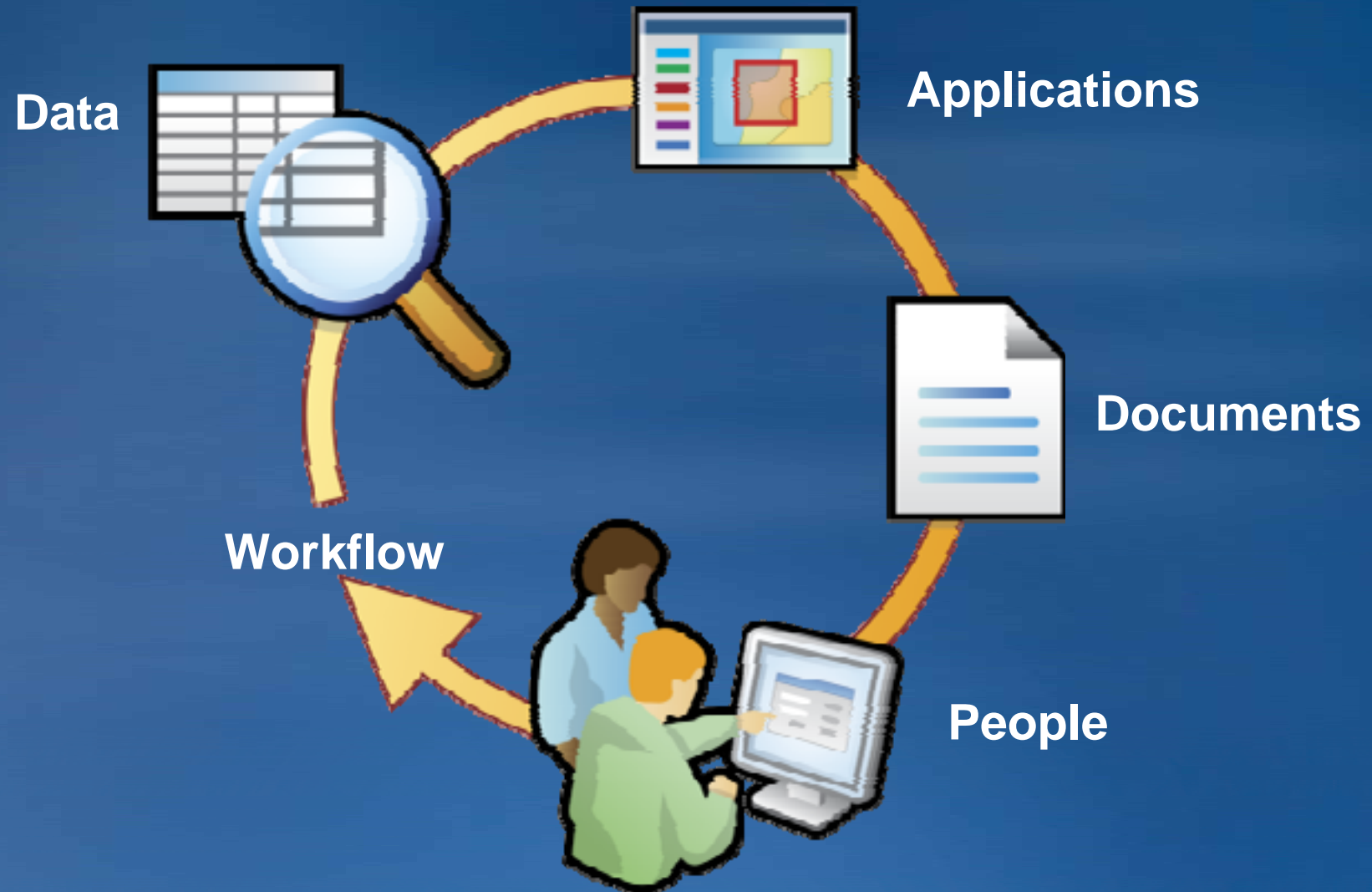
Reviewer

Editor

Editor

Editor

Workflow Management



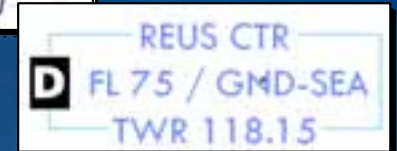
Latest Technology



Improved Geodesic
Editing (Feature Builder)



Central Docs and Rules
(Product Library)



Advanced Callouts



Sample Charts & Workflows



Task Assistant

New Products & Services



Product On Demand



3D Visualization

Web Services

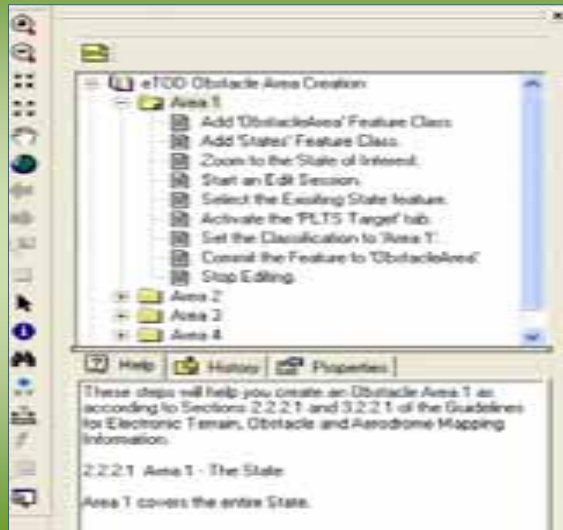
Product On Demand

3D Visualization

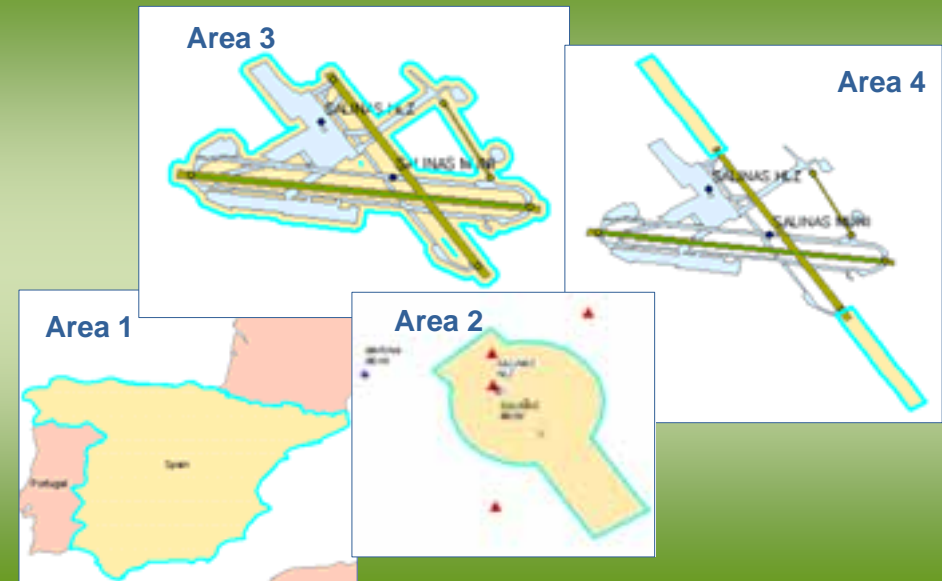
Web Services

eTOD Support in the AIS

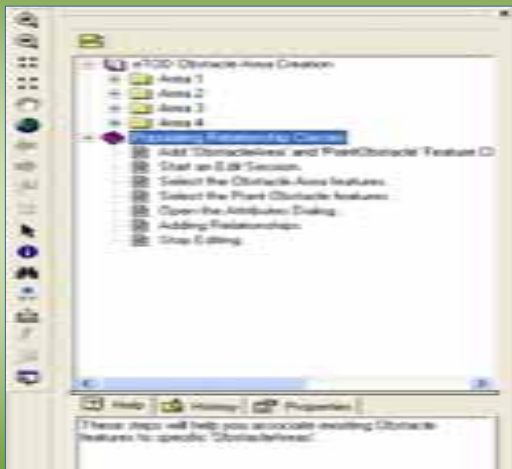
Task Assistant Workflow Area Creations



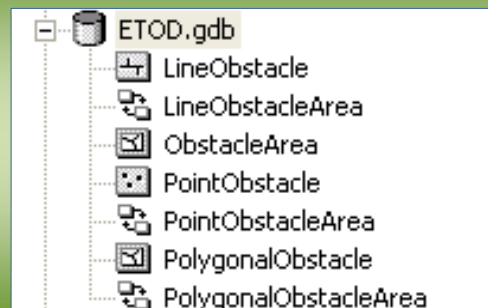
Obstacle and Terrain Data Collection Areas



Task Assistant Workflow Populating Relationship Classes

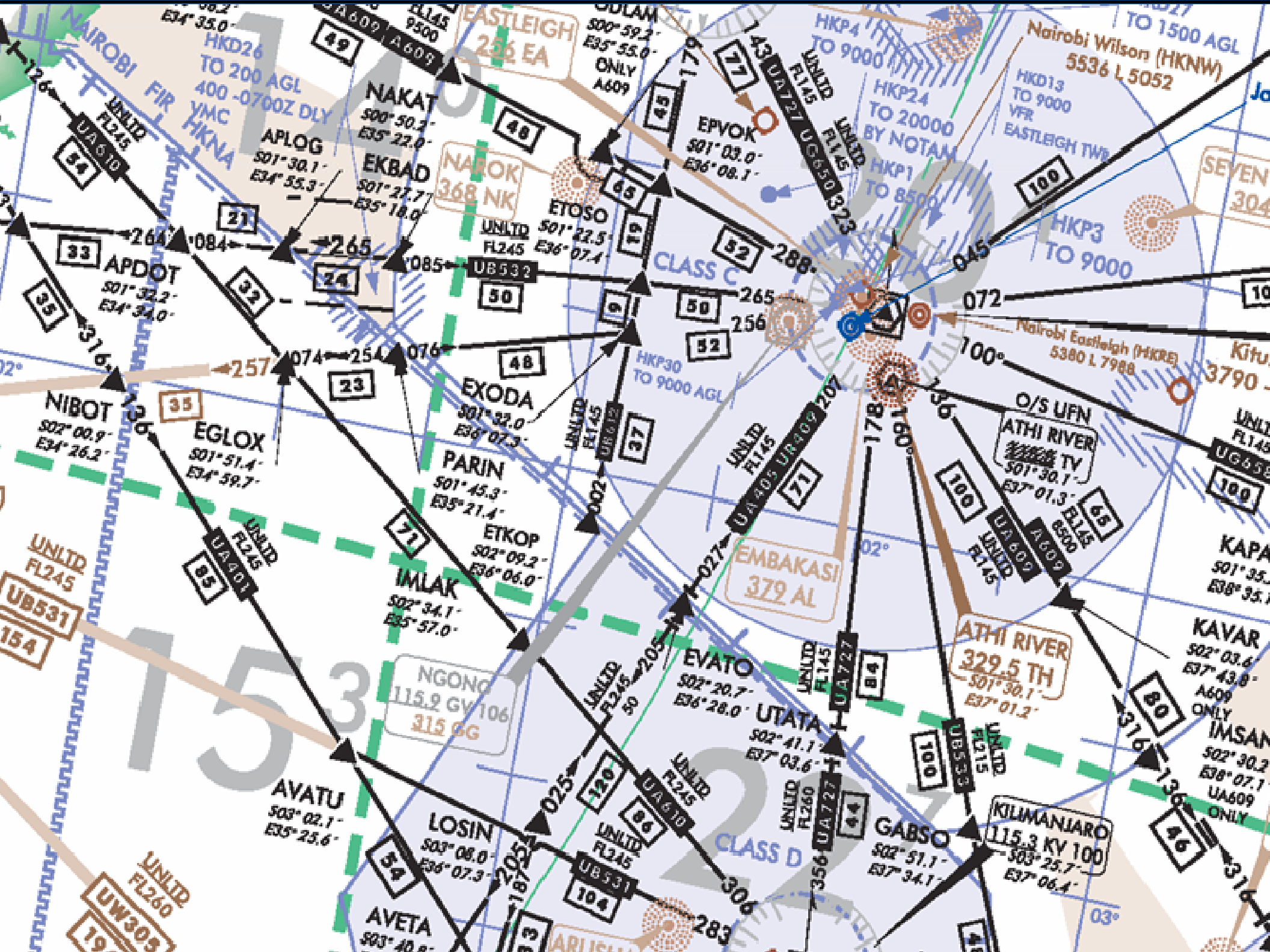


Data Storage in AIS Model



Data Collection







Solutions Overview

Defense

Providing specialized capabilities for defense users

-

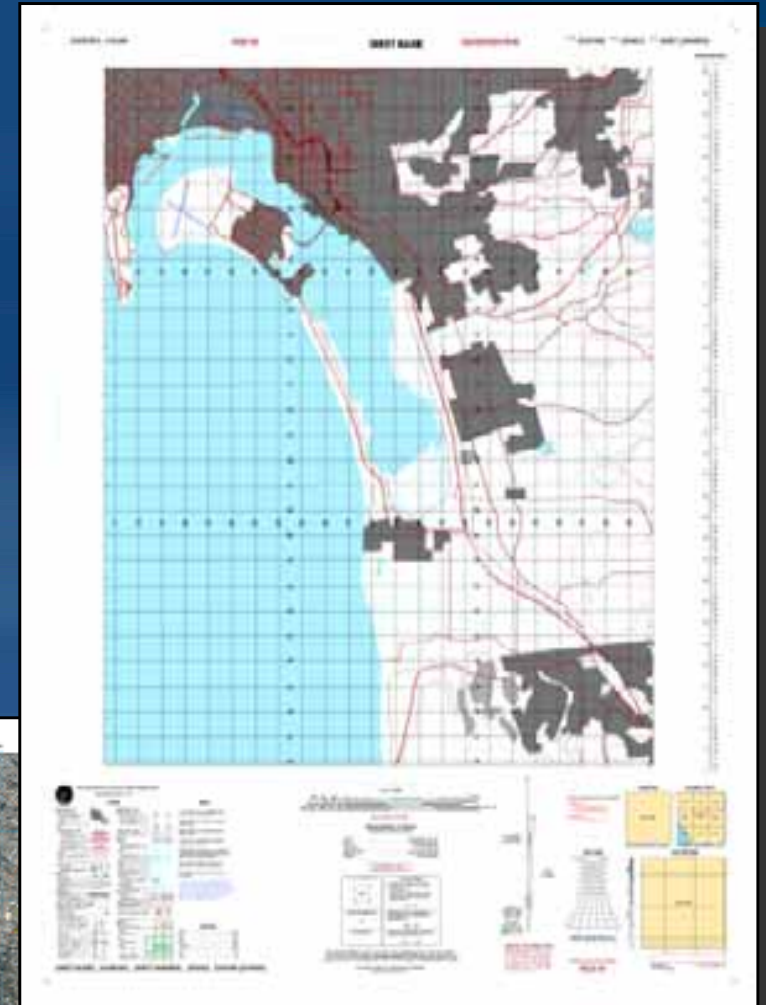


Encapsulates ESRI technology in unified user experience

Defense

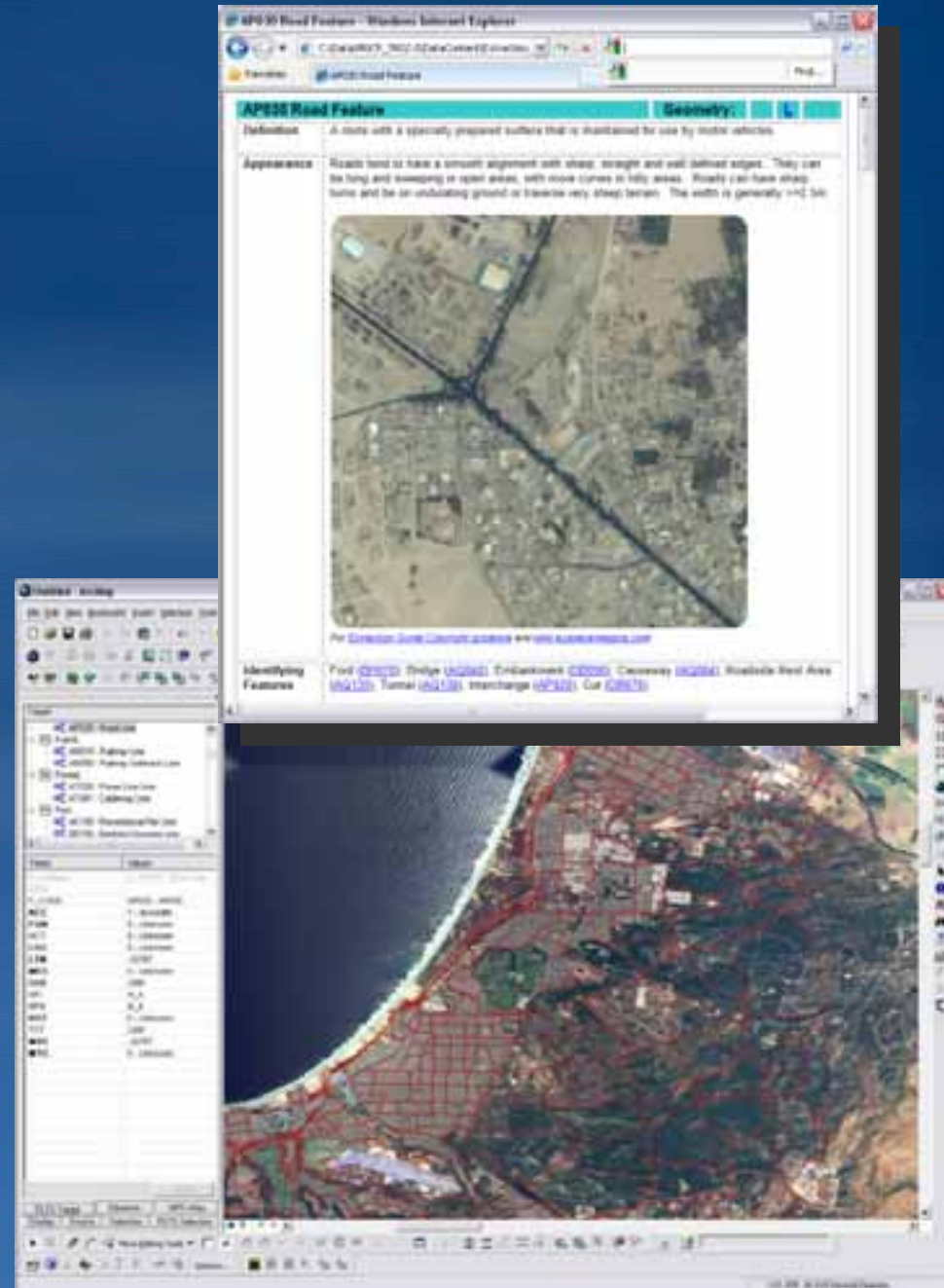
Setting the Defense Mapping Standards

- Specification driven production environment for
 - Defense mapping agencies
 - Defense forces
 - Intelligence agencies
 - Defense installations
- Key implementations
 - NGA
 - Def Geographic Centre (UK)
 - DIGO (AUS)
 - Multi-national Geospatial Coproduction (MGCP)
- Related projects
 - TFDM
 - NGA GGI Production



Defense

- **Context**
 - Defense agencies worldwide adopting
 - ESRI well established
 - Interest in TFDM
- **Standards support**
 - NGA, MGCP, DISDI
 - Data (e.g. MGCP, ICM, VMAP2)
 - Hard copy (e.g. TLM, ICM, MDG)
 - Defense I&E (SDSFIE)
- **Specialized capability**
 - Data management (MGCP)
 - 2D/3D feature collection workflows
 - Defense topographic production
 - Cartographic automation

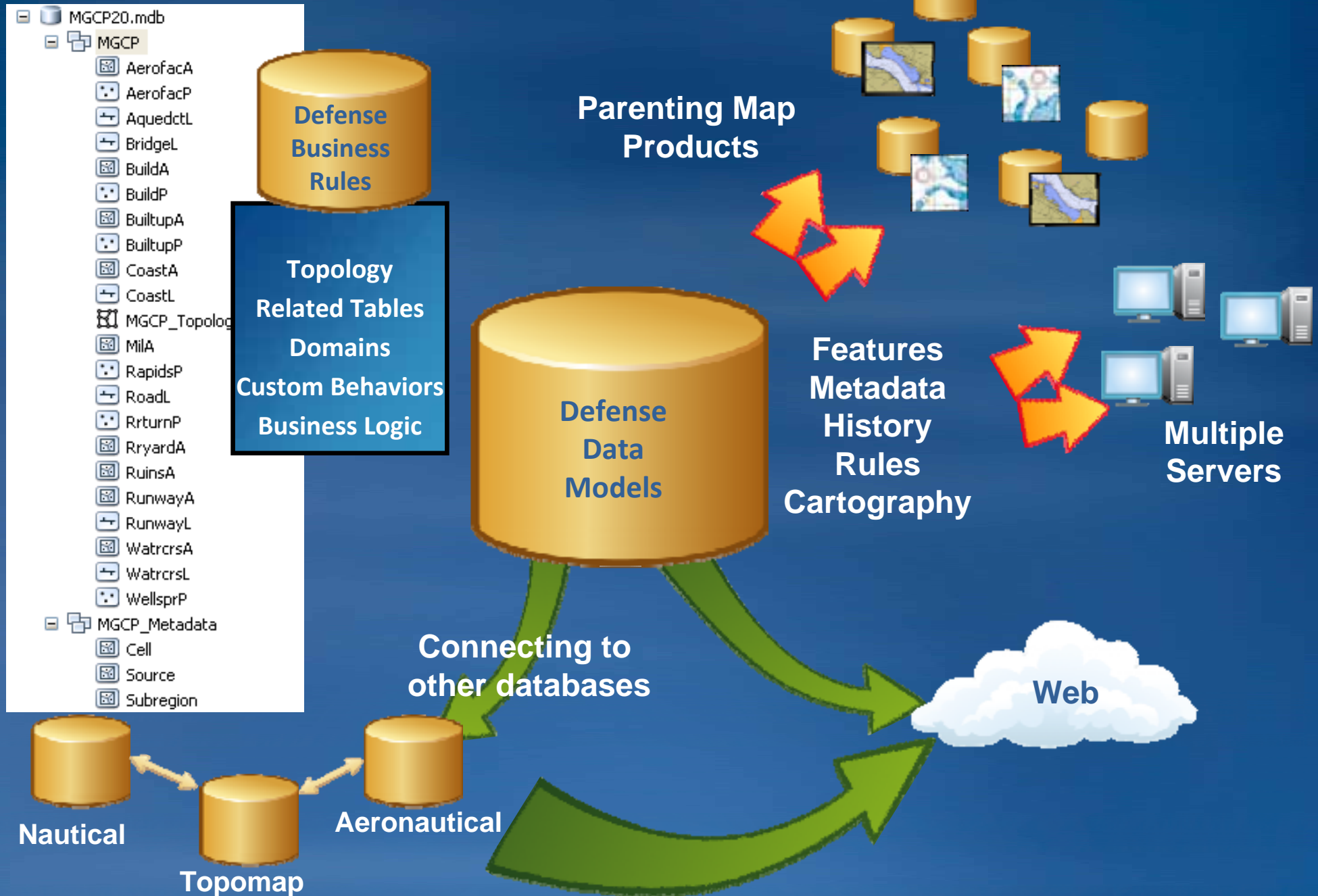


Defense

- 9.3.1 Release
 - Military Standard Representations
 - MGCP Derived Graphic (MDG)
- 10 Themes
 - Usability & productivity
 - MGCP/TFDM support
 - Standards



Centralized Data



Quality Control

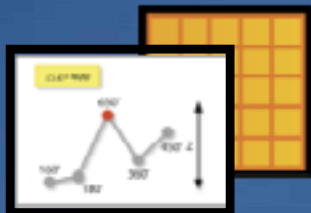


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Topology Checks



Data

History

Validation

**Multuser
Environment Control**

Master

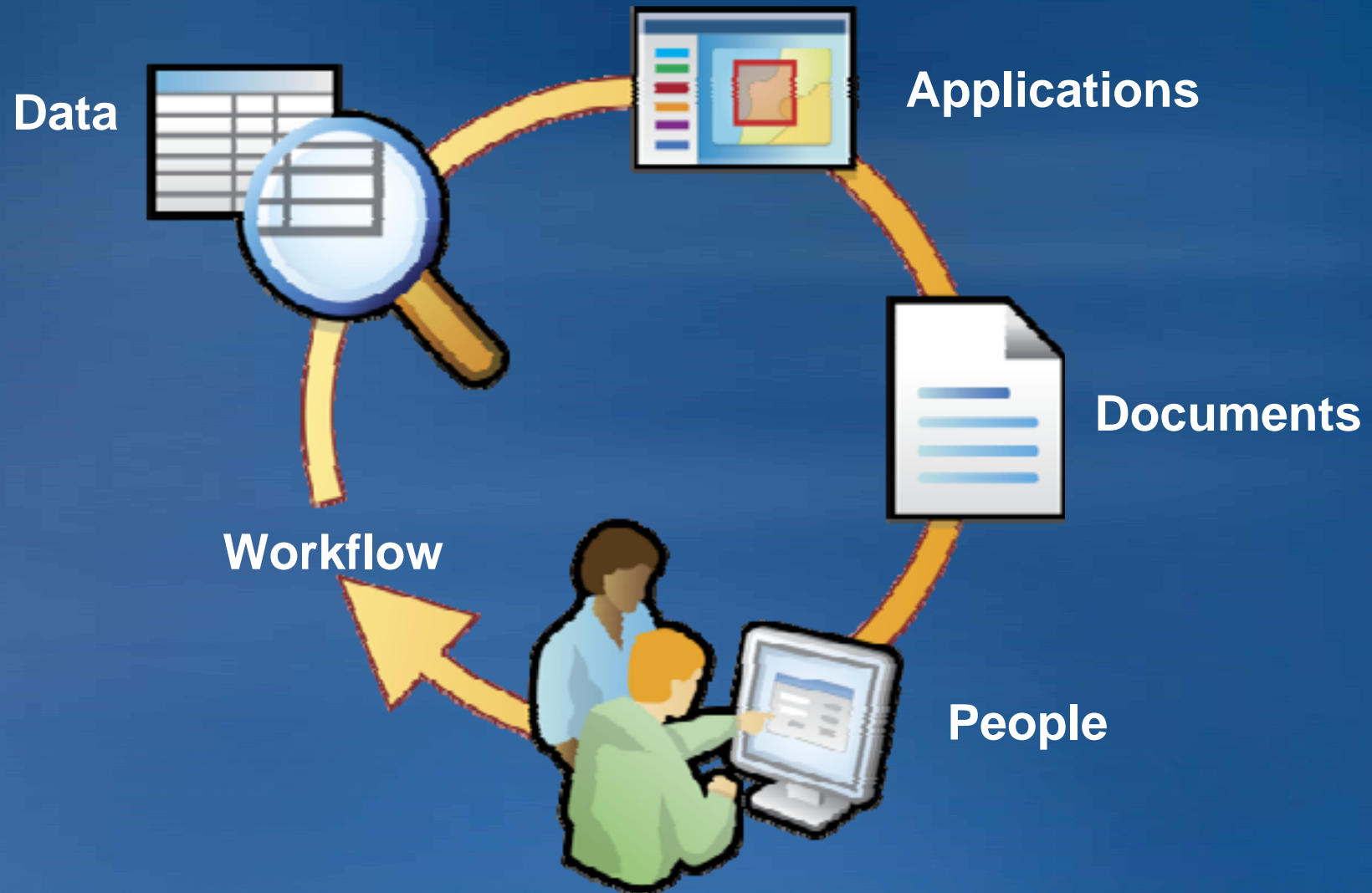
Reviewer

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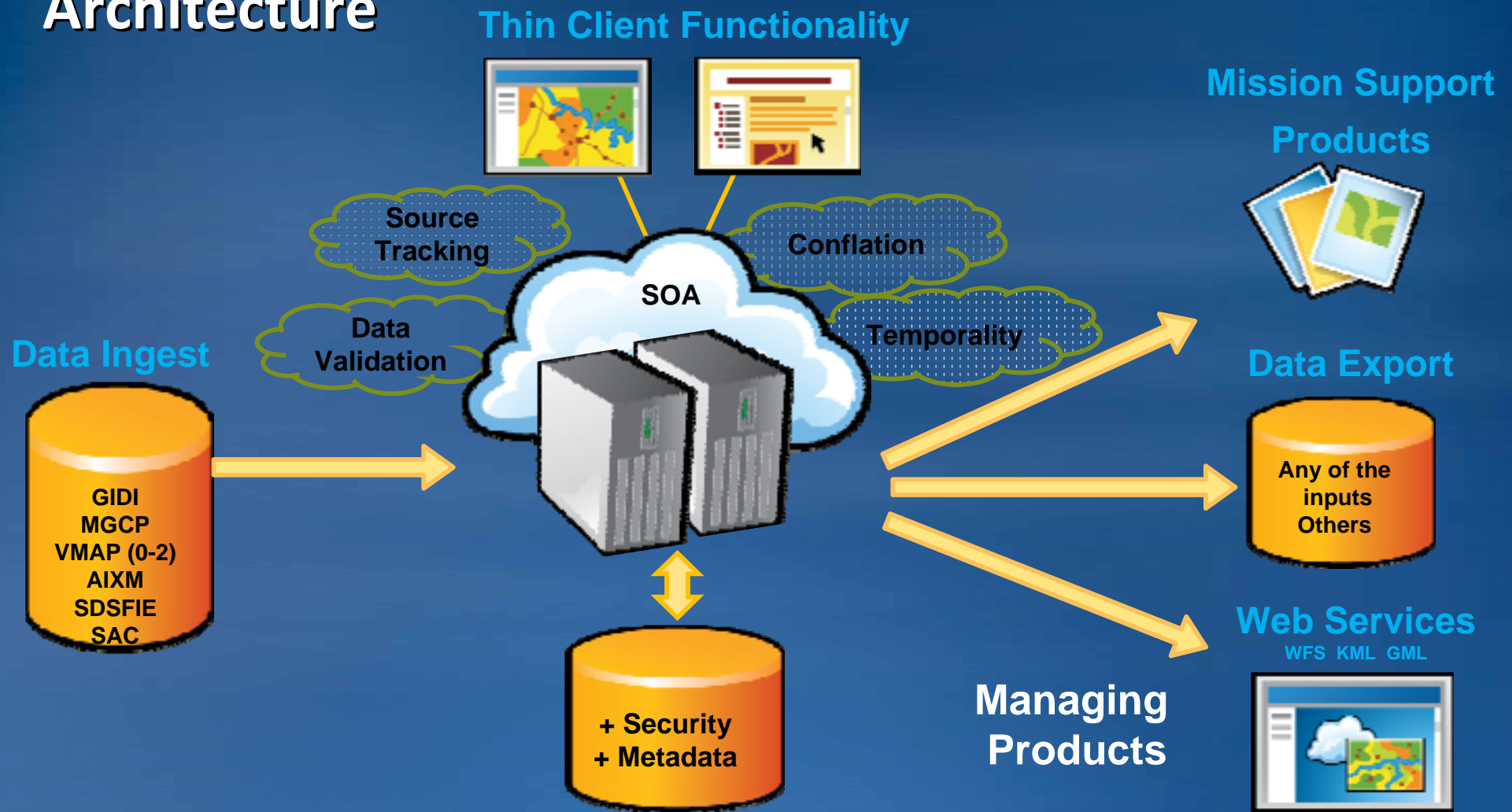
Workflow Management



Specialized Defense Tools

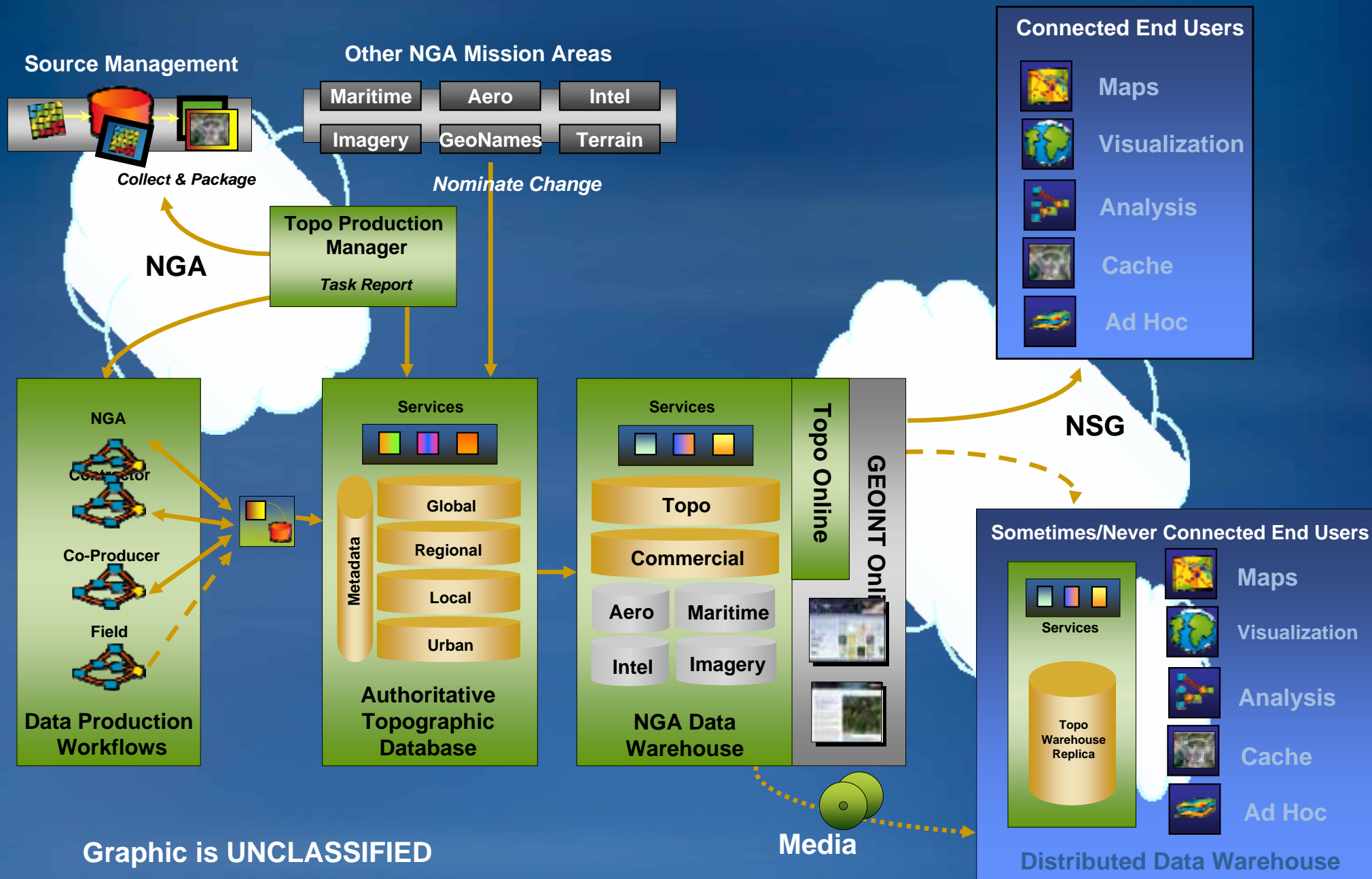


Architecture



Topographic Feature Data Management (TFDM)

Concept of Operations



Graphic is UNCLASSIFIED

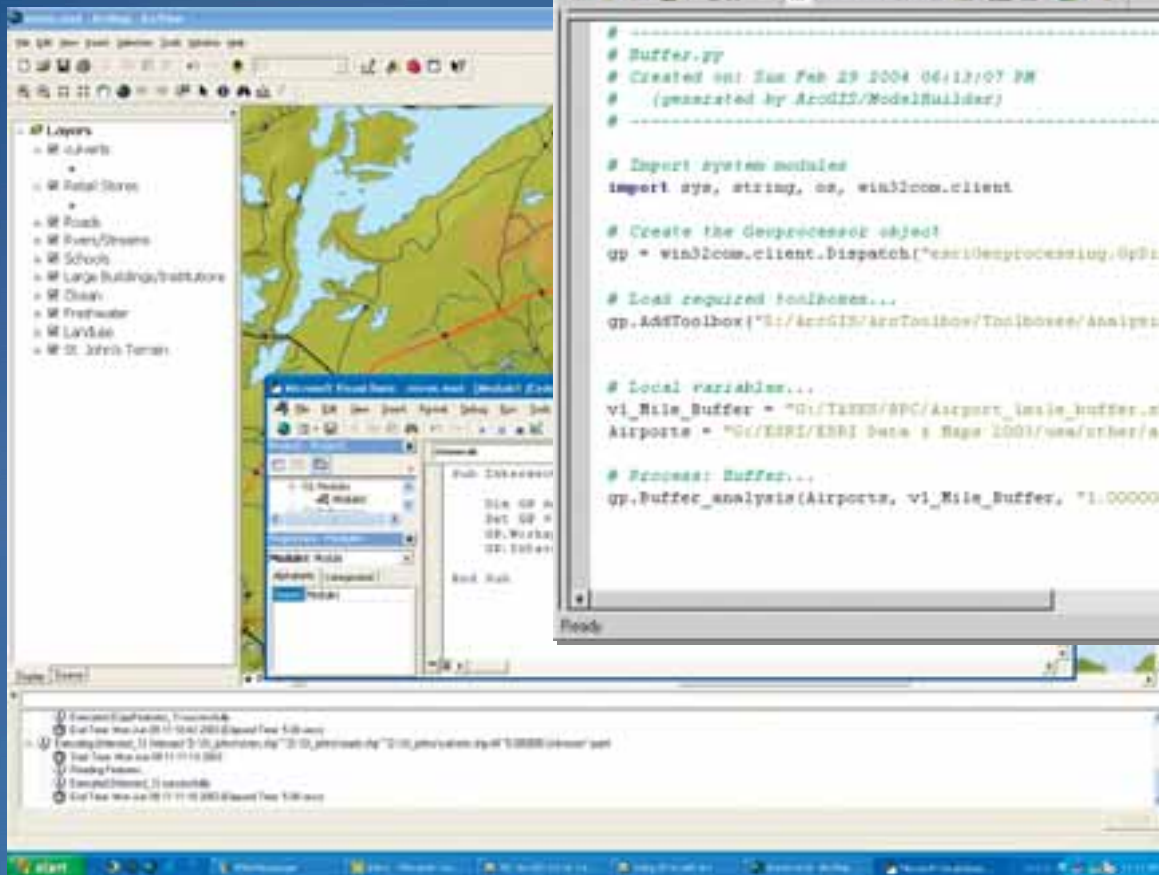
Extending Applications

Setting the Defense Mapping Standards

Modeling

Scripting

Applications





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Cusapin

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Palmas Blancas

CALZADA LARGA

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Sambora

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LAS CUMBRES

NUEVO EMPERADOR

MARCOS A. GELABERT INTL

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Los Urales

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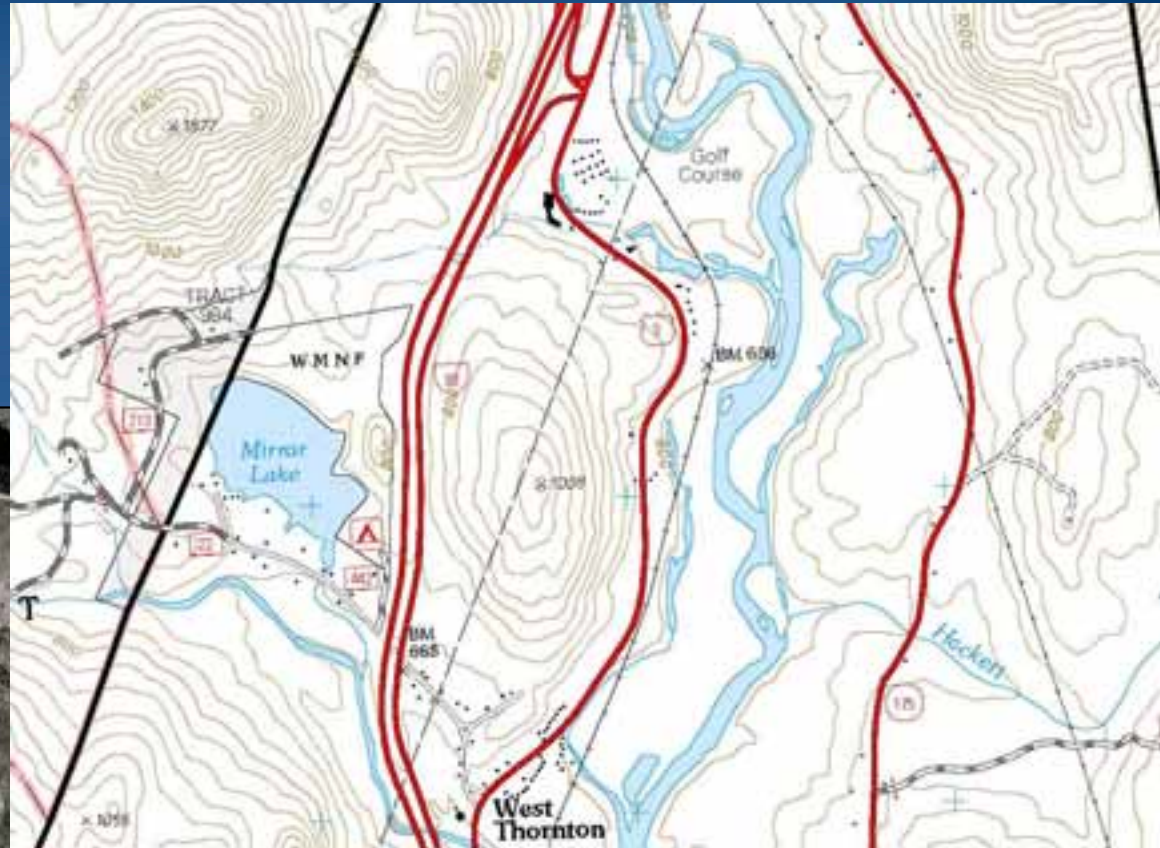
Solutions Overview

Mapping Agency

Mapping Agency

Providing specialized capabilities for Mapping Agencies

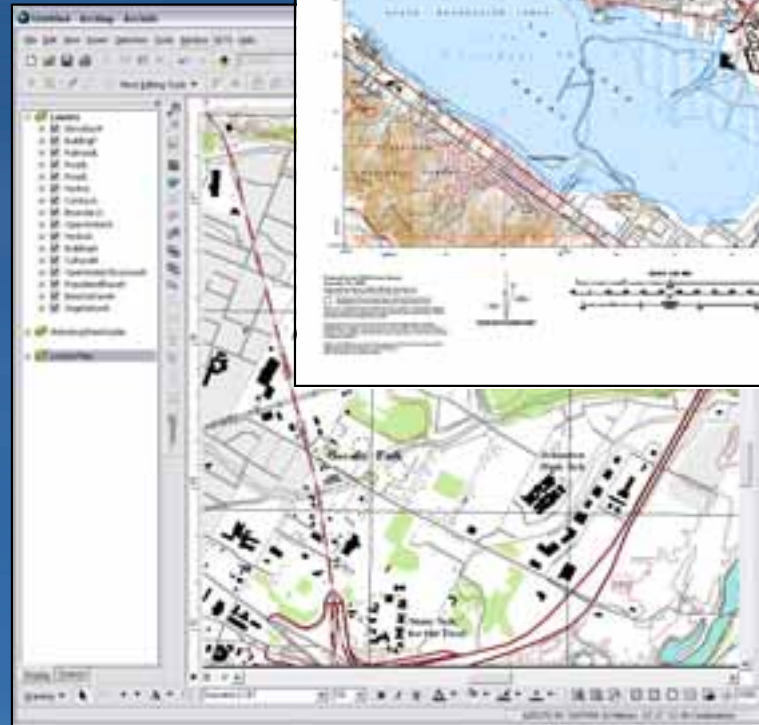
- Enterprise data and map production
- Centrally managed production
- Streamlined workflows



Encapsulates ESRI technology in unified user experience

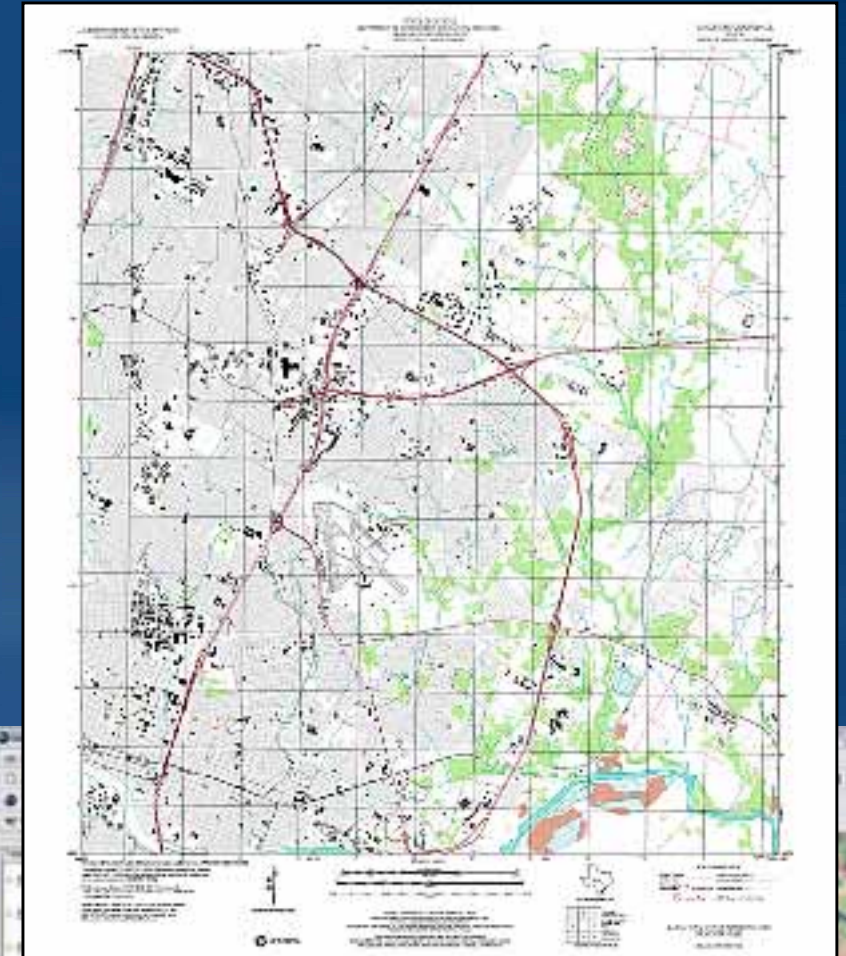
Mapping Agency

- Specification driven production environment for
 - Mapping agencies
 - Basemap creation
 - Specialized agencies
- Key implementations
 - USFS
 - USGS
 - DHS
 - Many others around the world
- Related projects
 - GSTC



Mapping Agency

- **Context**
 - Mapping agencies worldwide adopting
 - ESRI well established
 - Interest in Topography Mapping
- **Standards support**
 - USGS Quads, EuroGeographics
 - Data (Topomap, EuroRegional and Global)
 - Hard copy (Quads 7.5, 1 inch to a mile)
- **Specialized capability**
 - Data management
 - Topographic Map Production
 - Cartographic Map Automation

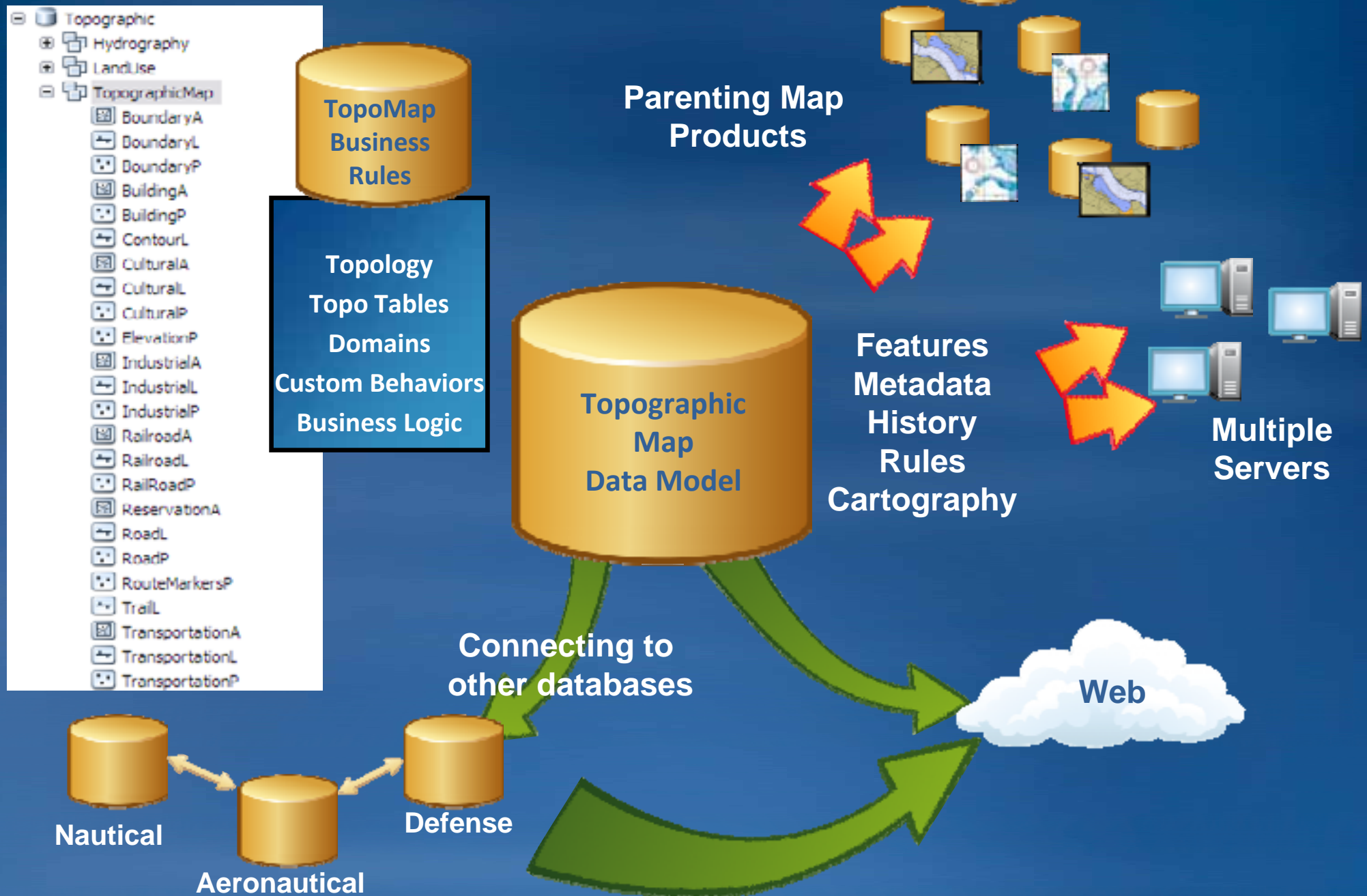


Mapping Agency

- 9.3.1 Release
 - Standard Representations
 - Image maps
- 10 Themes
 - Usability & productivity
 - USGS/USFS support
 - Standards



Centralized Data



Quality Control

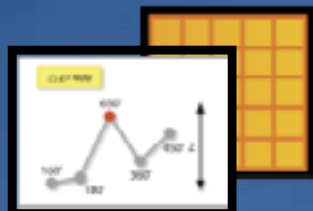


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Topology Checks



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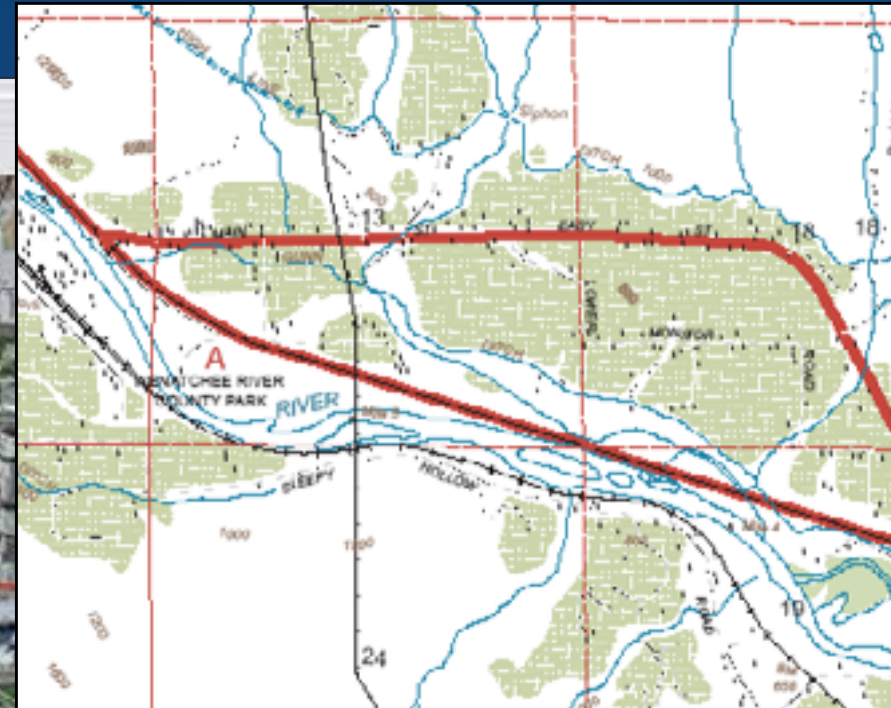
Editor

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Specialized Topo Tools



Custom Metadata



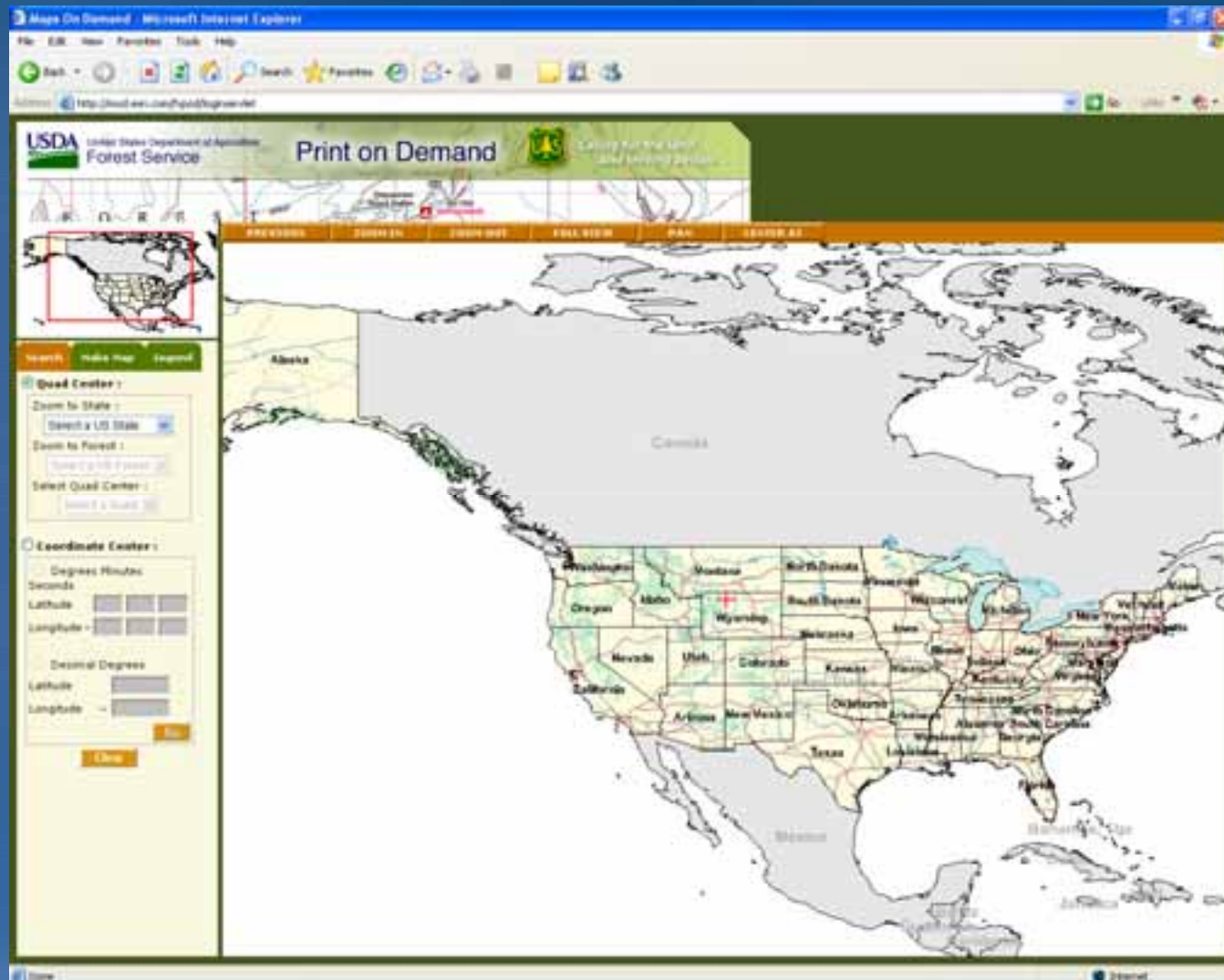
Managing Products

Workflow Management



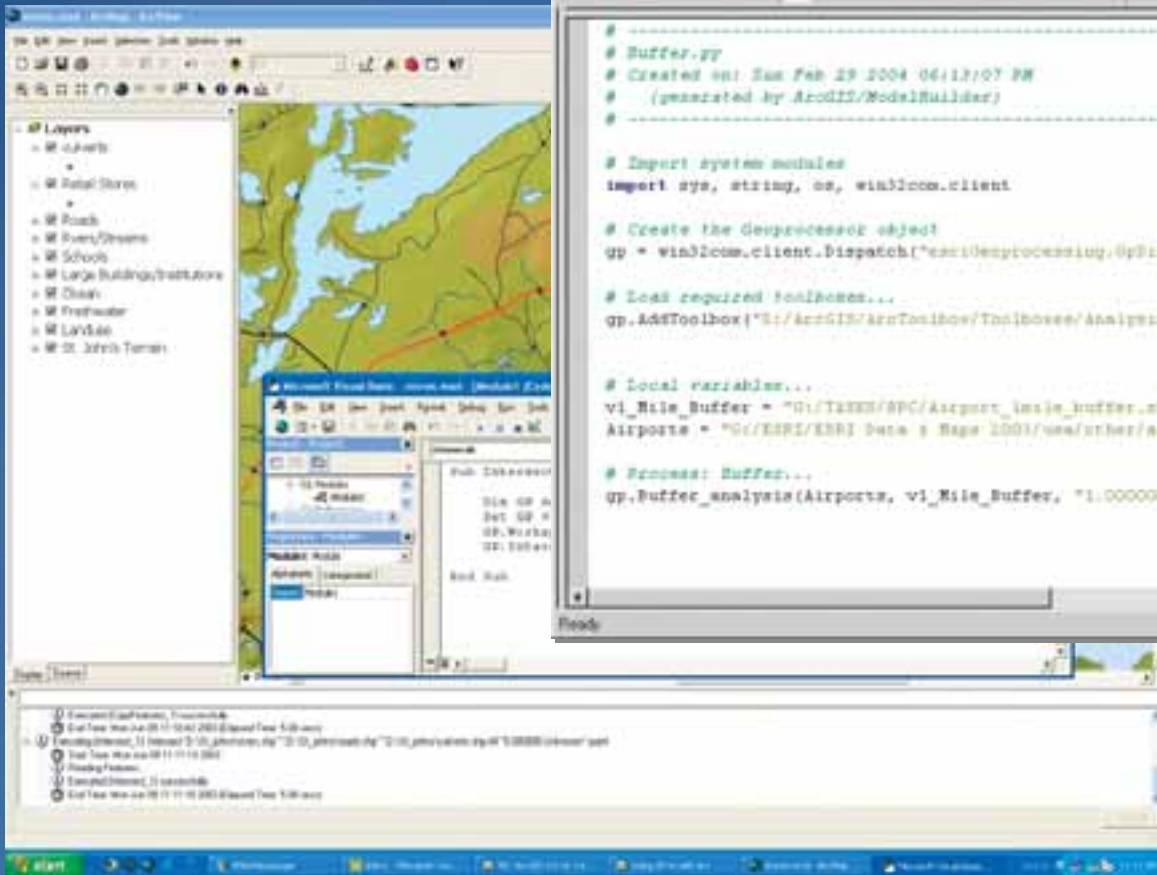
New Products

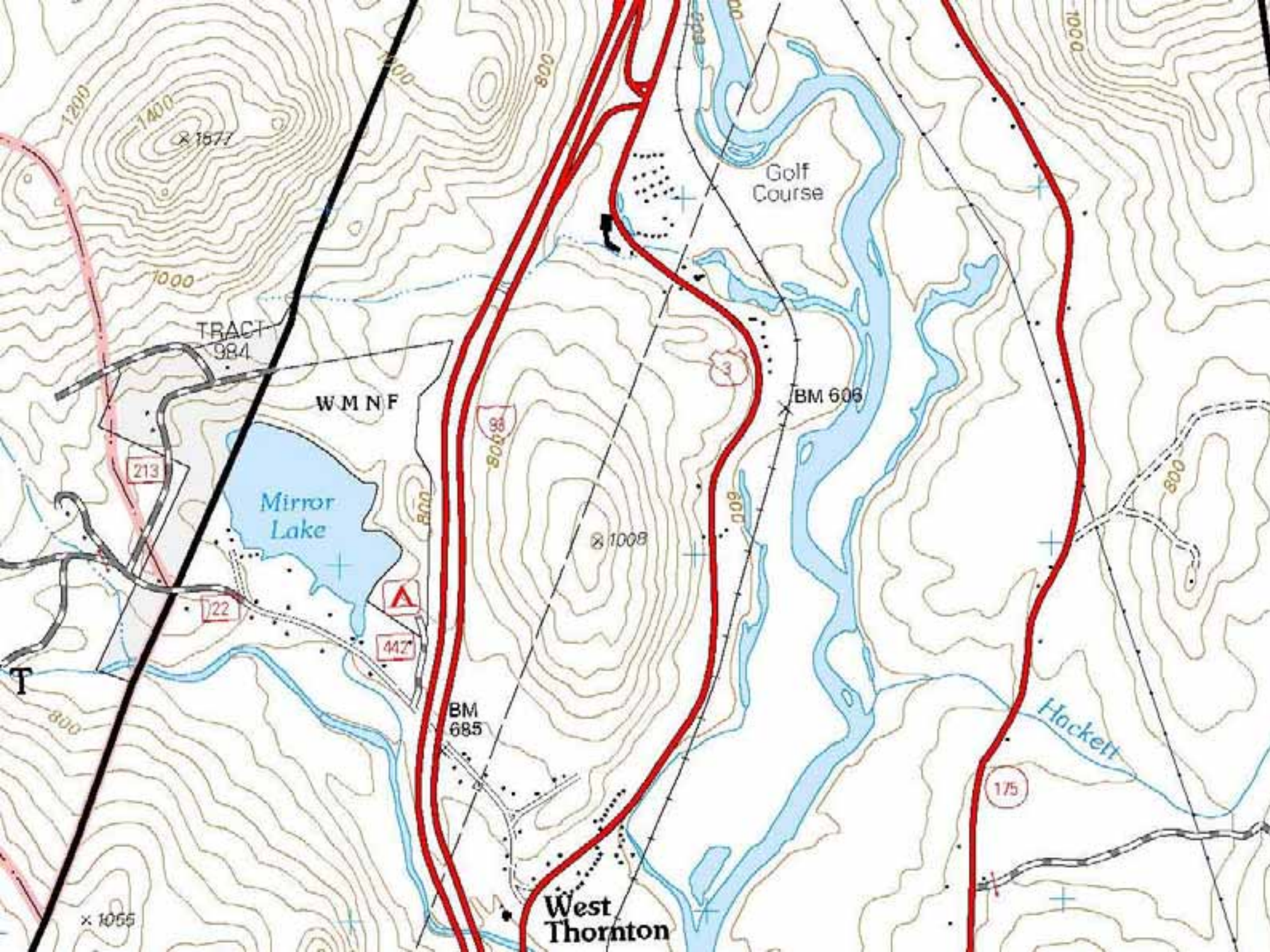
Product On Demand



Applications

Scripting







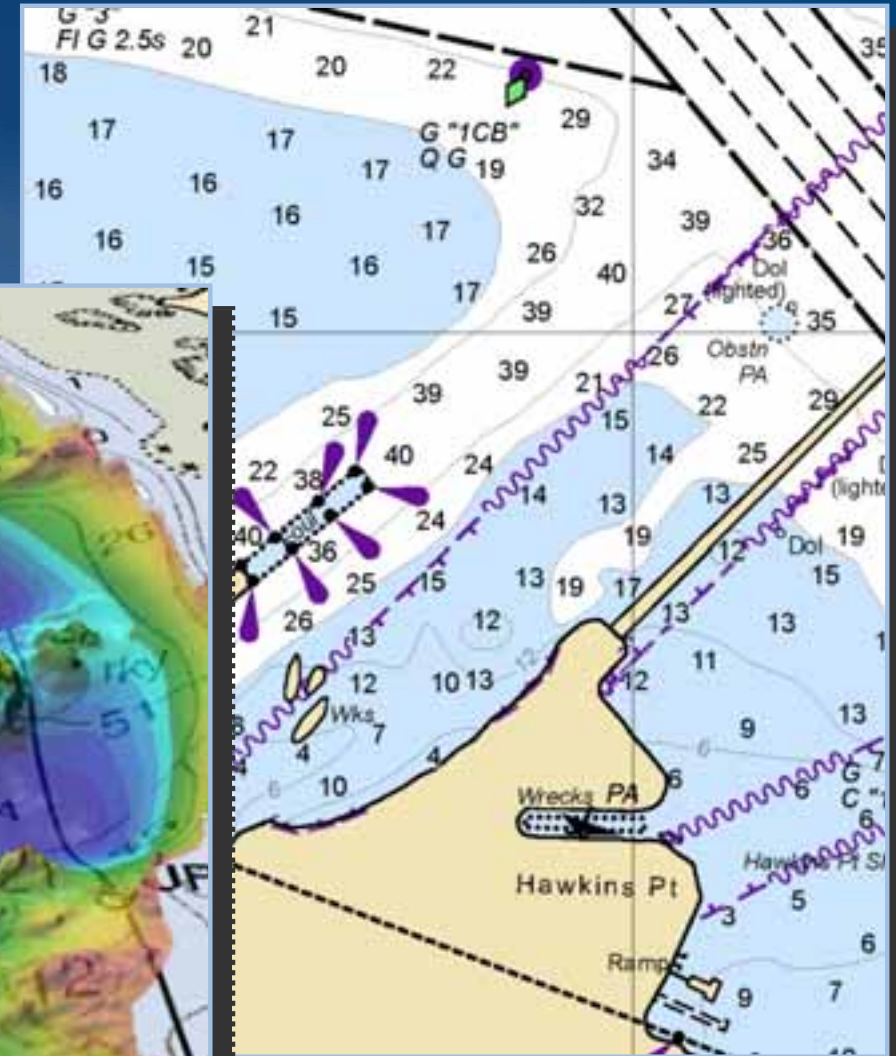
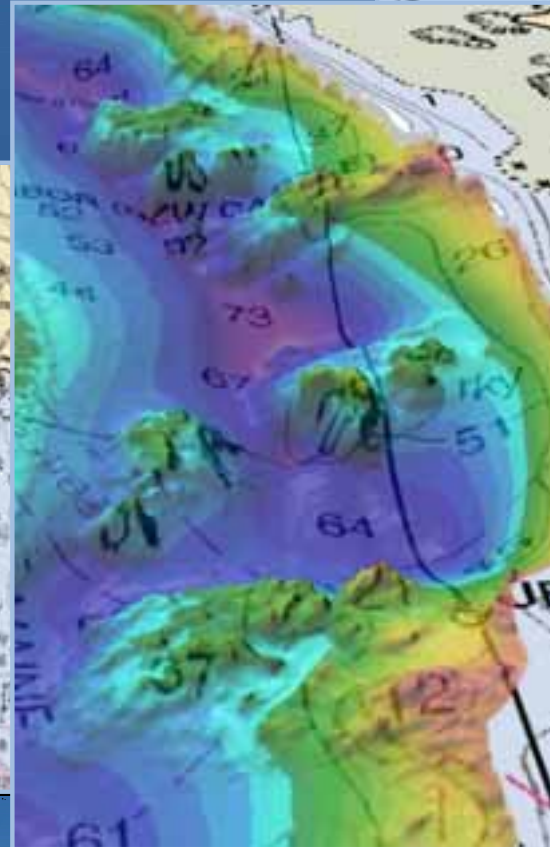
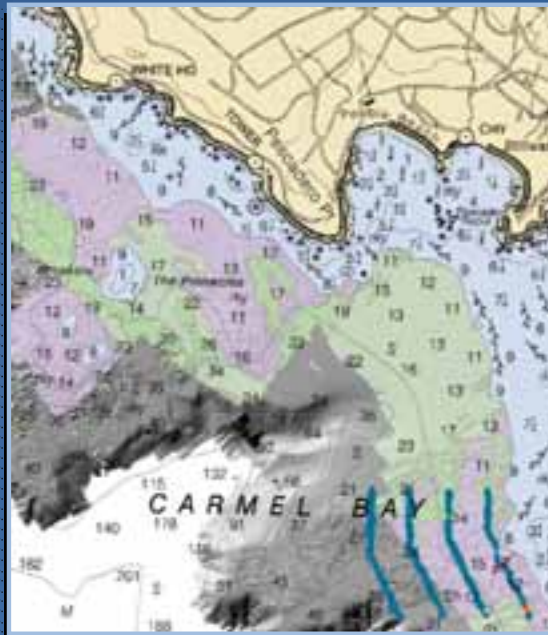
Solutions Overview

Nautical

Nautical

Enterprise hydrographic data management and cartography

- Manage hydrographic information
- Produce nautical charts
- Streamline workflows



...bringing a robust and flexible GIS to the nautical market

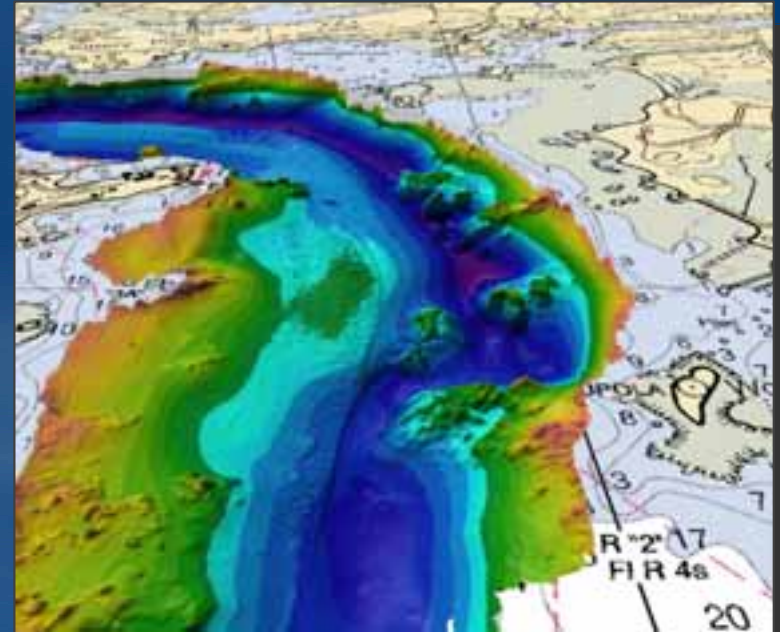
Nautical

- High volume production with rich cartographic tradition; tight community
- Key implementations
 - NOAA
 - NGA
 - Greek Navy
 - Lithuania
 - Israeli Navy
- Related projects
 - NOAA
 - NGA Global Navigation Services



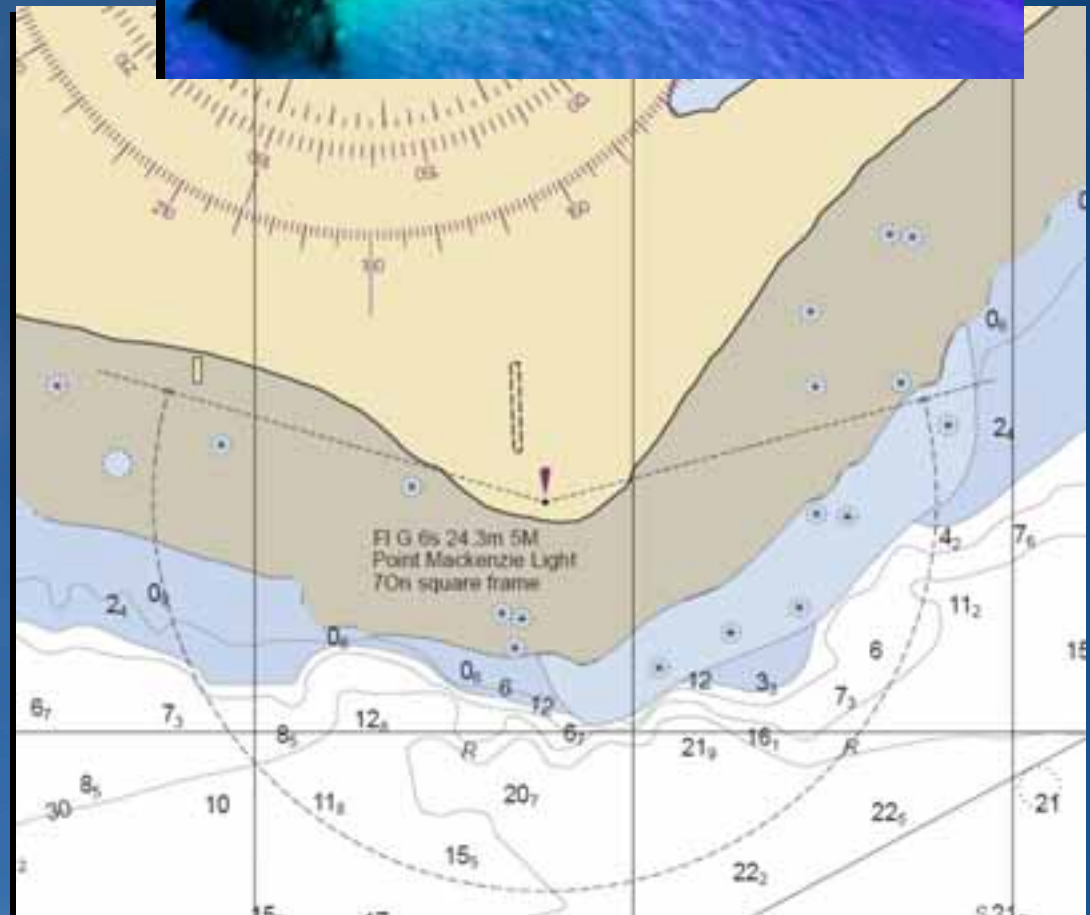
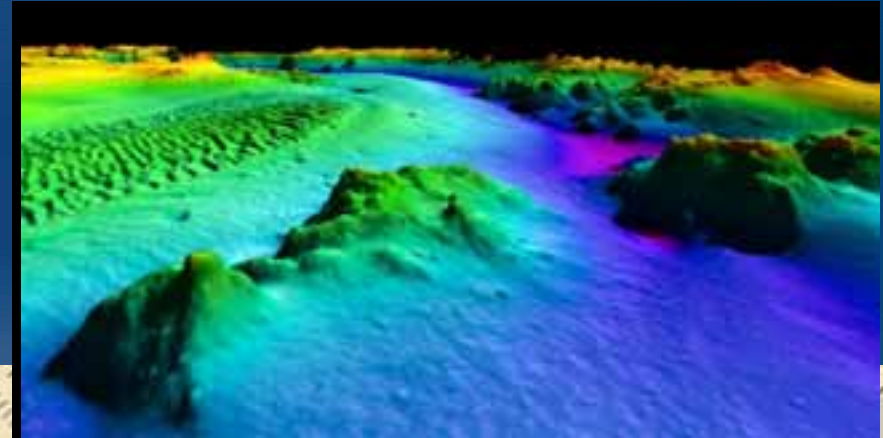
Nautical

- Context
 - Proving ESRI is serious about hydrography
 - ESRI is seen as “brown” company
 - Building capabilities for bathymetry
- Standards support
 - S-57 (ENC / AML)
 - DNC
 - SDSFIE (IENC)
 - Bathymetry
 - Hard copy charts
- Specialized capability
 - Complex data editing
 - Cartographic efficiency
 - Enterprise data/product management



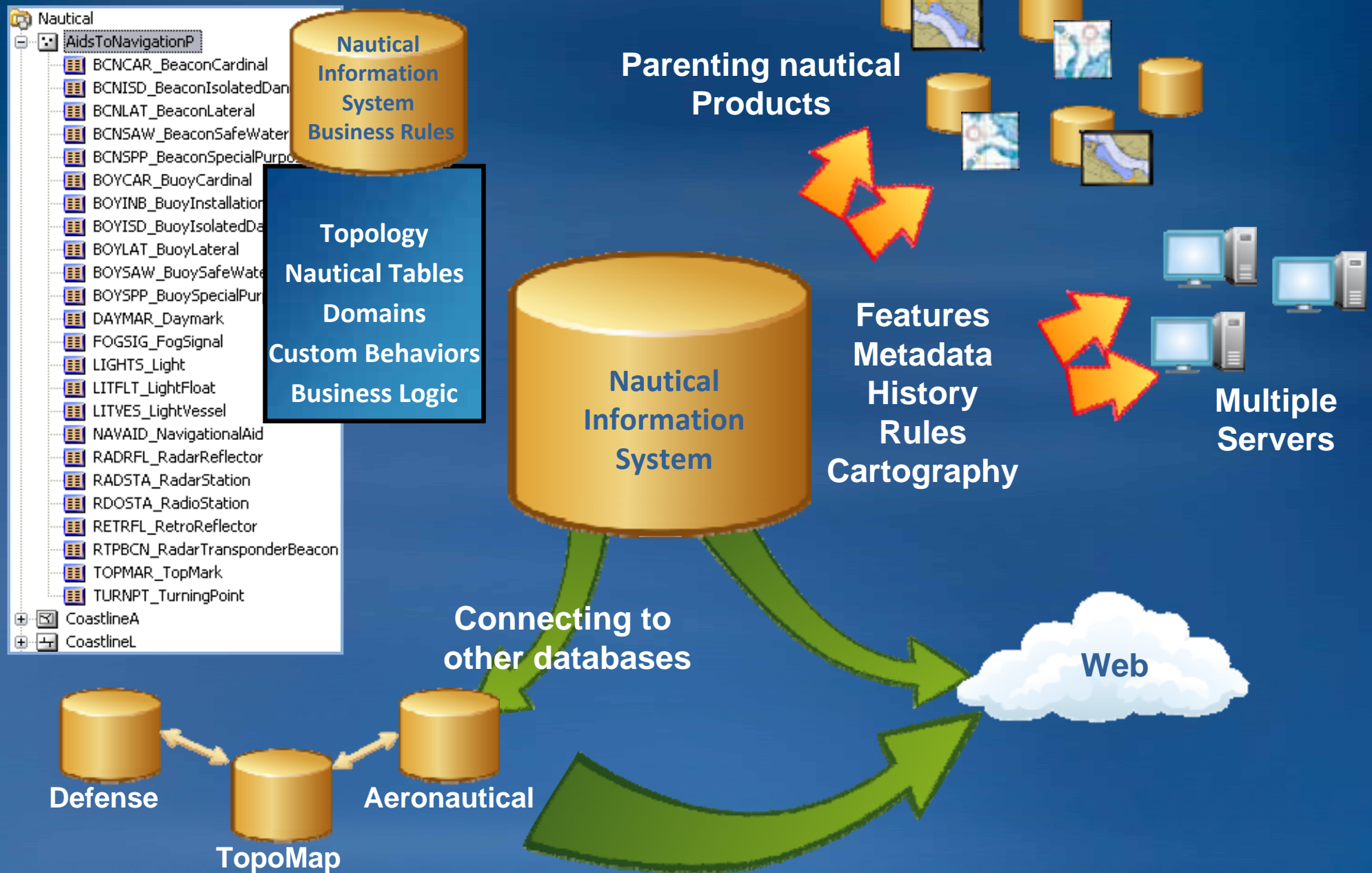
Nautical

- 9.3.1 Release
 - NOAA support
 - Additional Military Layers (AML)
- 10 Themes
 - NOAA support
 - Usability and productivity
 - Stability



Video

Centralized Data



Quality Control

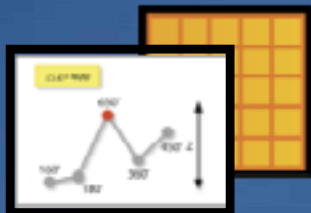


Rule-Based Editing and Validation

DATA	DESCRIPTION
000	
SEA	SEA AREA
LAND	LAND AREA
CAU	CAUTION

OBJECTID	SHAPE	FCSUBTYPE
1	POLYLINE	AQ040 BRIDGE LINE
2	POLYLINE	AQ040- BRIDGE LINE
3	NULL	AQ040- BRIDGE LINE

Topology Checks



Data

History

Validation

**Multiuser
Environment Control**

Master

Reviewer

Editor

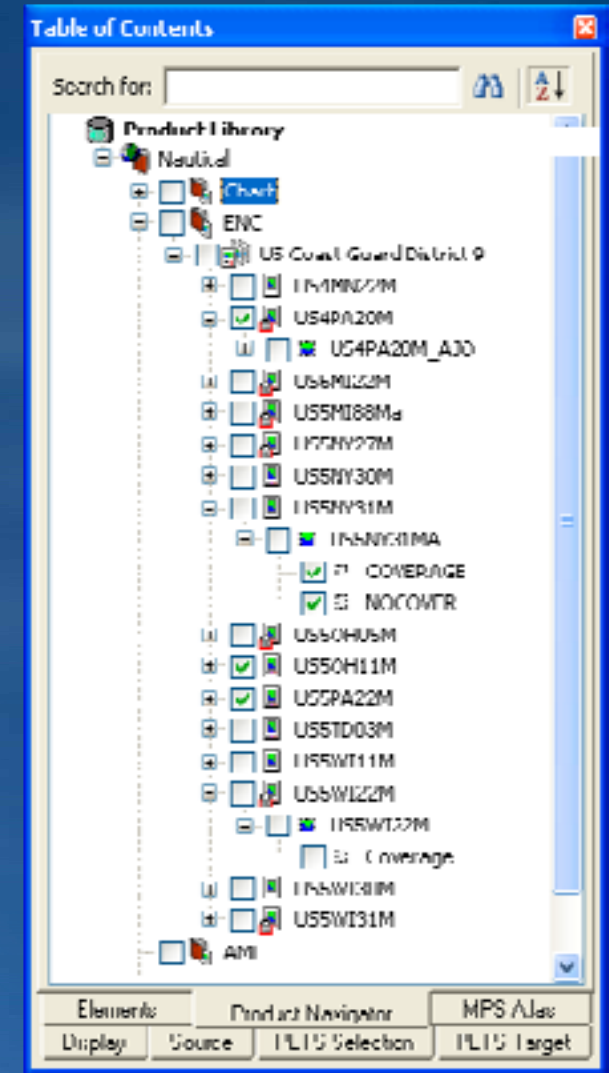
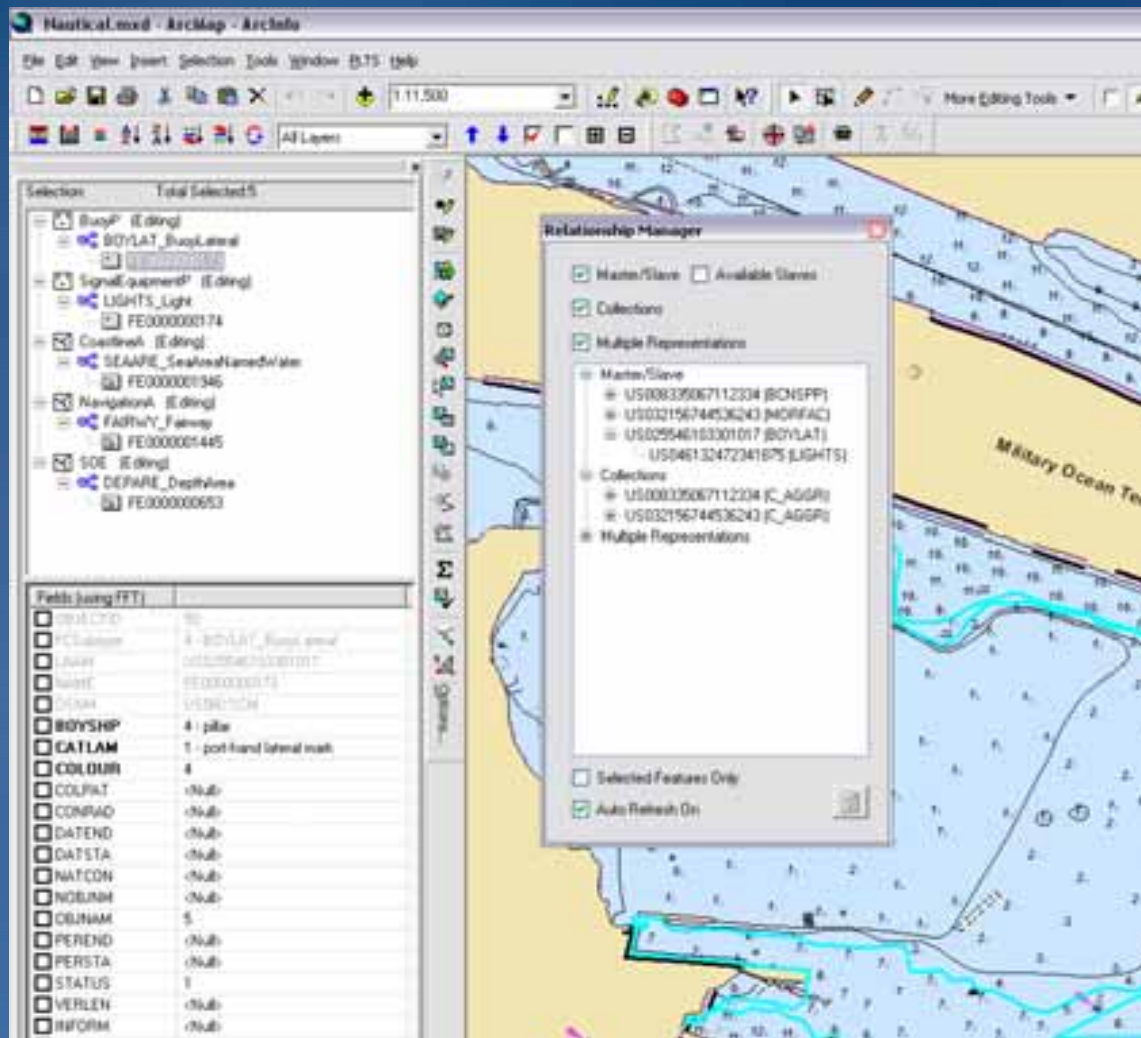
Editor

Editor

Specialized Nautical Tools



Managing Relationships

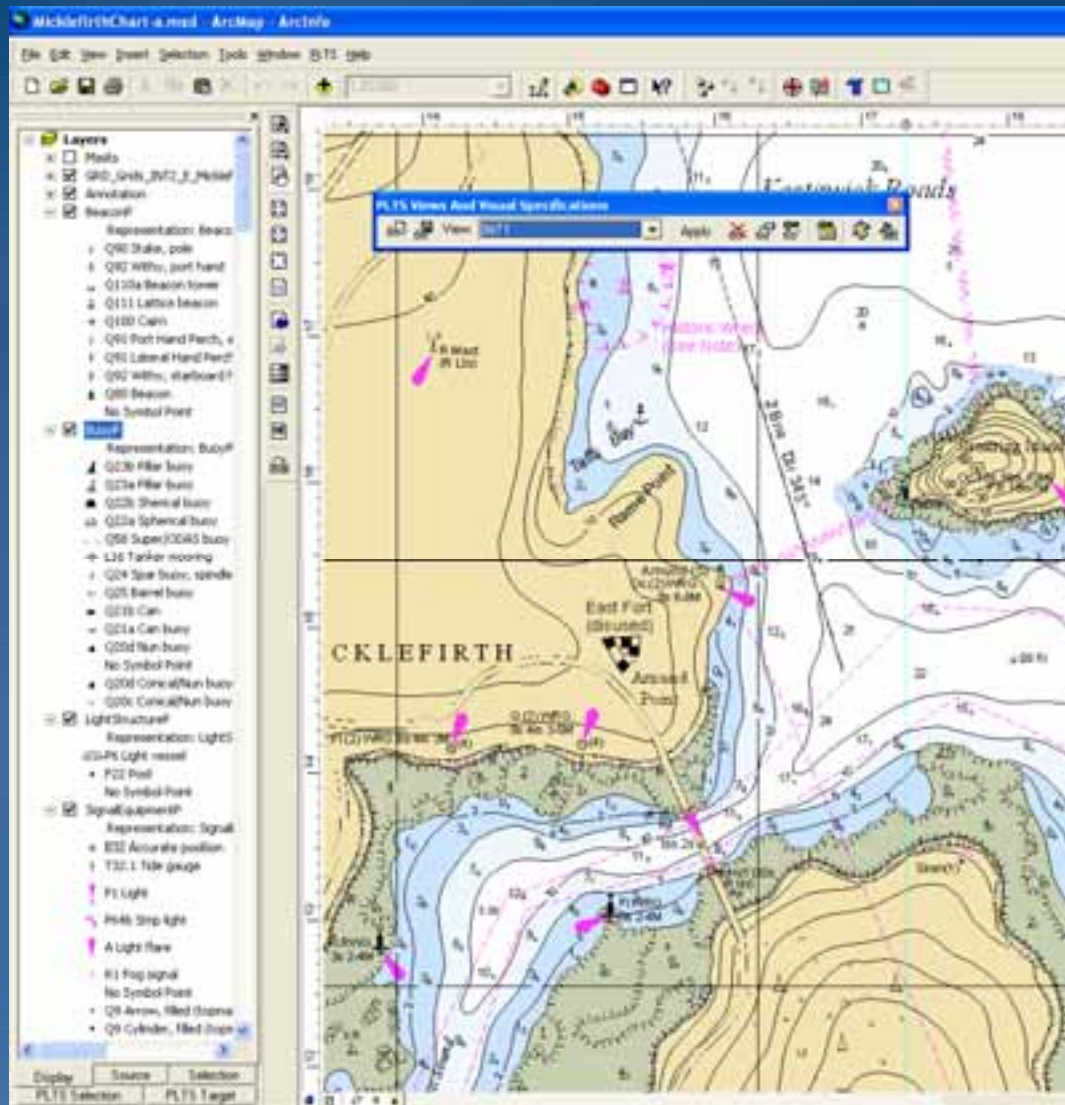


Managing Products

Specialized Nautical Tools



Single Environment



Coordinates

Input Output Vertices

	Latitude	Longitude
▶	30°10'02.38"N	085°45'08.63"W

Functions

Functions Components

Polyline (Simple)
Arc (Azimuth and End Point)
Bearing Distance (Magnetic)
Bearing Distance (Rhumbline)
Segment Bearing

Input Output

	Parameter	Value
▶	Azimuth	0.00
	Distance	0.00
	MagVar Value	0.00
	MagVar Source	None

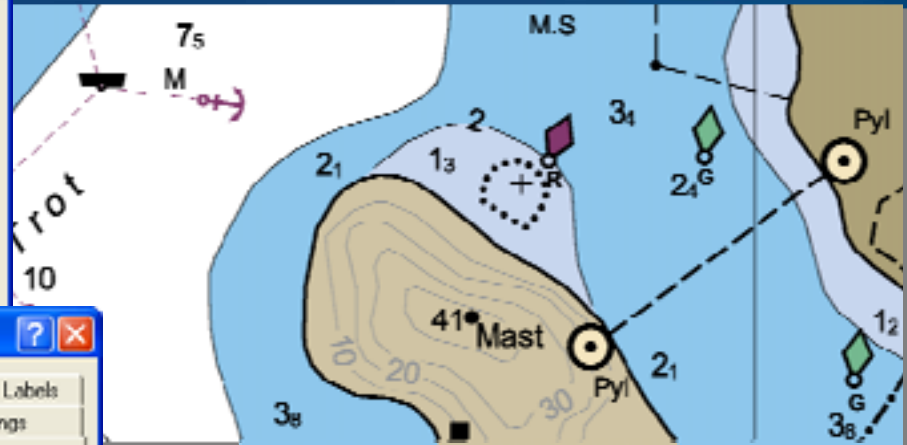
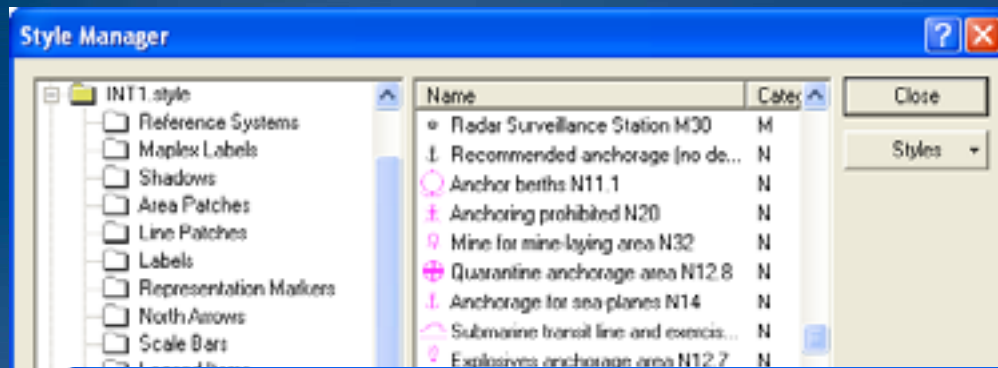
Feature Builder PLTS Selection PLTS Target MPS Atlas

Complex
Features

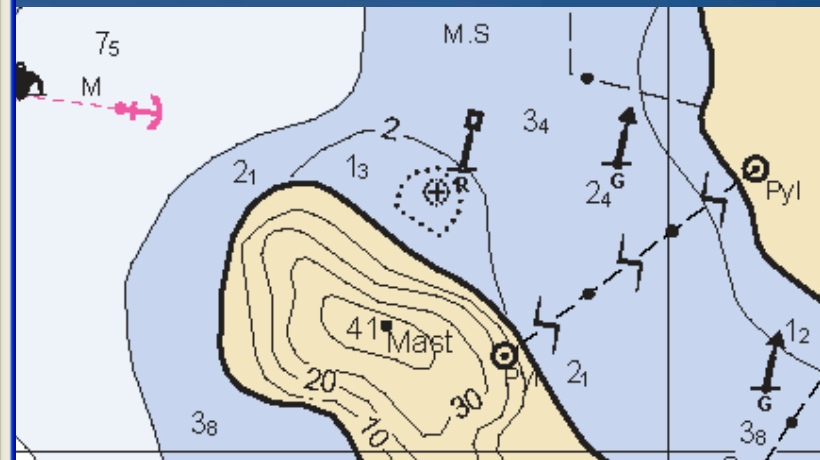
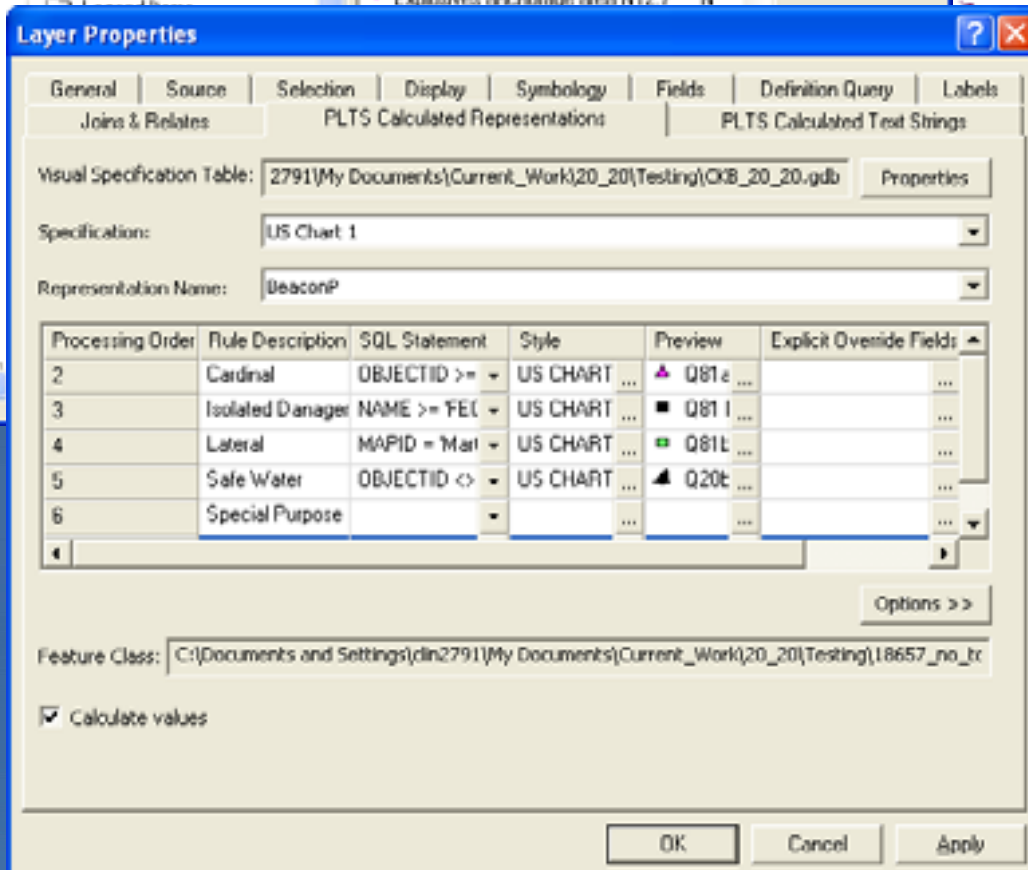
Specialized Nautical Tools



Custom Symbology meeting cartographic standards



US Chart1



INT1

Workflow Management

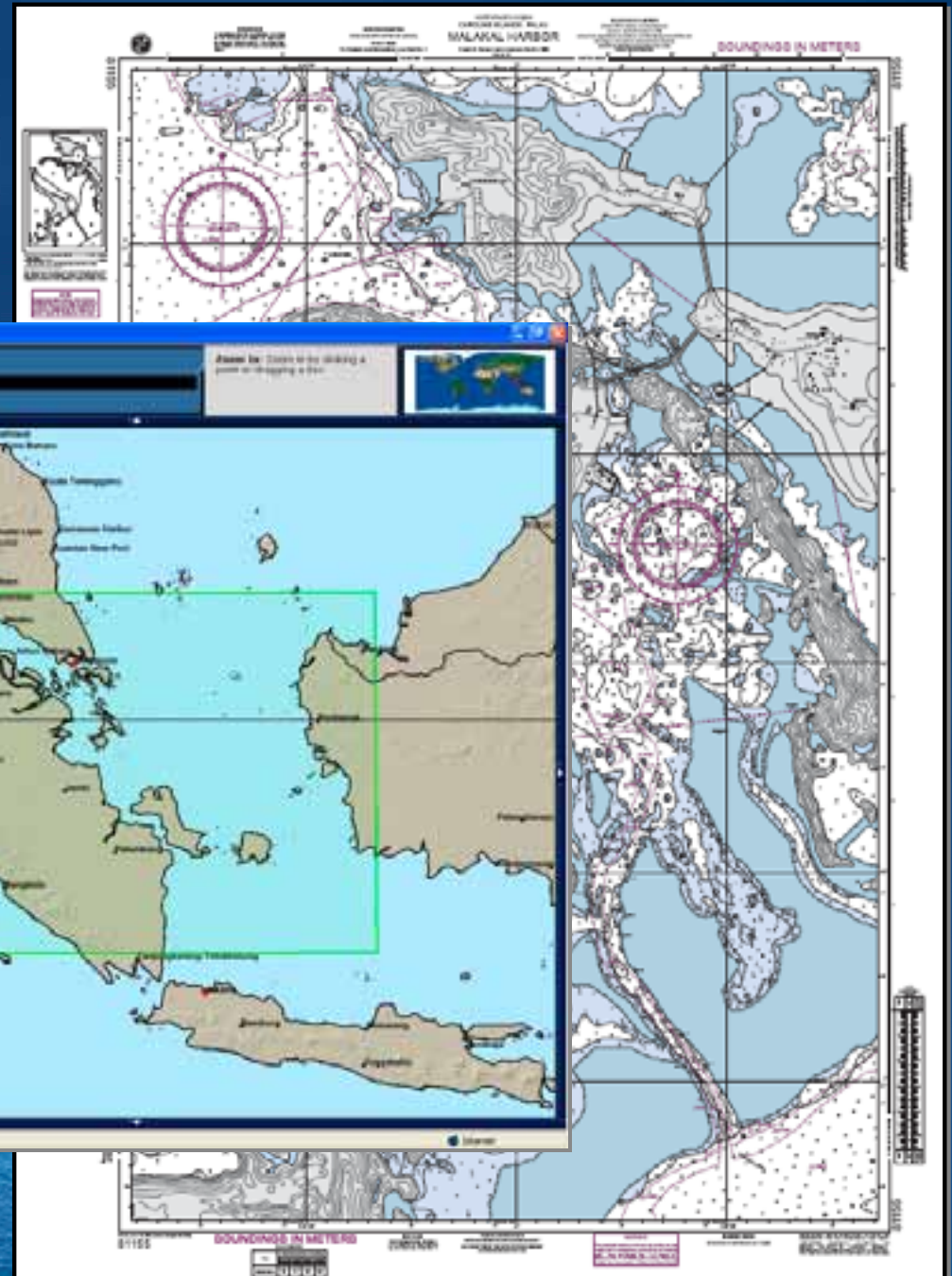


New Products

Product On Demand



Seafloor Modeling

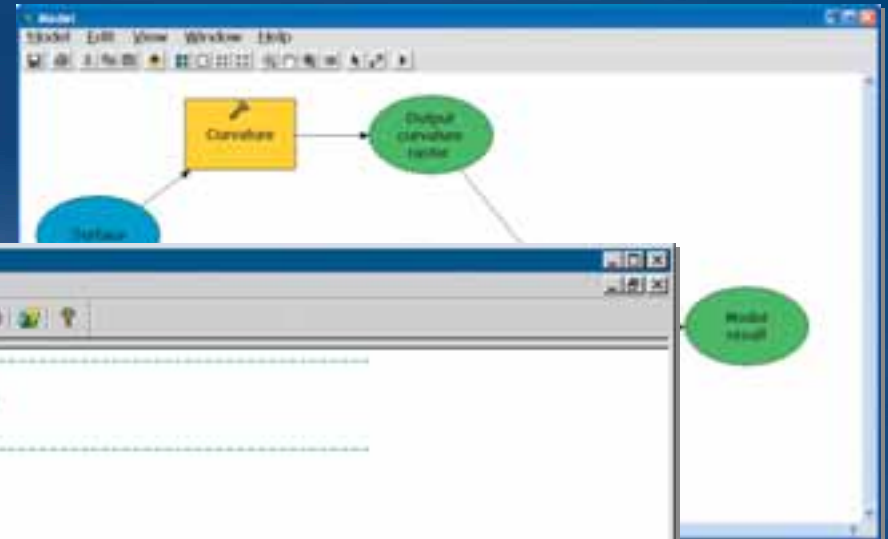
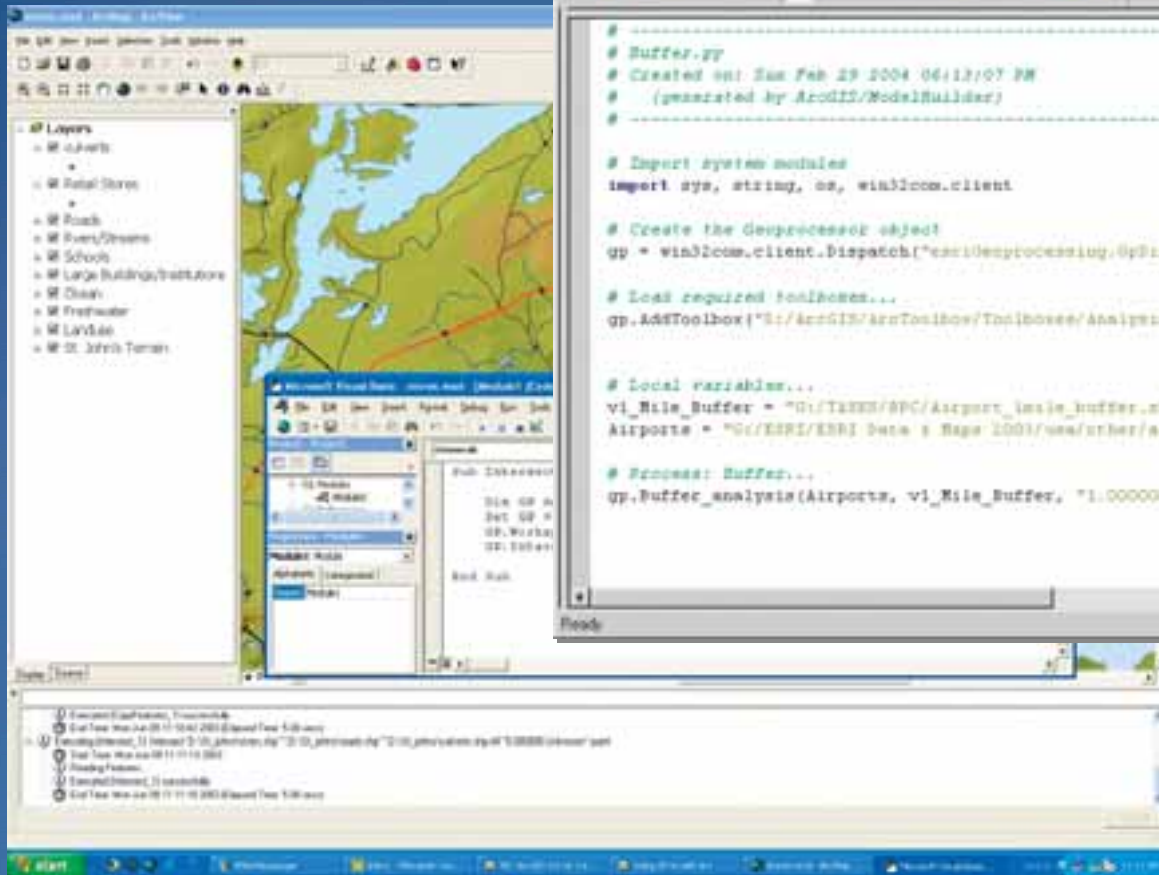


Extending Applications

Modeling

Scripting

Applications



```
PythonWin: [Buffer.py]
File Edit View Tools Window Help

# -----
# Buffer.py
# Created on: Sun Feb 29 2004 06:12:07 PM
# (generated by ArcGIS/ModelBuilder)
# -----

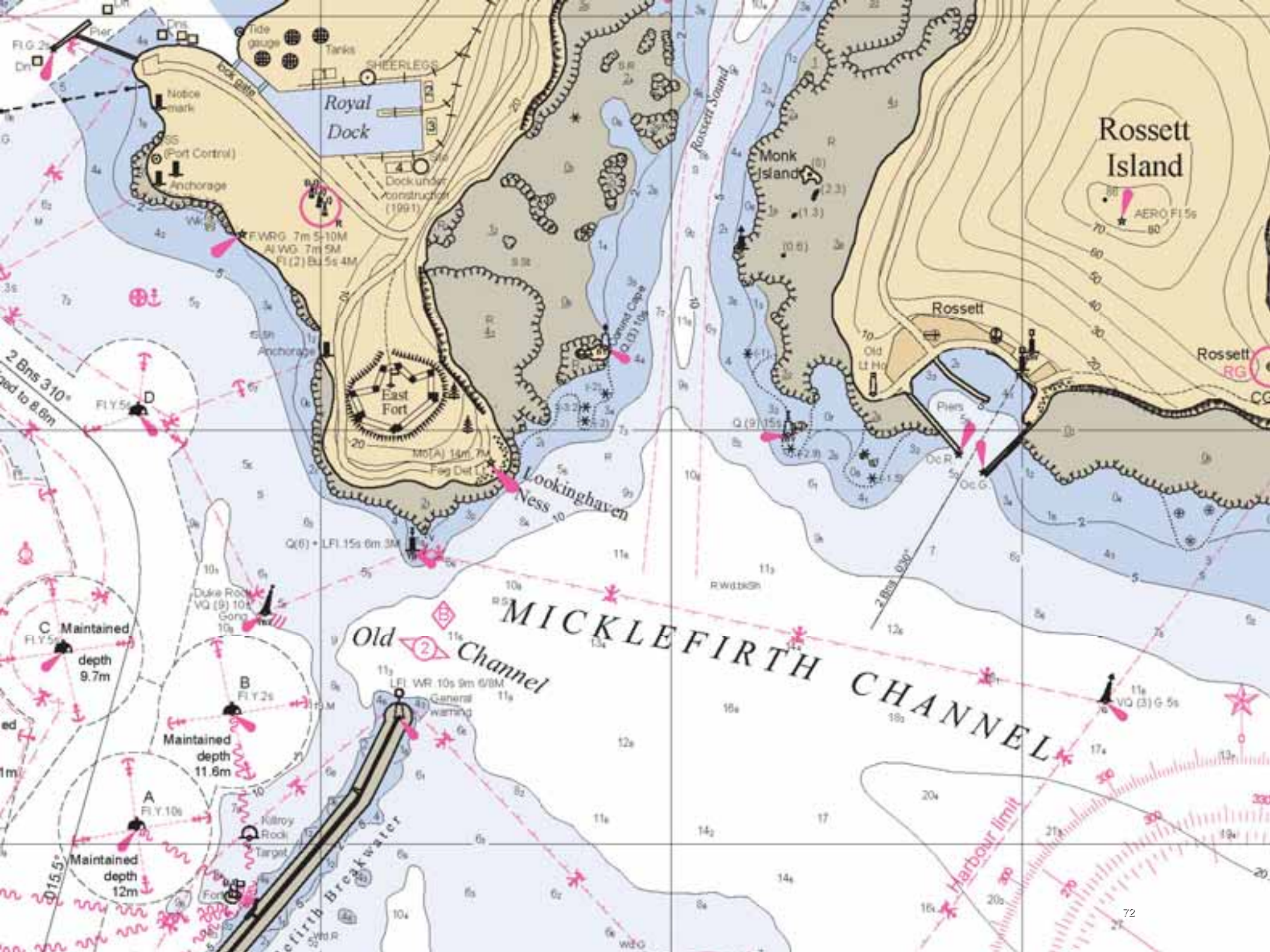
# Import system modules
import sys, string, os, win32com.client

# Create the geoprocessor object
gp = win32com.client.Dispatch("esriGeoprocessing.IGeoprocessor")

# Load required toolboxes...
gp.AddToolbox("C:/ArcGIS/ArcToolbox/Toolboxes/Analysis Tools.tbx")

# Local variables...
v1_Mile_Buffer = "C:/TAXES/SPC/Airport_mile_buffer.shp"
Airports = "C:/ESRI/ENRI Data & Maps/2001/usa/other/airports.mxd/airports"

# Process: Buffer...
gp.Buffer_analysis(Airports, v1_Mile_Buffer, "1.000000 Miles", "FULL", "ROUND", "NONE", "")
```





Solutions Overview

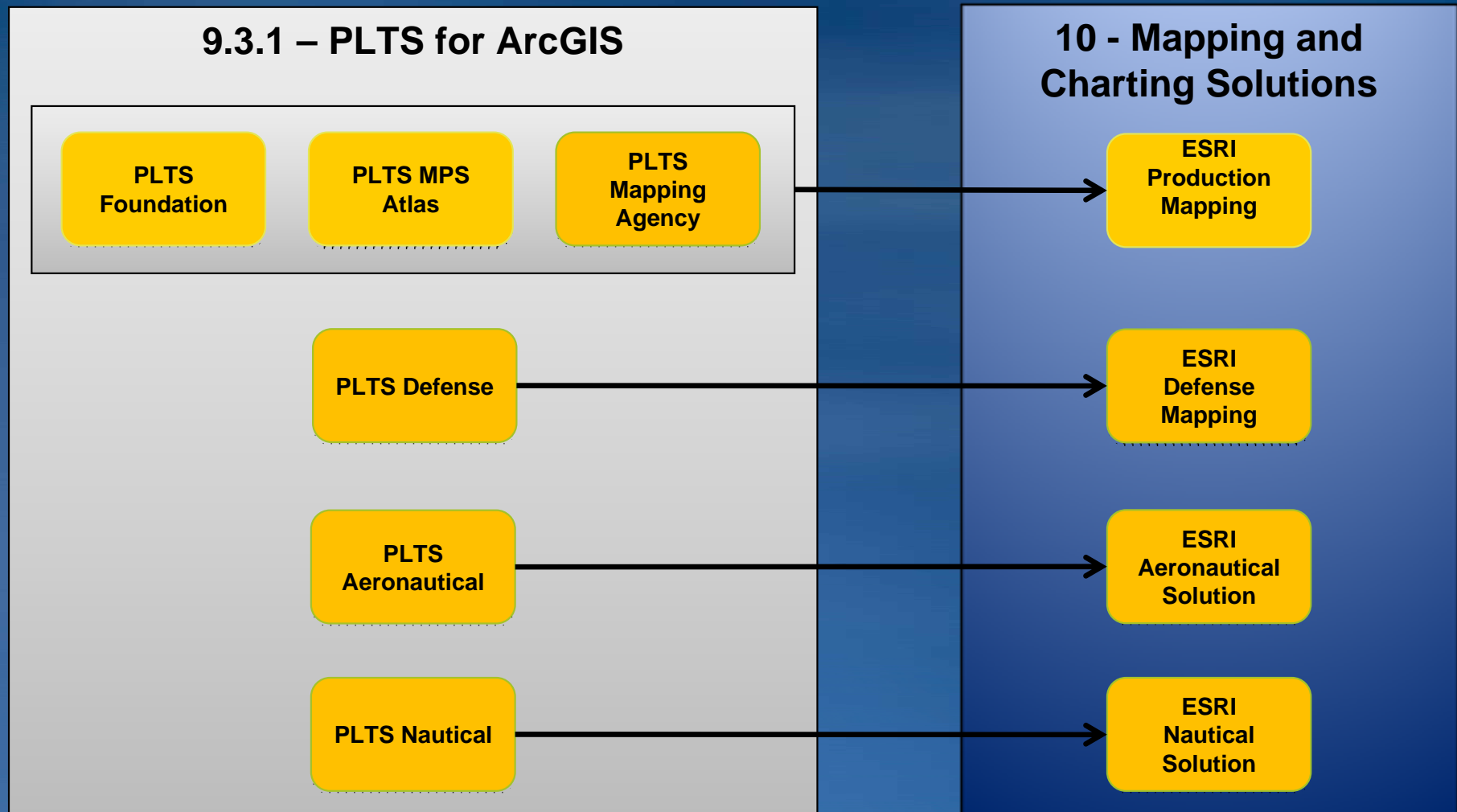
Changes at 10

Themes at 10

- **Simplify the product**
 - Easier to buy
 - Easier to configure
 - Easier to use
- **Continue to enhance fundamental elements**
 - Editing
 - Cartography
 - Centralized production
- **Industry driven functionality**
 - Targeted enhancements
 - Leverage templates
- **Support key projects**

Product Changes from 9.3.1 to 10

- New positioning



ESRI's Mapping & Charting Solutions at 10

- **ESRI Production Mapping:** Supporting data and map production needs broadly across ESRI user base
- **ESRI Defense Mapping:** Data models, map templates, tools, and standards support for defense workflows
- **ESRI Nautical Solution:** Specialized support for the hydrographic community
- **ESRI Aeronautical Solution:** Tailored functionality enabling aeronautical data and chart producers

ESRI's Mapping & Charting Solutions at 10

Extensions to ArcGIS Desktop

- **ArcGIS Workflow Manager:** Building, defining and managing workflows
- **ArcGIS Data Reviewer:** ArcGIS Database quality control

Production Mapping

Enterprise GIS for advanced data management and cartography

- Solution for mapping
- Enables high quality production
- Facilitates standard, repeatable workflows
- Configurable for specific industries

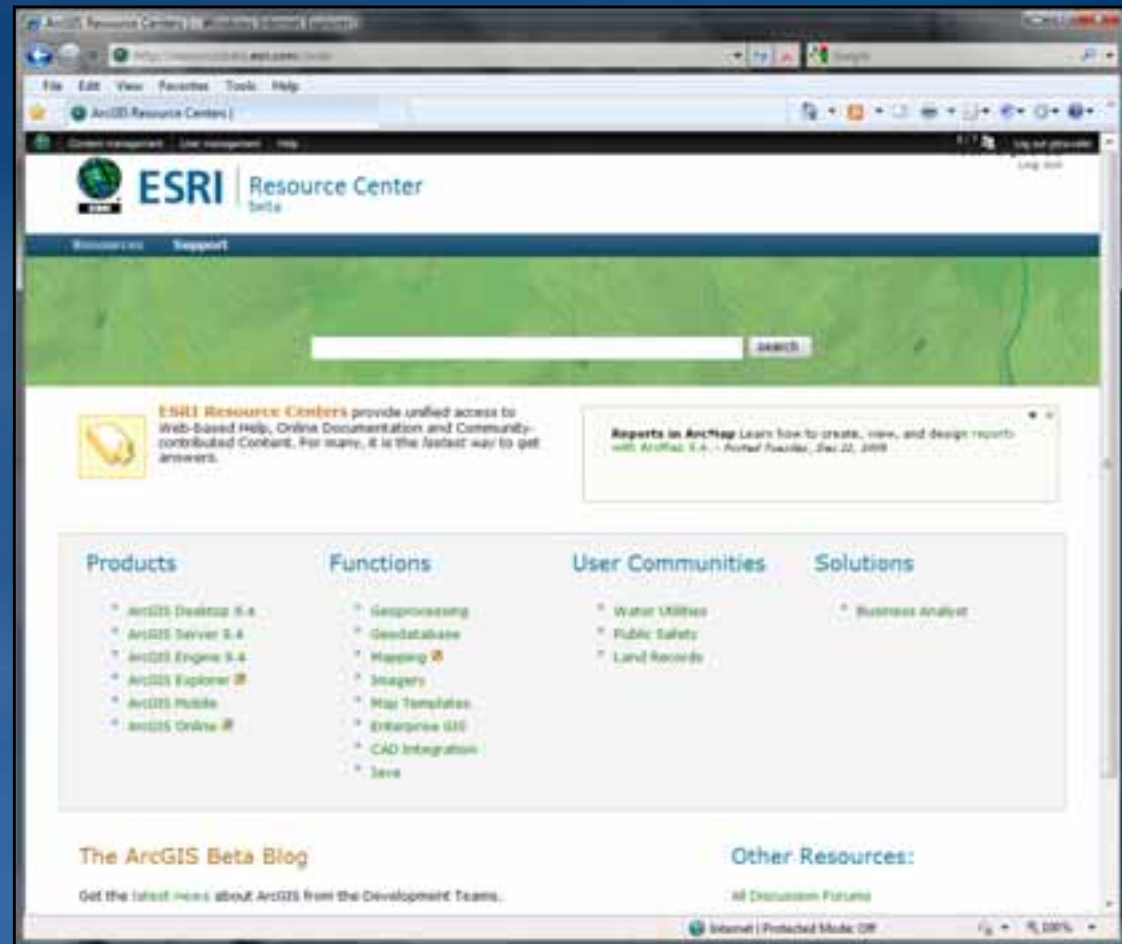


Streamlining high volume data and map production

Production Mapping Templates

Leveraging the Resource Center

- Include
 - Quality rules
 - Workflows
 - Map and chart documents
 - Symbols
 - COP Viewer
 - Mobile Applications
 - Etc ...
- Complement industry templates
- Deliver existing industry data models
- Expand industries supported
 - Transportation
 - Water/Waste Water
 - Pipeline
 - Wild Fire
 - Local Government
 - Etc...



Opening markets via flexible and cost-effective downloads

Transportation Resource Center

- Supports DOT highways & roads user community
- Utilizing the NYS DOT sample data
- Implementation templates:
 - Data Model - UML, GDB schema, sample dataset, data dictionary
 - Enhanced Validation - batch jobs, feature level metadata, field configurations
 - Linear Reference Systems (LRS) Editing
 - Workflow Management - Workflow Manager/TAM
 - Map Production - map templates, symbology, production procedures
 - Management Reporting - Flex web app
 - Citizen Interaction - Flex web app
 - Field Work - mobile app

National Mapping Resource Center

- Supports national mapping user community
- Migrate products from PLTS Mapping Agency Solution (USGS, ERM, EGM, GlobalMap, DFIRM, USNG)
- Implementation templates for each product above:
 - Data Model - UML, GDB schema, sample dataset, data dictionary
 - Data Validation - batch jobs, field configuration
 - Map Production - map templates, symbology, production procedures
 - Workflow Management - Workflow Manager/TAM

Water / Wastewater

Extension to existing w/ww user community

- Supports Water Utilities user community
- Additional capabilities added the existing Resource Center
- Implementation templates for each product above:
 - Data Model - UML, GDB schema, sample dataset, data dictionary
 - Data Validation - batch jobs, field configuration
 - Map Production - map templates, symbology, production procedures
 - Workflow Management - Workflow Manager/TAM



Questions?