The Hydrographic Approach

CHRIS 20
ENC/ECDIS Seminar

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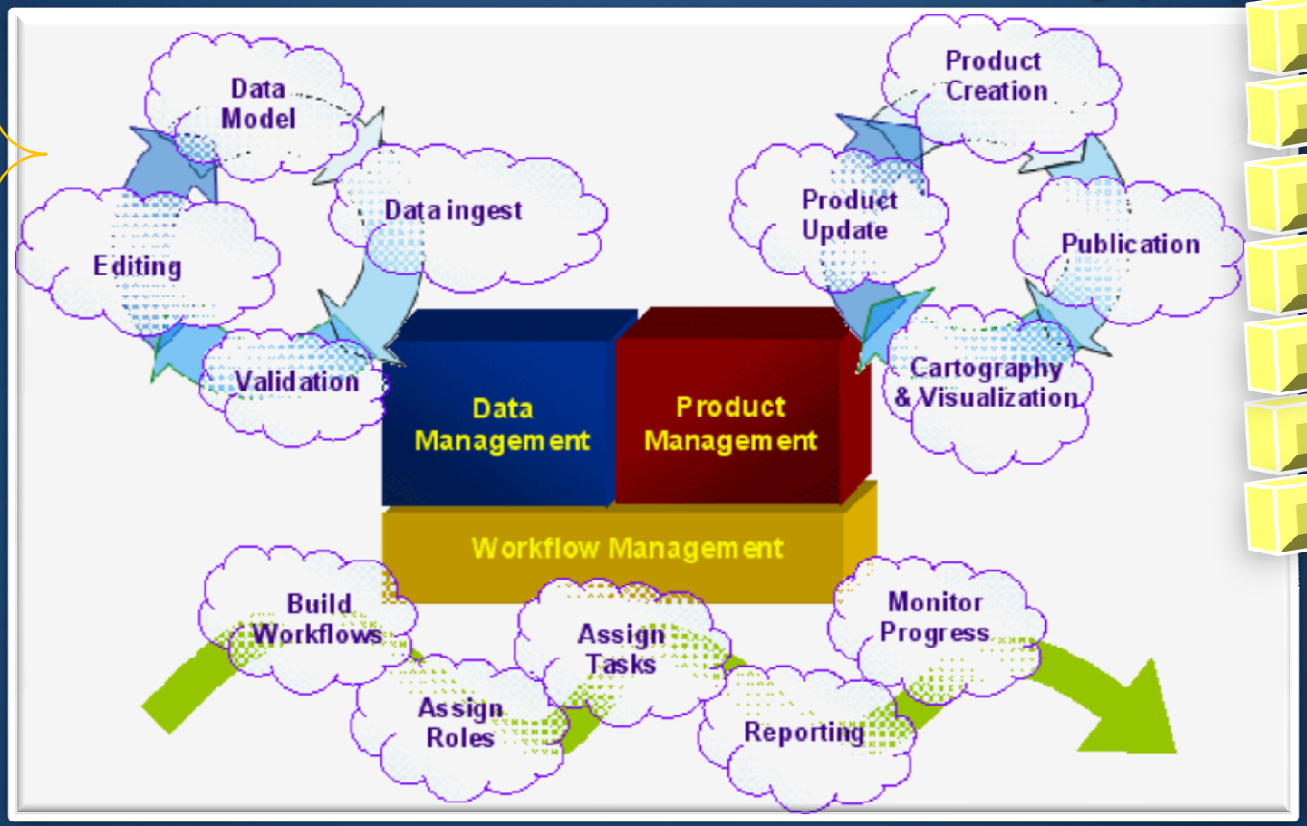
ArcGIS Nautical Solution Enterprise
the Nautical Information System (NIS)

A Product Neutral Central Database approach

What is the NIS?

- SHAPE files
- Paper Charts
- ENCs
- DNCs
- Bathymetry
- Imagery
- Raster formats



- ENCs
- DNCs
- Paper Charts
- AMLs
- MIOs
- iENC
- PDF
- Geotiff

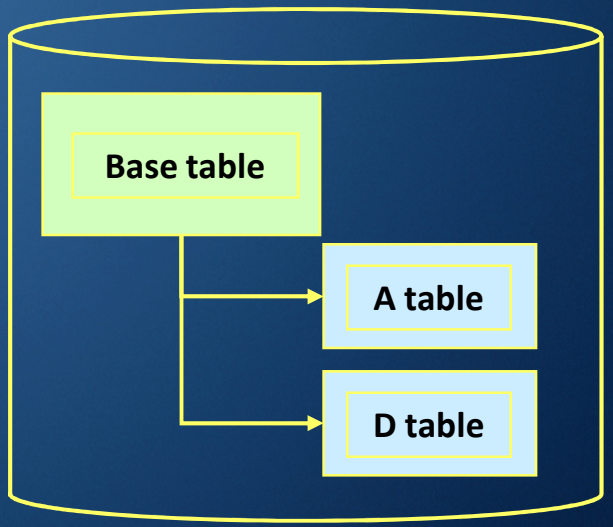
- A Database
- A Production System
- A Workflow

Data Management

- Versioning
- History/Archiving
- Replication
- Synchronization

Versioned editing

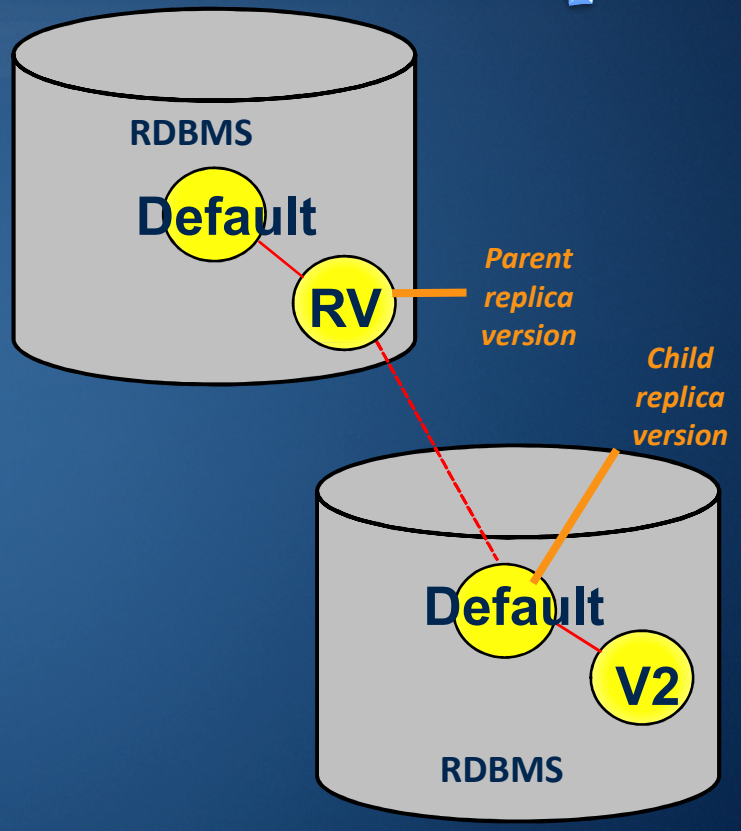
- Advantages include:
  - Isolate editor's work over an extended period
  - Reconcile and resolve conflicts between edits
  - Implement workflow for business procedures
  - Provides a mechanism to detect differences between collections of work orders completed by users (versions)
- Architecture:
  - Change to each feature class is preserved in A and D tables
  - Change accessed through a version



Versioned editing:
Changes stored in A and D tables

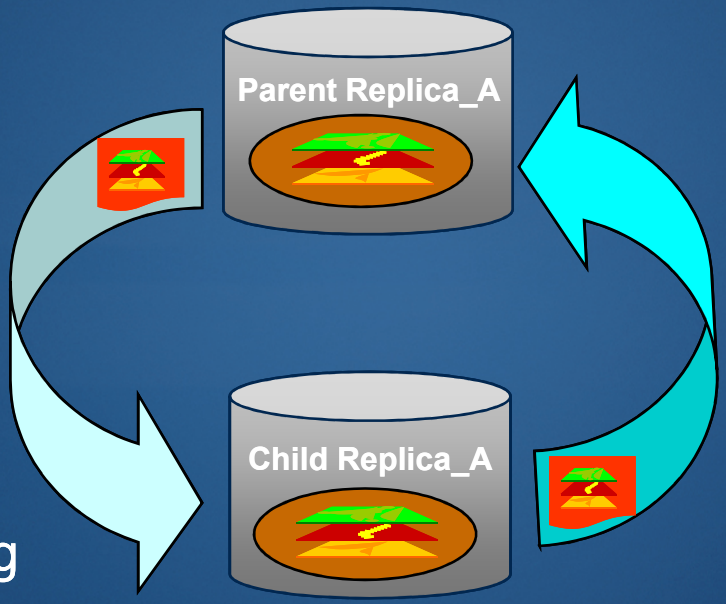
Replication and Versioning

- Edits made to the replica versions are synchronized
- Like extending the version tree to span multiple databases



ESRI Replication - Concepts

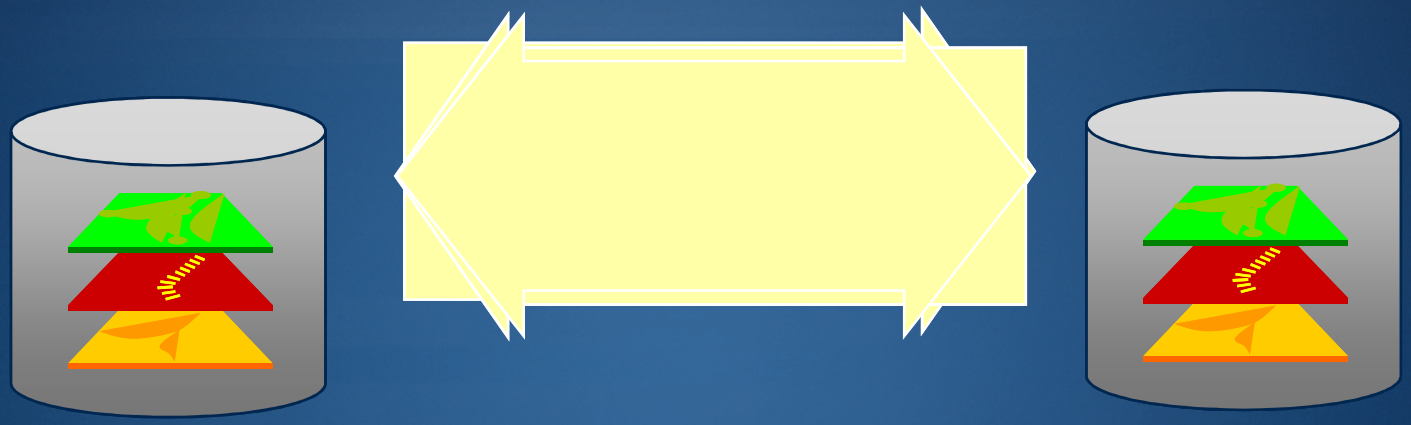
- Basic replication relationship is between two replicas :
  - A Child Replica is created from a Parent Replica



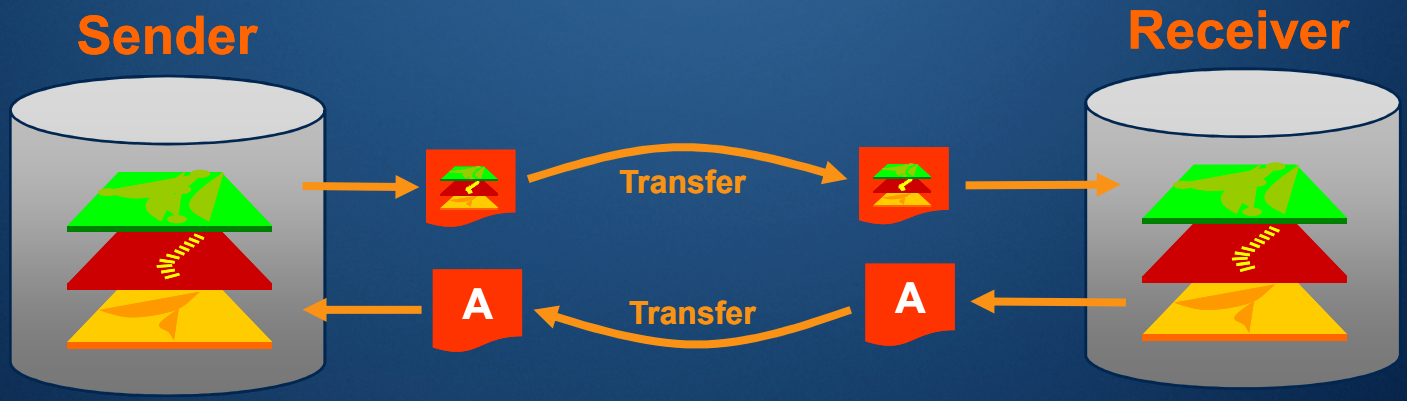
- Leverages Versioning
- You can replicate :
  - A specific version
  - Specific datasets
  - A subset of features in the chosen datasets

Replica Synchronization – Compare and Contrast

- Example 1 – Connected Synchronization with a 2 way replica

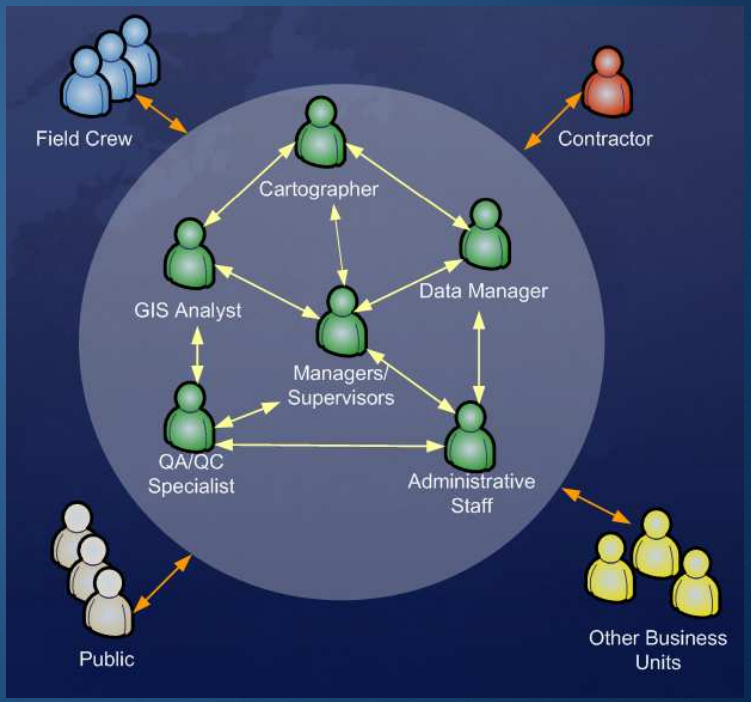


- **Example 2 – Disconnected Synchronization with a 2 way replica**



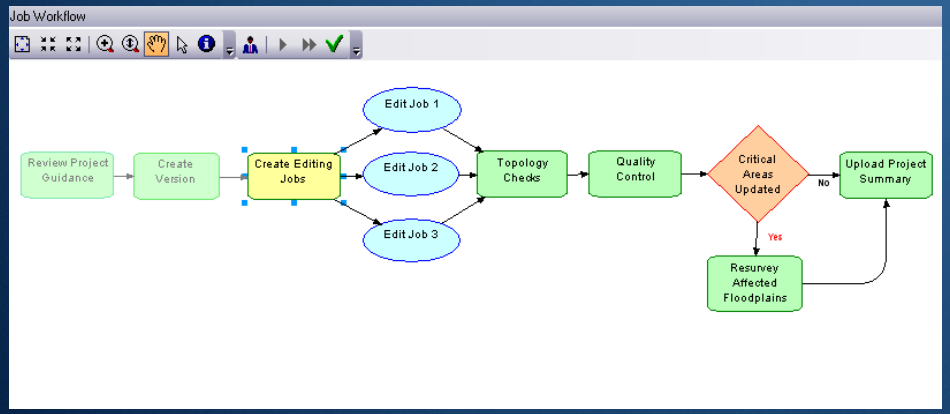
Managing Workflow

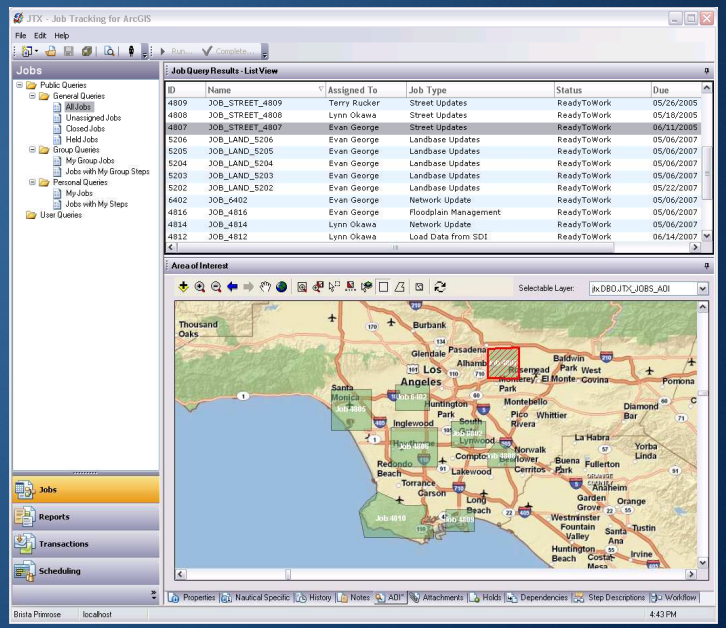
- **Real-world GIS Implementations involve many specialists and concurrent operations**
  - **Many Tasks/People/Skills**
  - **Different Datasets**
  - **Complex Processes**
- **Perform work most efficiently**
  - **Better**
  - **Faster**
  - **Cheaper**



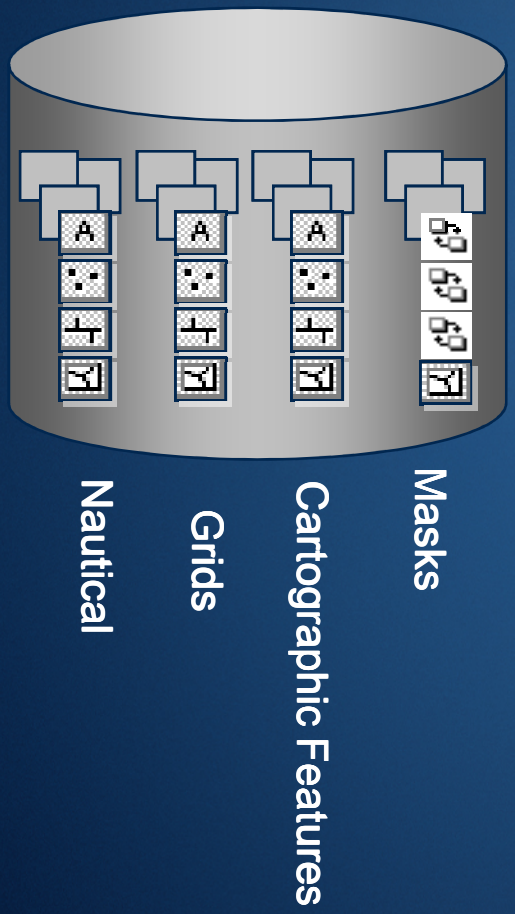
Enterprise geospatial workflow solution - JTX

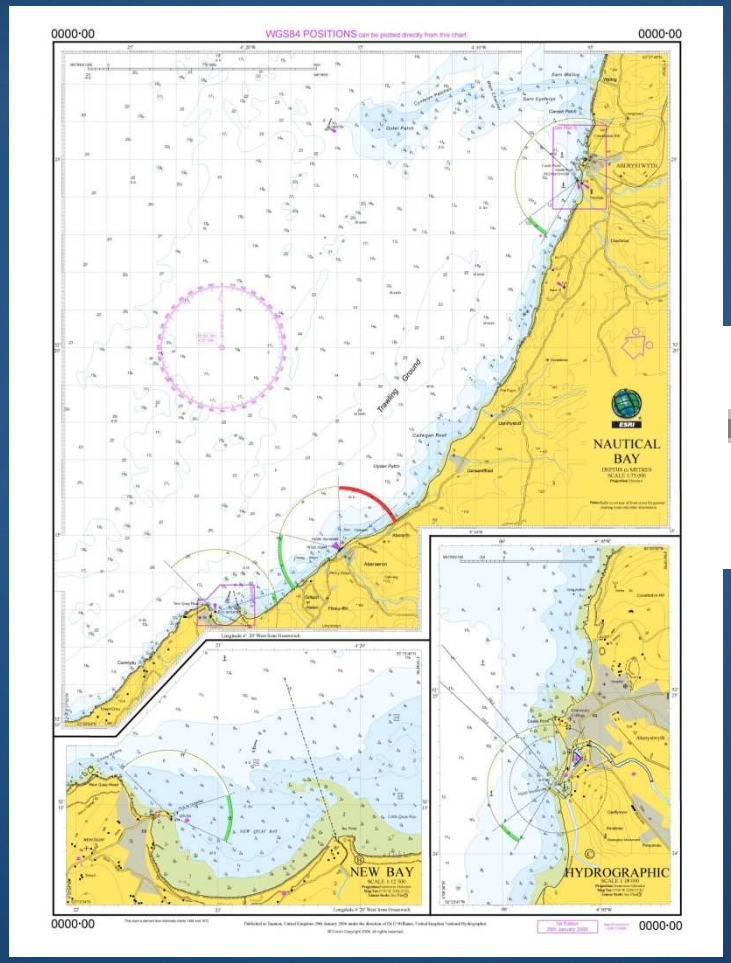
- Workflow Management
- Job/Task Tracking
- User/Role Management
- Version and Data Access Controls
- ArcGIS Integration
- User-friendly Configuration

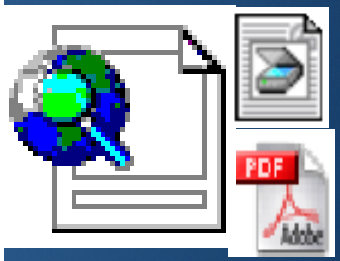




ESRI Technology to Nautical Chart

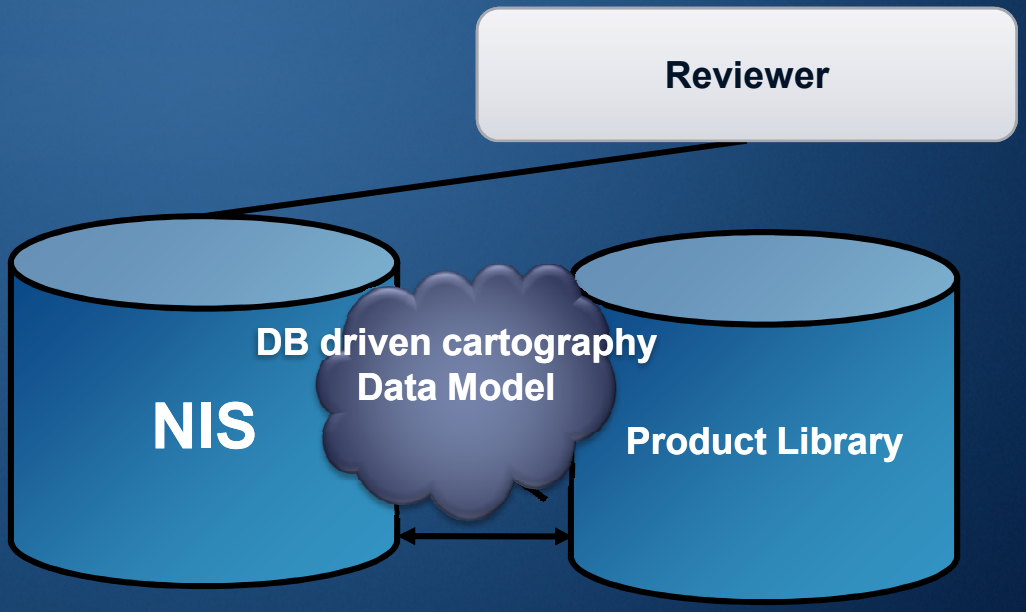




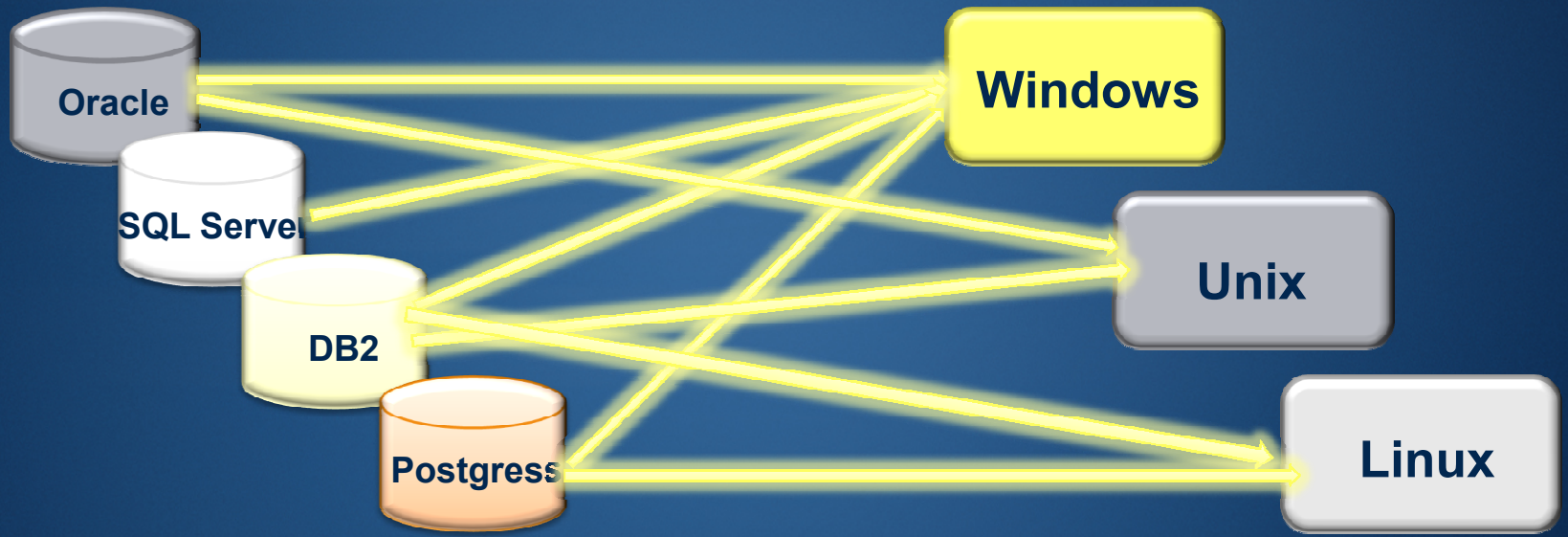


Database intensive Product Management

- Product Library
- NIS
- Data Model
- Database driven cartography
- Data Reviewer

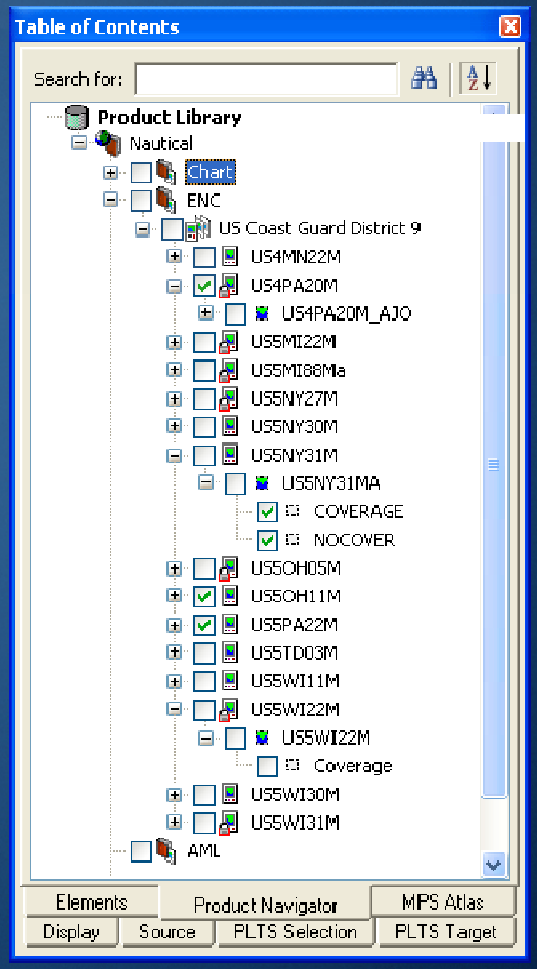


Supported multiple Databases/Platforms

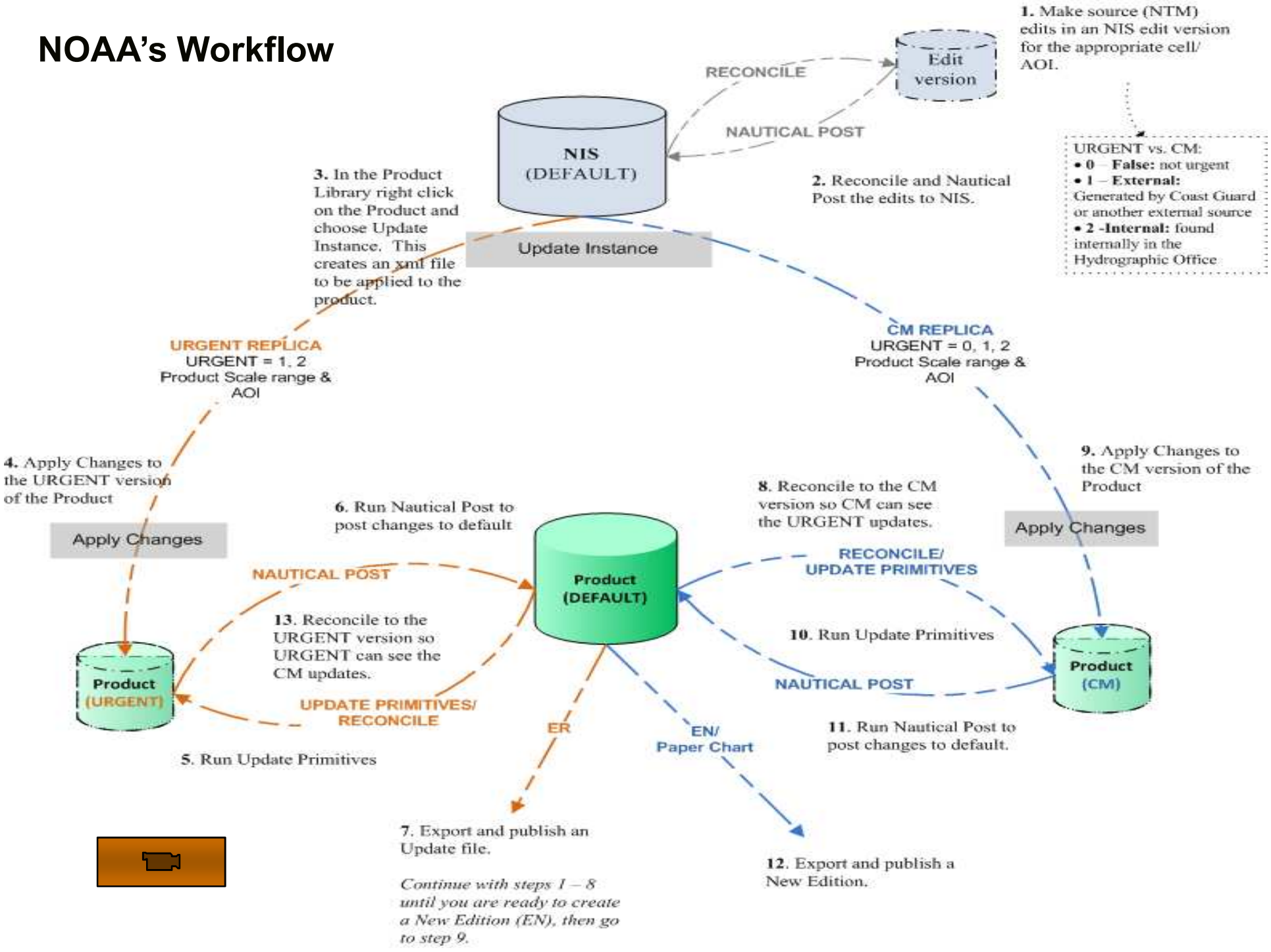


Product Library

- Stores Product Information
- Cartographic Information
  - Map templates
  - Visual Specifications
  - AOI/Boundary shapes
  - Masking Rules
- Data Information
  - Validation rules
  - Field Configuration Information
  - Schema



NOAA's Workflow

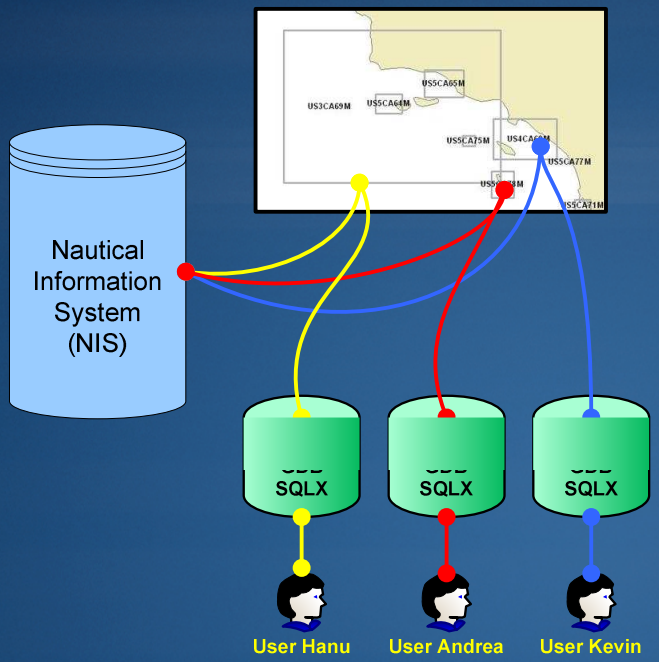


Common characteristics for Central Databases

- 1F1T (point features)
- Multiple products
- Multiple representations
- S-57 ENC and paper chart production
- New editions (EN) and updates (ER)
- Editing the source and the product

Specific of the NIS

ESRI NIS



- Spatial Area
- Panel/Chart/ENC ID#
- Definition Query
  - selected features
  - scale band
  - features by product

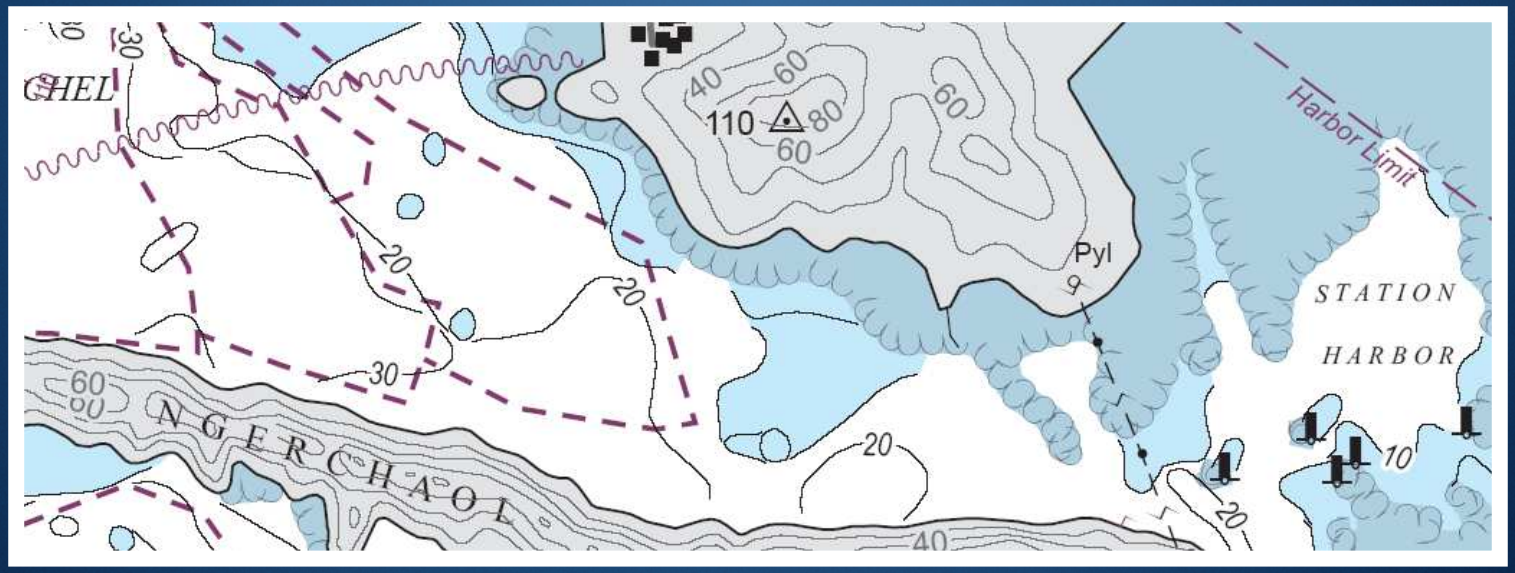
- ►Format neutral database
- ►Product independent
- ►Database platform independent
- ►Multiple replicas
- ►Multiple versions
- ►Multiple editors at the same time at feature level

- ►Multiple input formats
- ►Export to multiple products /formats
- ►Job Tracking System (workflow configuration)
- ►Task assistant (production procedures)

Distribution:
An example

The Hydrographic Approach

ePODS-M
Enterprise Product on Demand Service
Maritime

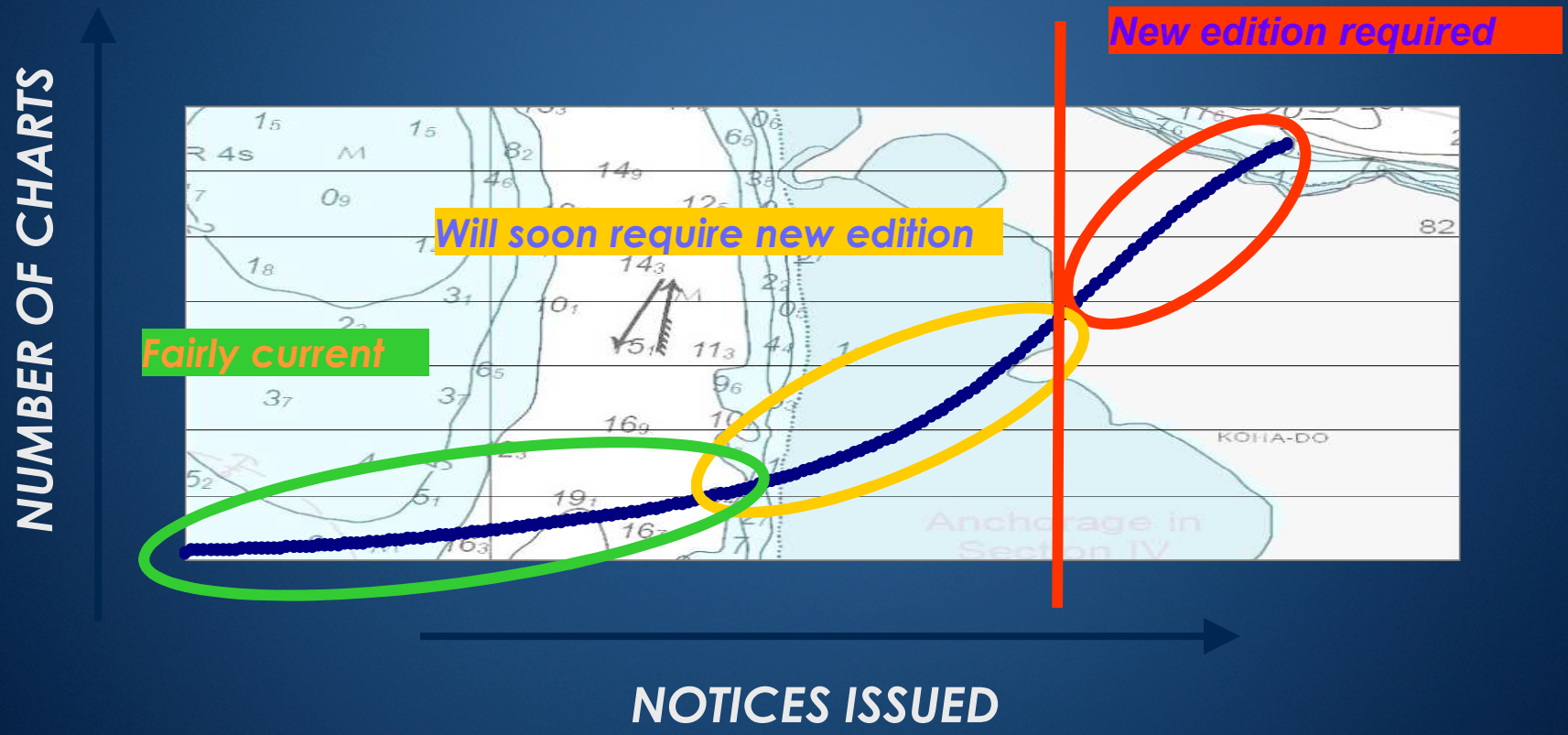


Why ePODS-M ?

- Aging chart inventories
- Traditional cartographic products are slow and expensive to produce
- Traditional product outlines and scales do not always answer the needs of the customer

Aging Inventories

- *Many charts have exceeded the "Criticality Factor System" threshold*

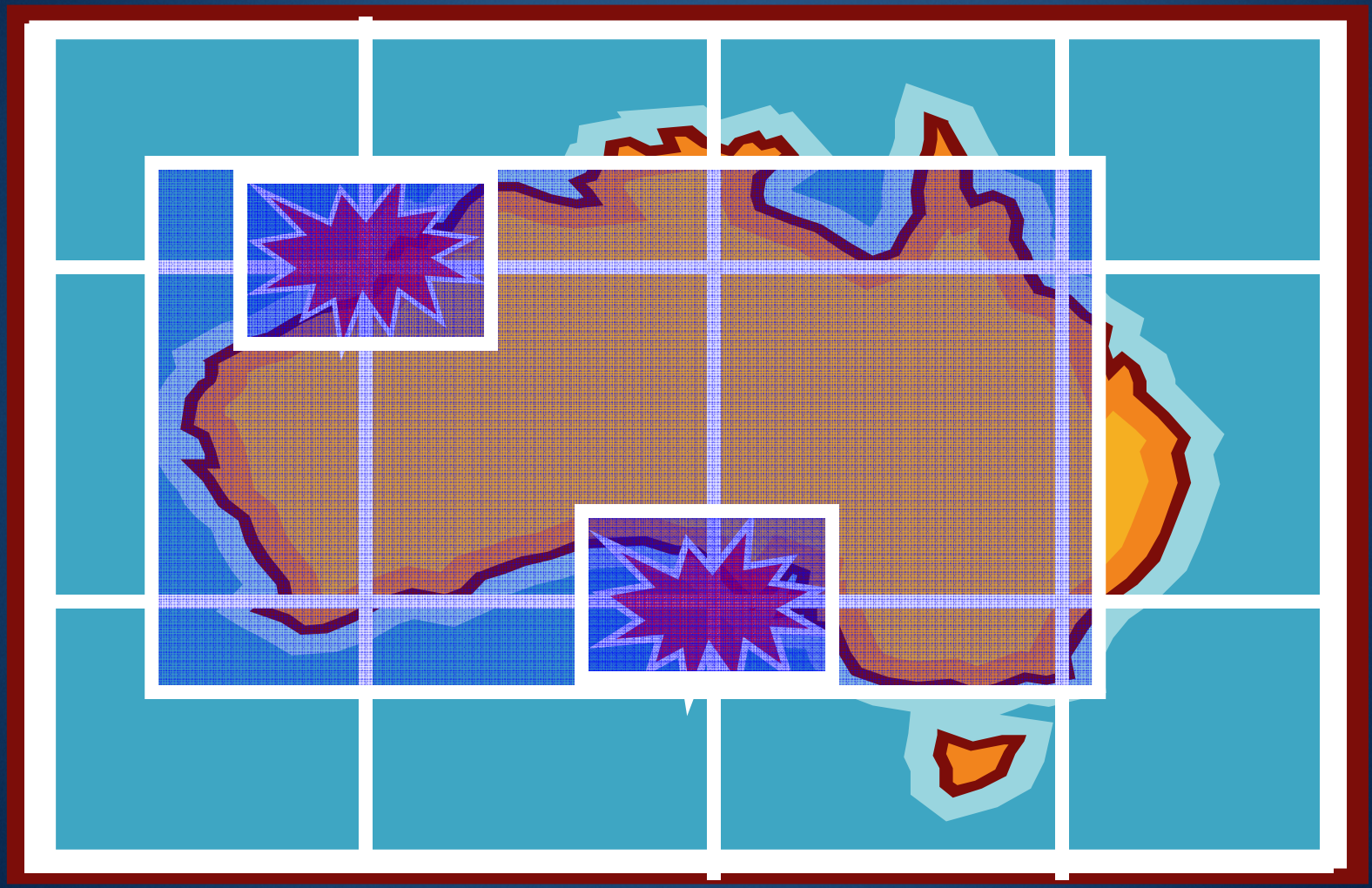


“Print Ready” Defined

“A product that meets the spirit of the traditional specification but may deviate where a change enables technology to complete the chart generation quickly and efficiently without impacting the usability of the product.”

ePODS Concept

“Product on Demand”



Why is ePODS – M Different?

- *Nautical data are not a seamless database*
  - *Not centralized (VPF)*
  - *4 scales*
  - *Embedded higher resolution data*
  - *Gaps and overlaps in data coverage*

- *Traditional charts are not standardized*
  - *Chart footprints are irregular*
  - *Different page layout for each chart*
  - *Insets vary*
  - *Data based on traditional chart coverage (not seamless)*

ePODS-M Overview

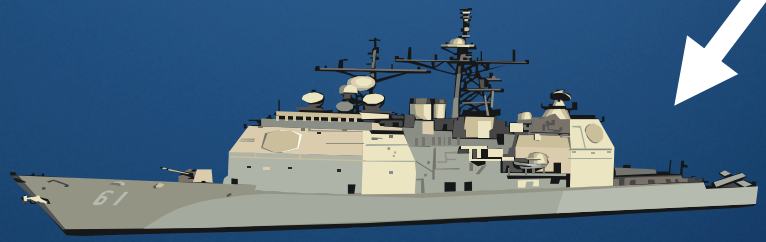
Data CDs, Map Products, GIS Databases

ArcGIS Server Processing

Desktop Finishing with PLTS

Thin Client Web Portal

Users Products Analysts



User

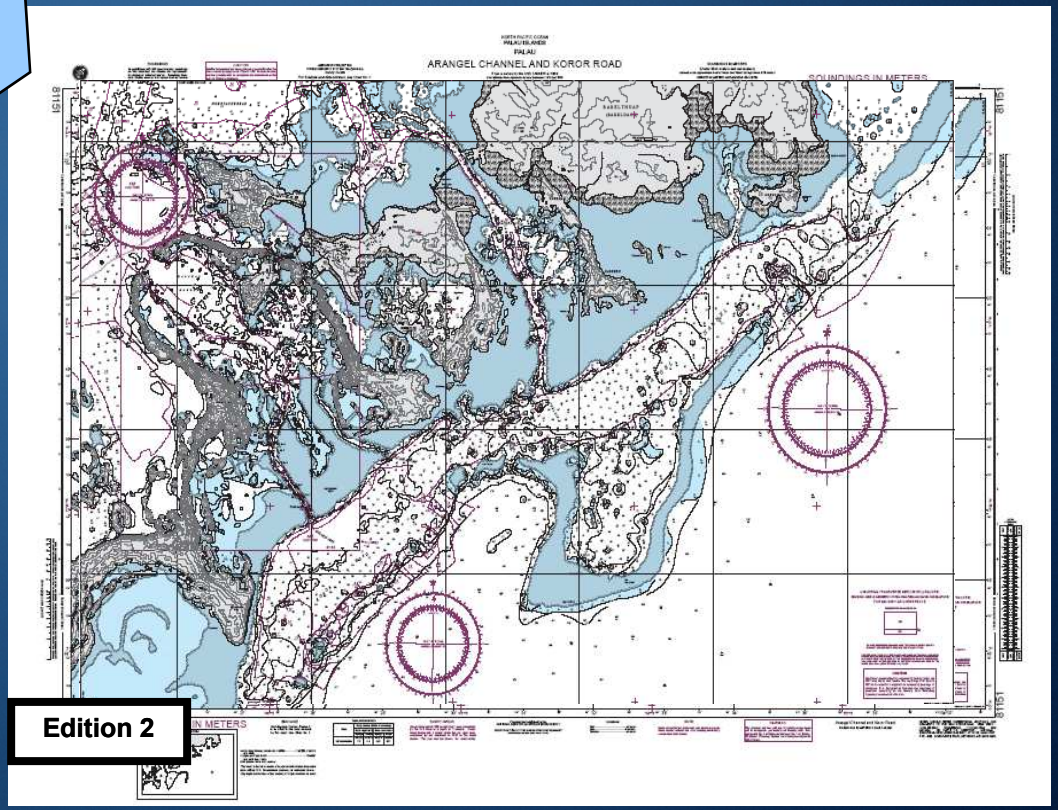
Smart Frames

- Leveraging time investment on surround for future editions

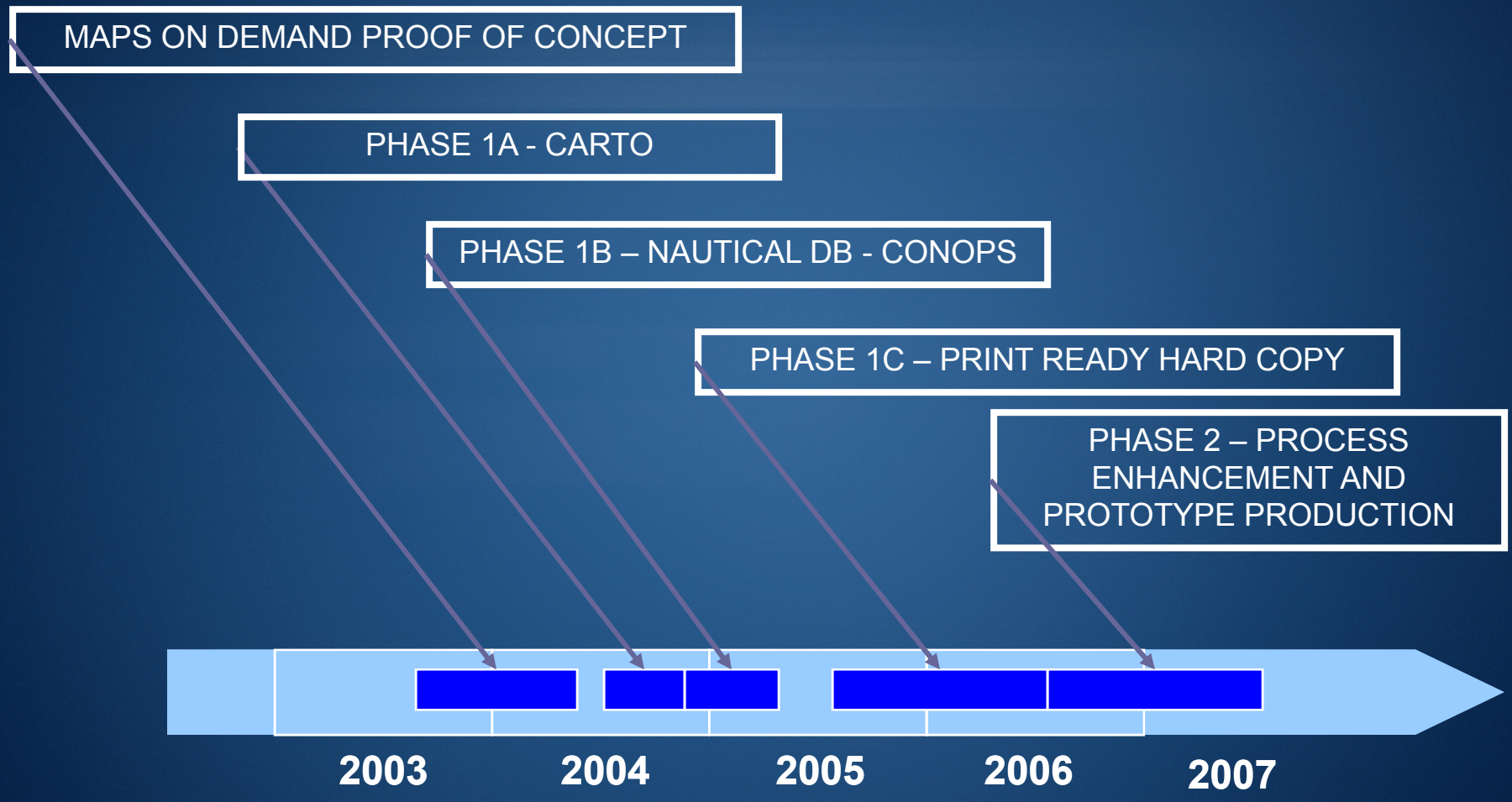
SAVES 5 HOURS

EACH NEW EDITION

1. **AOI established.**
2. **Grid and surround built.**
3. **Chart finished and published.**
4. **Smart Frame saved.**
5. **New edition chart needed.**
6. **Smart frame retrieved.**
7. **New data frame embedded.**
8. **New edition chart finished and published.**



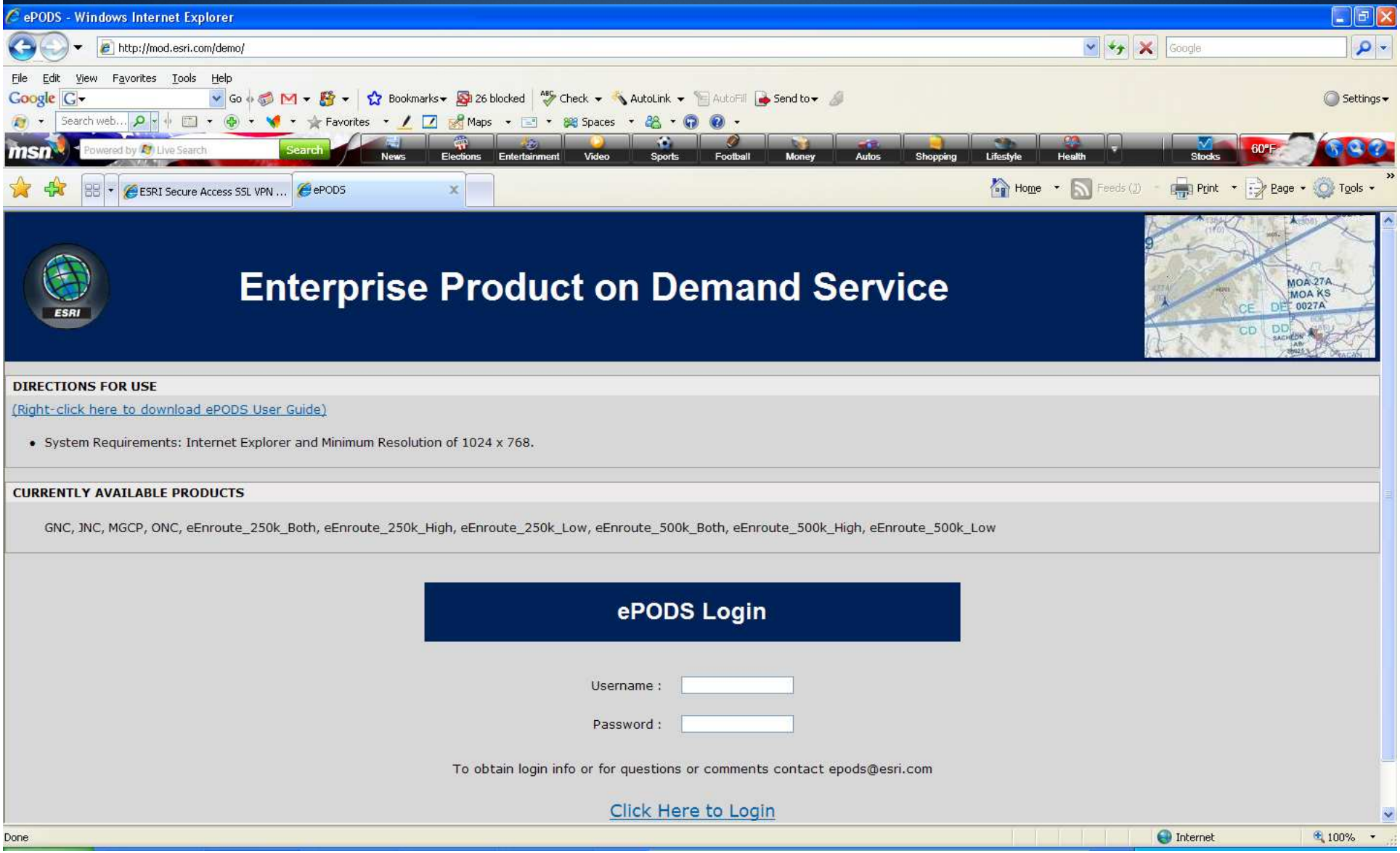
ePODS-M History

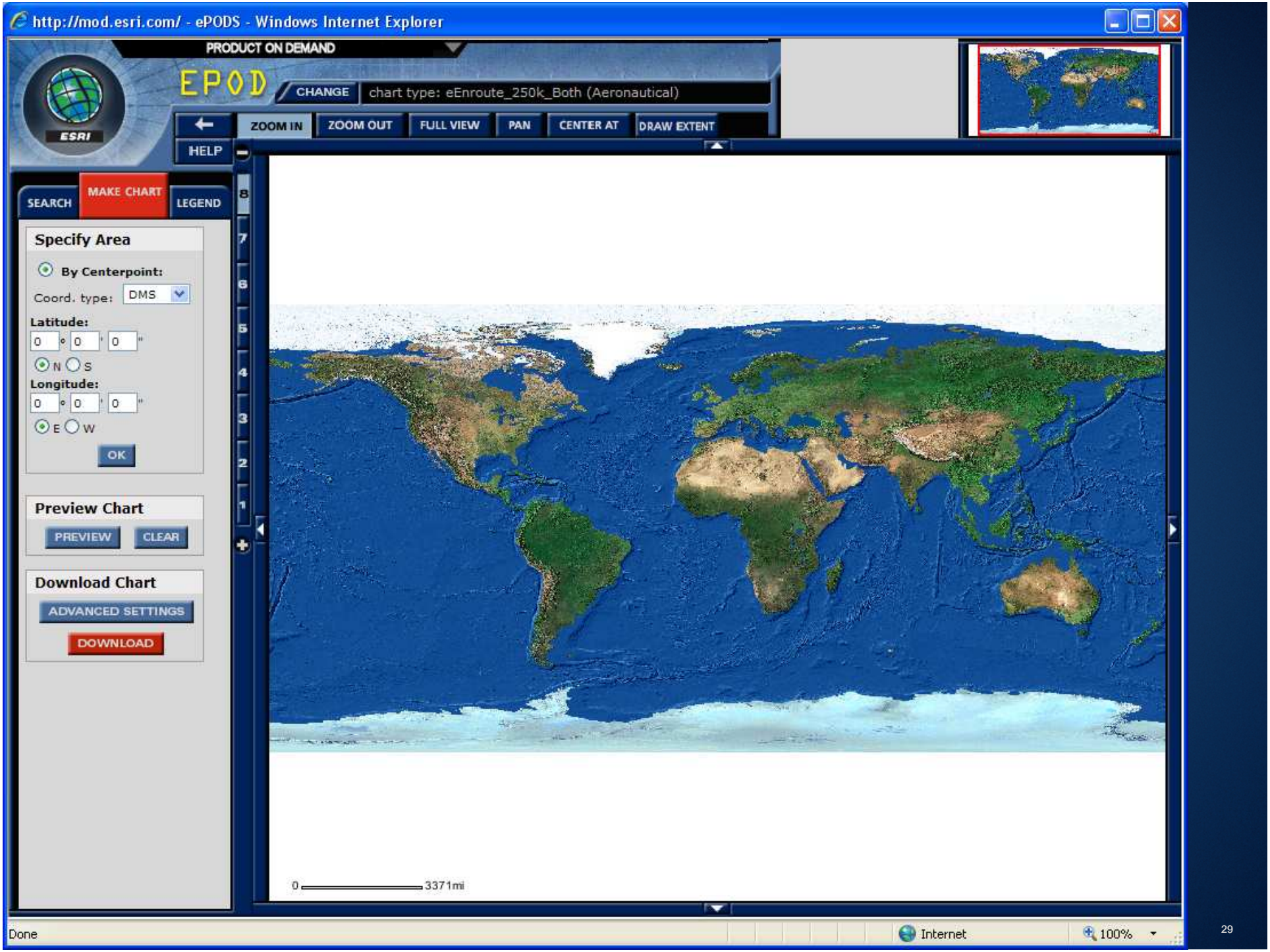


Challenges

- Charting tradition and legacy processes
- Keeping “Print Ready” in the forefront
- Understanding customer requirements
- Metrics and managing chart review
- Source data limitations

Example of ePODS chart production




http://mod.esri.com/ - ePODS - Windows Internet Explorer
PRODUCT ON DEMAND
EPOD
CHANGE
chart type: eEnroute_250k_Both (Aeronautical)
ESRI
ZOOM IN
ZOOM OUT
FULL VIEW
PAN
CENTER AT
DRAW EXTENT
HELP
SEARCH
MAKE CHART
LEGEND
Specify Area
By Centerpoint:
Coord. type: DMS
Latitude:
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N S
Longitude:
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E W
OK
Preview Chart
PREVIEW
CLEAR
Download Chart
ADVANCED SETTINGS
DOWNLOAD
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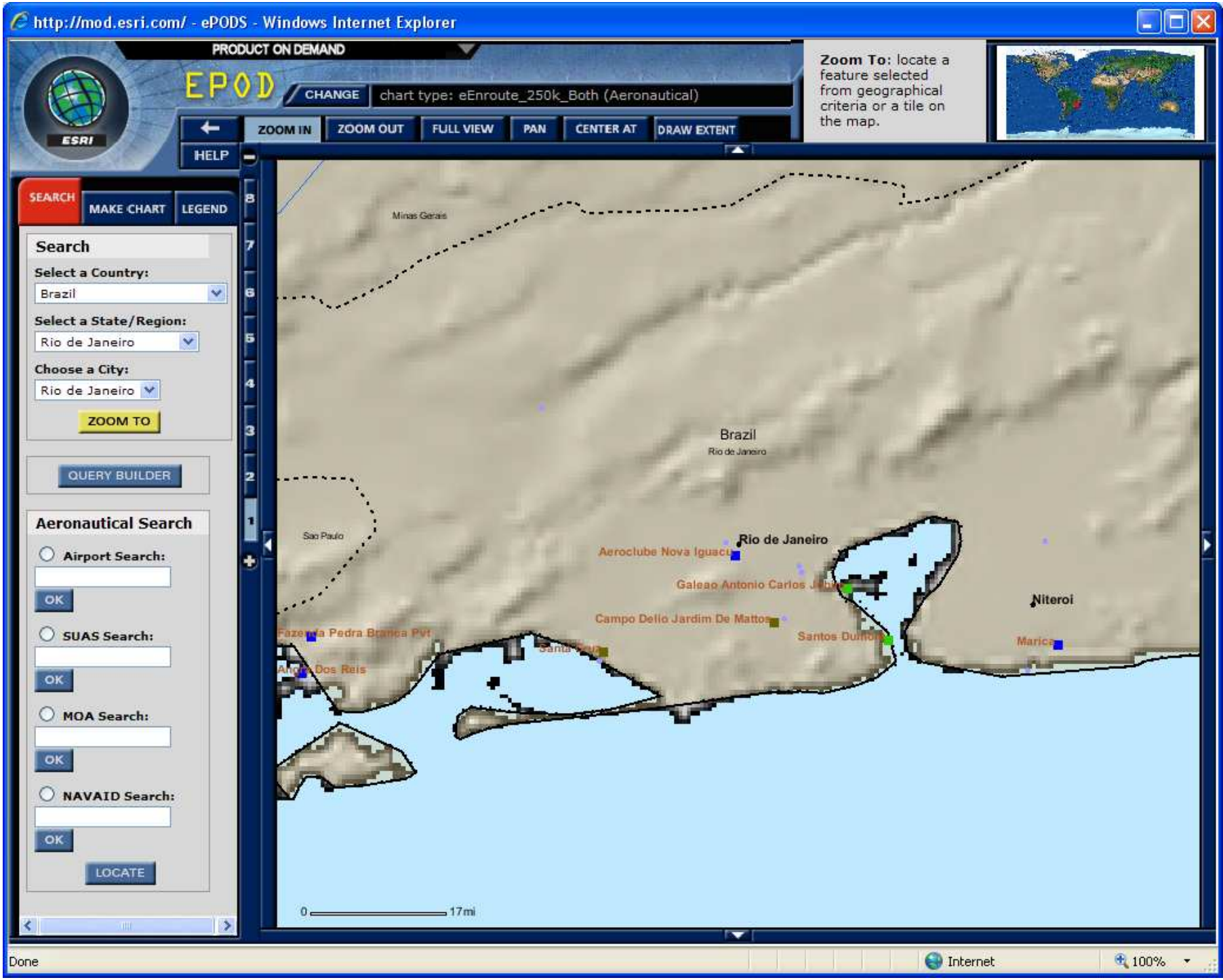
Internet
100%


http://mod.esri.com/ - ePODS - Windows Internet Explorer
PRODUCT ON DEMAND
EPOD
CHANGE
chart type: eEnroute_250k_Both (Aeronautical)
ZOOM IN
ZOOM OUT
FULL VIEW
PAN
CENTER AT
DRAW EXTENT
HELP
Zoom To: locate a feature selected from geographical criteria or a tile on the map.
SEARCH
MAKE CHART
LEGEND
Search
Select a Country:
Brazil
Select a State/Region:
Rio de Janeiro
Choose a City:
Rio de Janeiro
ZOOM TO
QUERY BUILDER
Aeronautical Search
Airport Search:
OK
SUAS Search:
OK
MOA Search:
OK
NAVAID Search:
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Brazil
Rio de Janeiro
Sao Paulo
Rio de Janeiro
Aeroclube Nova Iguacu
Galeao Antonio Carlos Jobim
Campo Delio Jardim De Mattos
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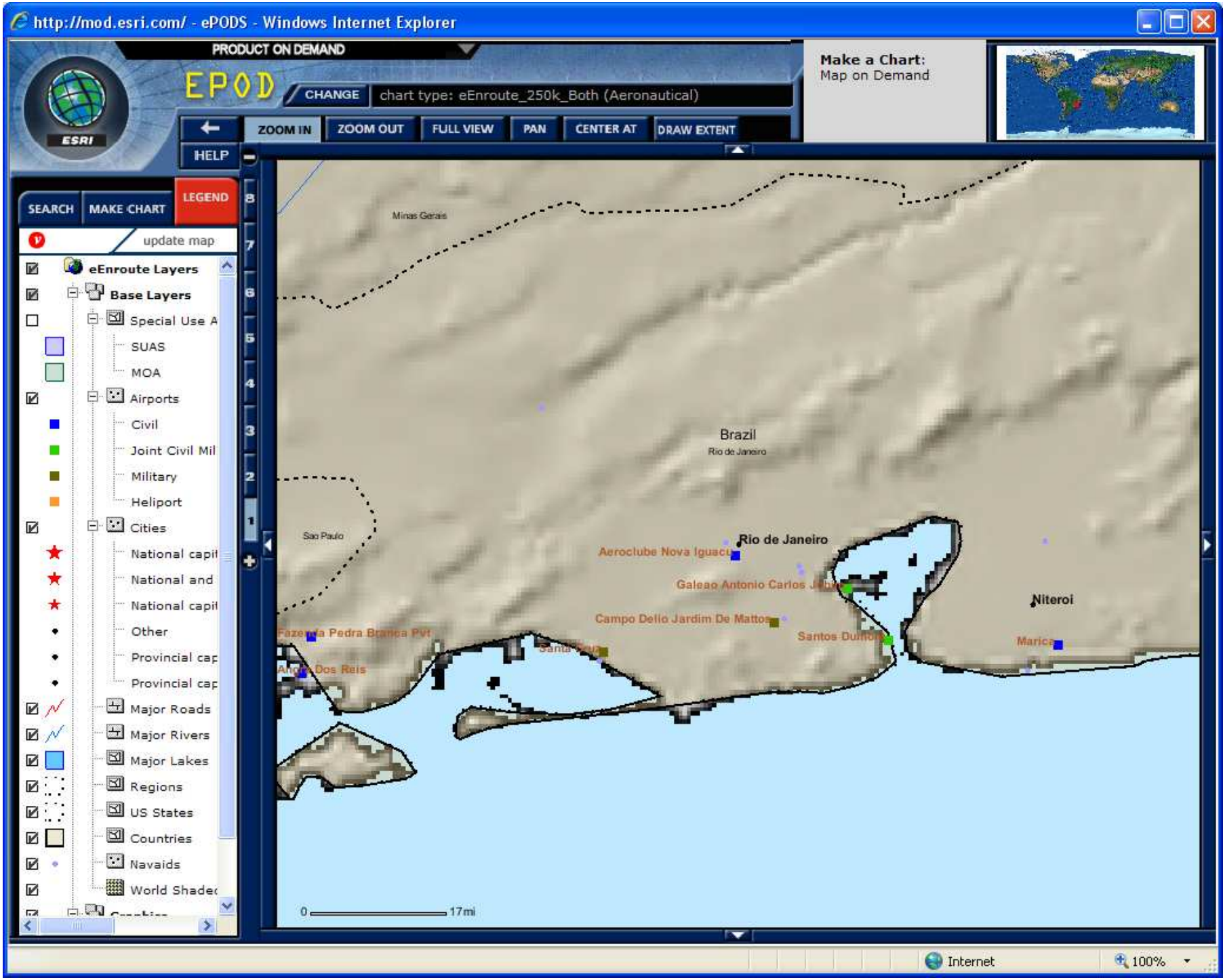
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Make a Chart:
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Military
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Cities
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National capil
Other
Provincial cap
Provincial cap
Major Roads
Major Rivers
Major Lakes
Regions
US States
Countries
Navaids
World Shade
Minas Gerais
Brazil
Rio de Janeiro
Sao Paulo
Rio de Janeiro
Aeroclube Nova Iguacu
Galeao Antonio Carlos Jobim
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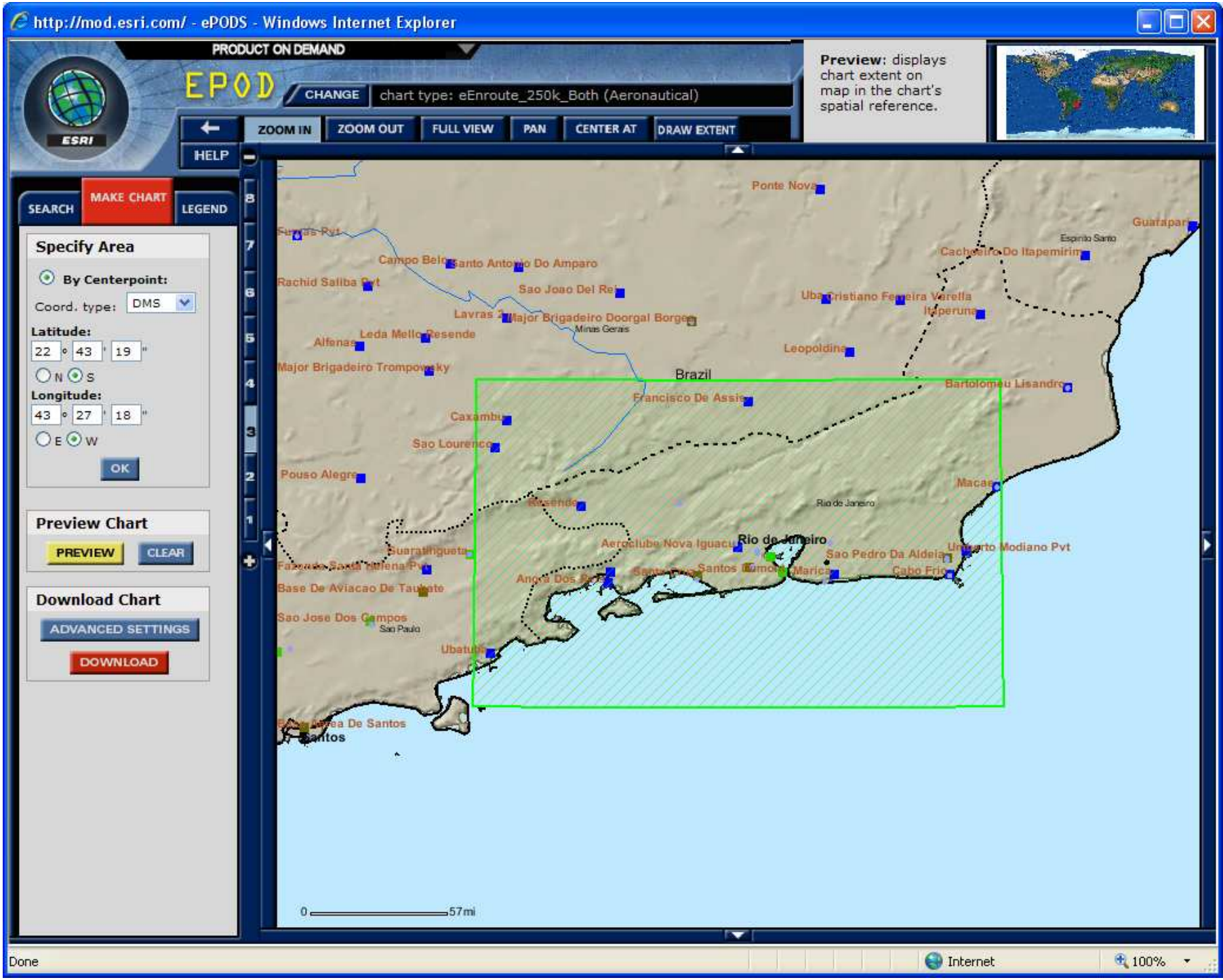
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PRODUCT ON DEMAND
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chart type: eEnroute_250k_Both (Aeronautical)
ZOOM IN
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CENTER AT
DRAW EXTENT
HELP
Preview: displays chart extent on map in the chart's spatial reference.
SEARCH
MAKE CHART
LEGEND
Specify Area
By Centerpoint:
Coord. type: DMS
Latitude:
22 ° 43 ' 19 "
N S
Longitude:
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E W
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Preview Chart
PREVIEW
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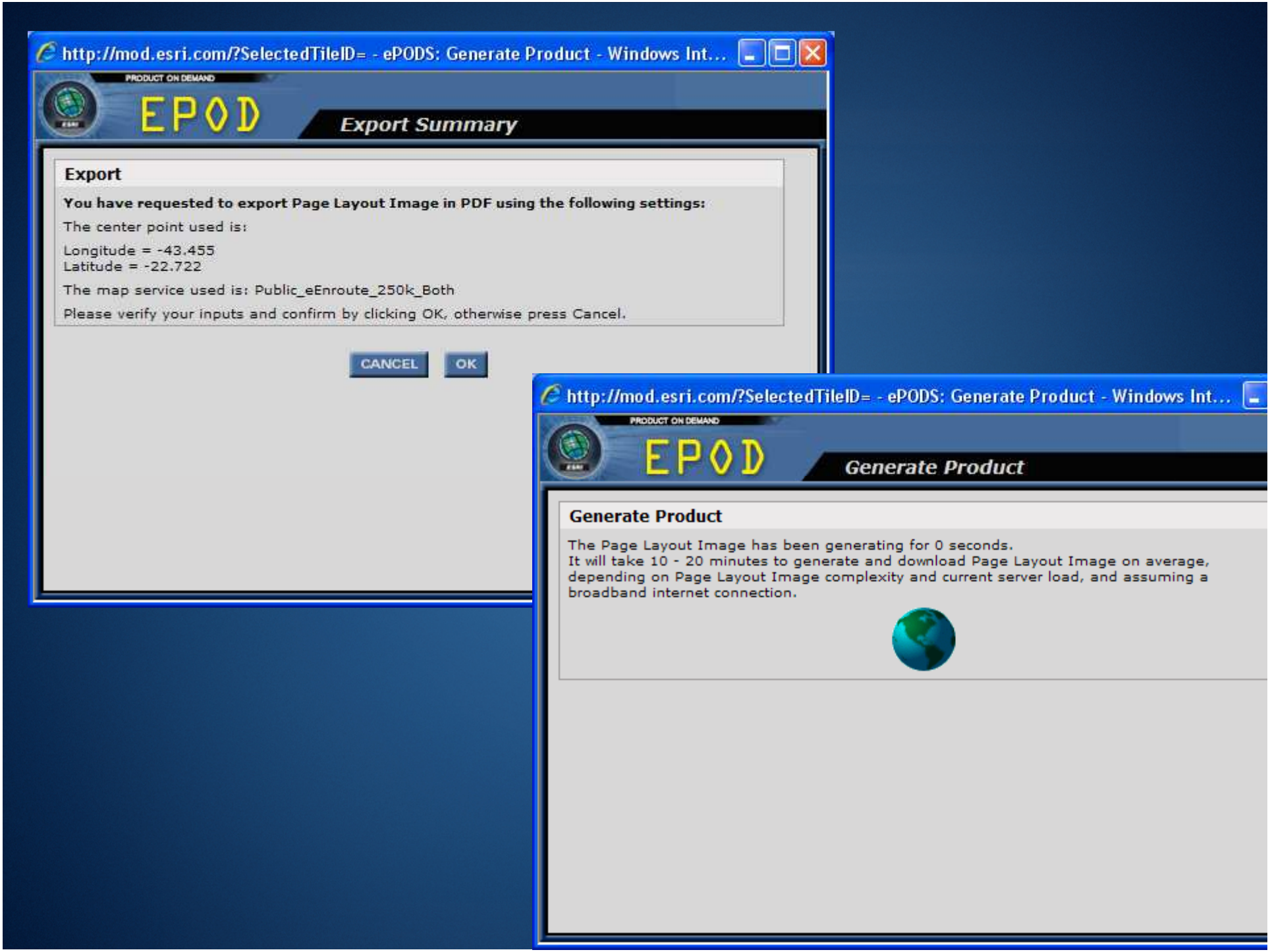
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The map service used is: Public_eEnroute_250k_Both
Please verify your inputs and confirm by clicking OK, otherwise press Cancel.
CANCEL
OK
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It will take 10 - 20 minutes to generate and download Page Layout Image on average, depending on Page Layout Image complexity and current server load, and assuming a broadband internet connection.


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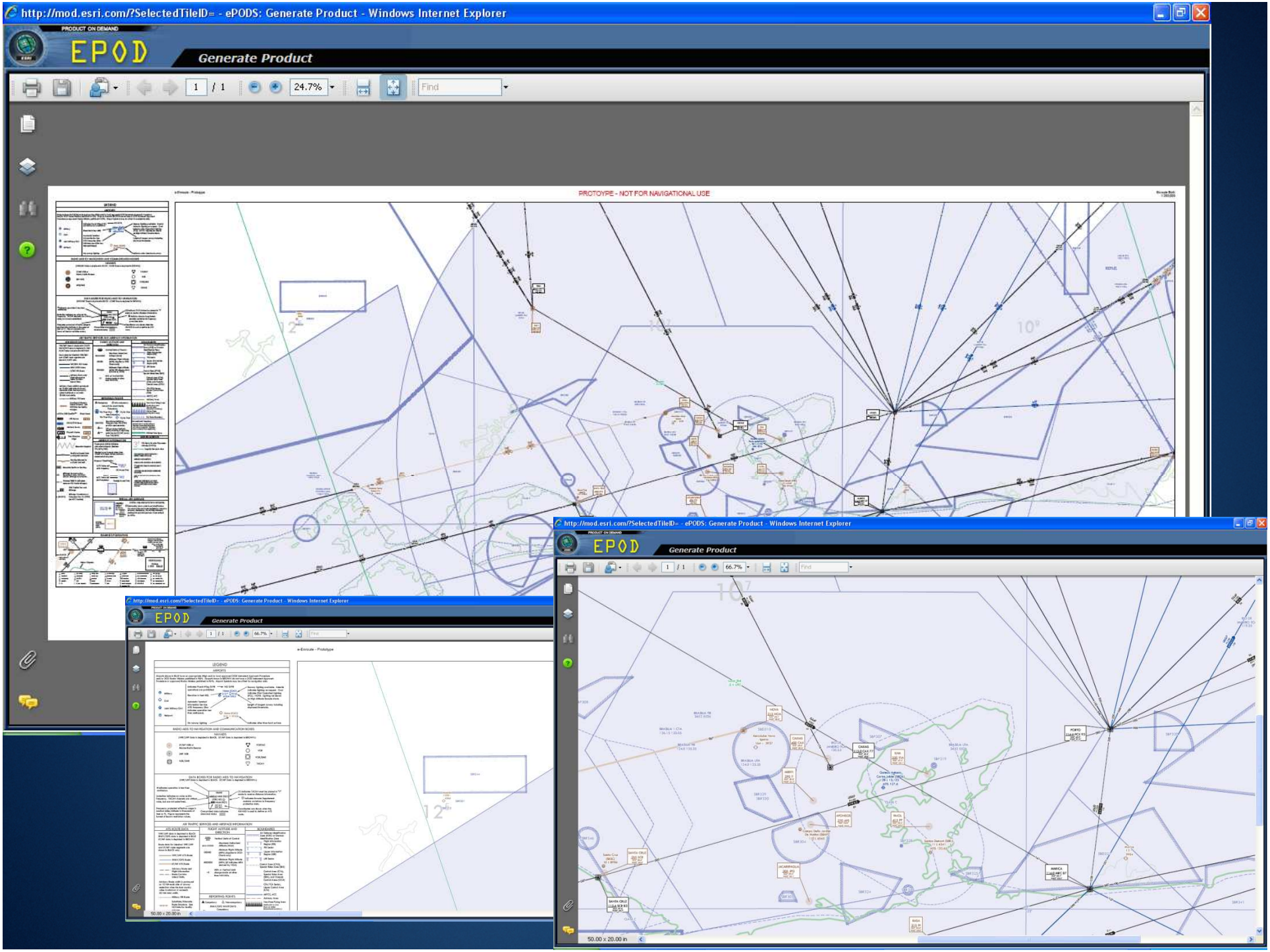
Right-click and save the output file to your computer.
If your output file is SpotEPS, make sure to rename file extension from .ps to .eps.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Thank you!