



Know the Earth...Show the Way

Geospatial Intelligence Database Integration (GIDI)

David Hampel – Analysis & Production Directorate

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SEDRIS Technology Conference

POC Info: Phone - 301-227-7284 / Email - hampeld@nga.mil

► Agenda

- Foundation Data Concept
- Geospatial Intelligence Database Integration (GIDI)
- Feature Data Standards
- Geospatial Intelligence Feature Database (GIFD) Feature Data Population
- GIFD Gateway Website

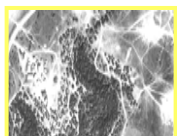
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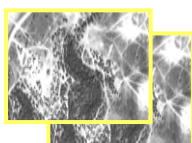
► Foundation Data Concept

Foundation Data - Global Readiness

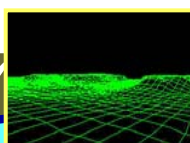
Unclassified
Mono Imagery 5M



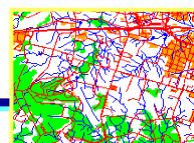
High
Resolution
Stereo Imagery



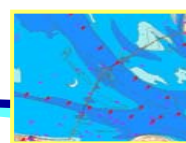
Elevation
Data
(DTED ® /SRTM)



Feature
Data



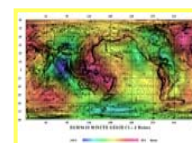
Digital Nautical
Chart
(DNC) ®



Navigation
Safety

Aeronautical
&
Hydrographic

Geodesy &
Geophysics



Mission-Specific Data and Views

- Mission Responsiveness
 - Mission-driven
 - Increased levels of detail
 - Timely, accurate, and relevant
 - Ability to accurately reference information of the earth

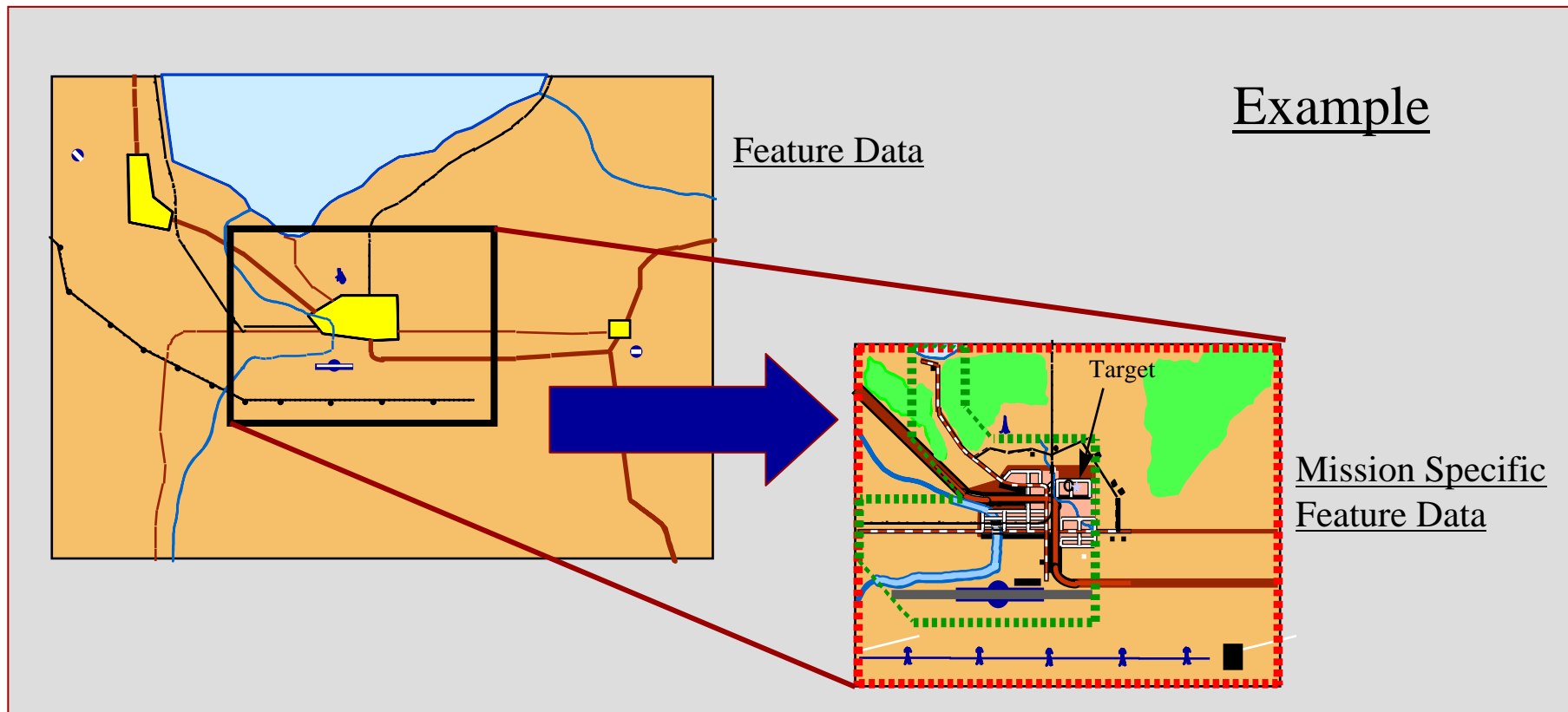
2D Displays

3D Scenes
& Models

4D Tracking
Over Time

► Mission-Specific Feature Data

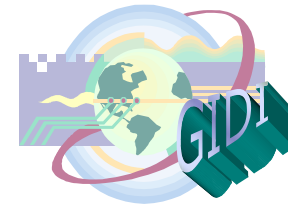
- Intensified foundation data with greater detail (density and resolution) to meet specific mission requirements. May also include “tailoring” of geospatial intelligence. Customers may add data to mission-specific data for greater battlespace awareness (e.g. threat information, OB,....)



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► Geospatial Intelligence Database Integration (GIDI) Background



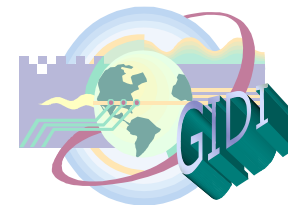
- Situation – Enterprise Data Environment needed to efficiently support the Global War on Terrorism (GWOT)
- Problem – NGA production database architecture fragmented
 - databases tied to specific production tools
 - each database has its own data model
- *Solution - Establishment of a GIS Enterprise that integrates existing databases and production tools*

► Geospatial Intelligence Database Integration (GIDI)



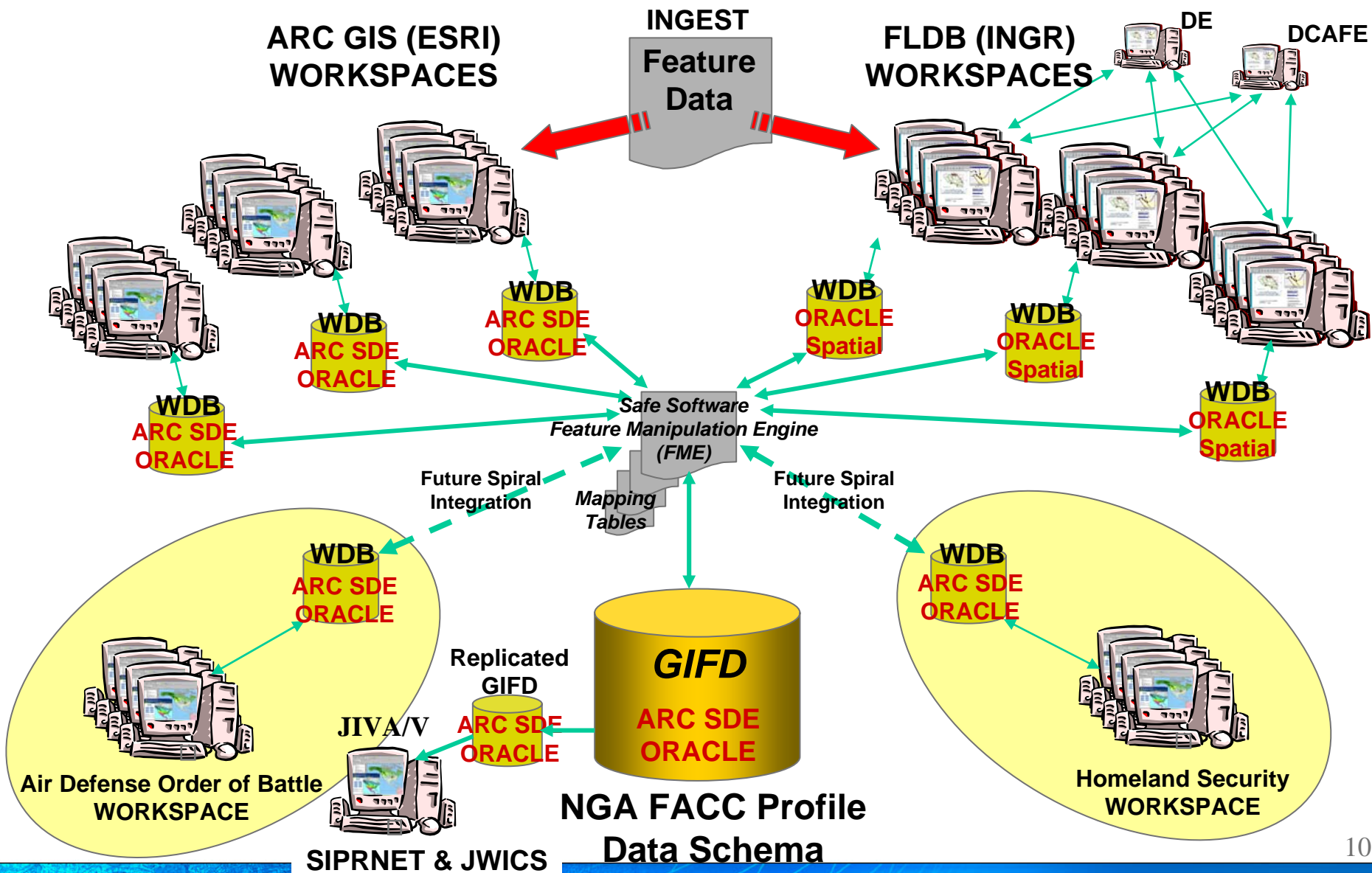
- What is it?
 - GIDI is a GIS enterprise that integrates existing NGA databases and production tools – new functionality thru spiral development
- GIDI Highlights
 - IOC – Nov 02
 - Establishes a single integrated feature level database ((Geospatial Intelligence Feature Database (**GIFD**))
 - Home to NGA's **feature data** - Foundation & MSD
 - Data Schema - NGA Profile of FACC
 - 3D capable
 - Feature level metadata (accuracy, currency, classification, source)

► Geospatial Intelligence Database Integration (GIDI)



- **GIDI Highlights (cont'd)**
 - Integrates new & existing COTS/GOTS production tools - currently COTS 174 workstations
 - Enables foundation-based operations:
 - feature data creation & maintenance
 - standard & custom product output
 - geospatial analysis
 - Dissemination of feature data via secure web (SIPRNet & JWICS)

Current GIDI Architecture



► Geospatial Intelligence Feature Database (GIFD)

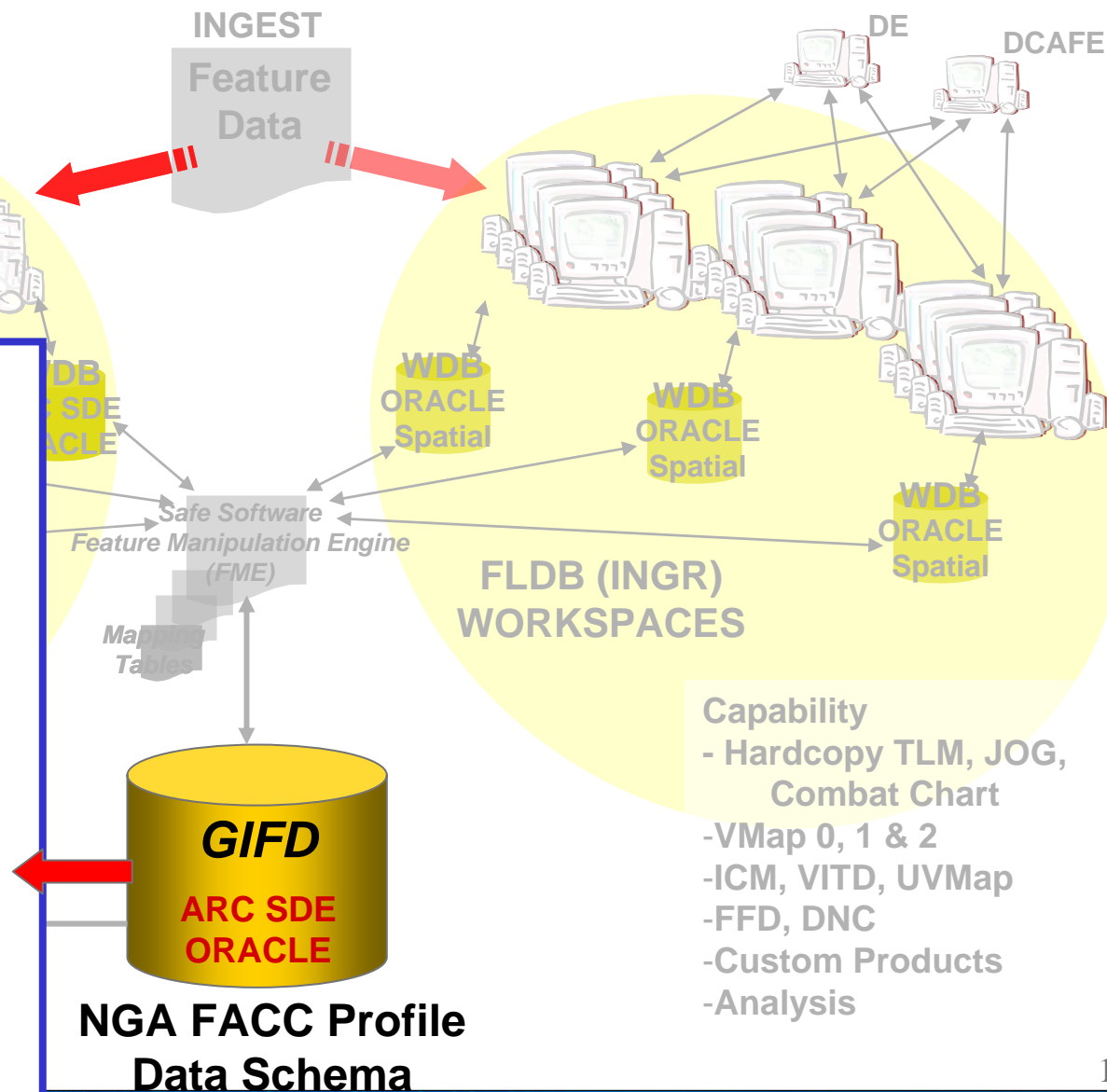
GIFD Contains:

- 400 features types
- point, line & polygon for each
- GeoNames layer
- Contains features from:

- VMap 0, 1, 2
- FFD
- DNC
- TOD
- VITD / DTOP
- UVMap
- WVS

Capability

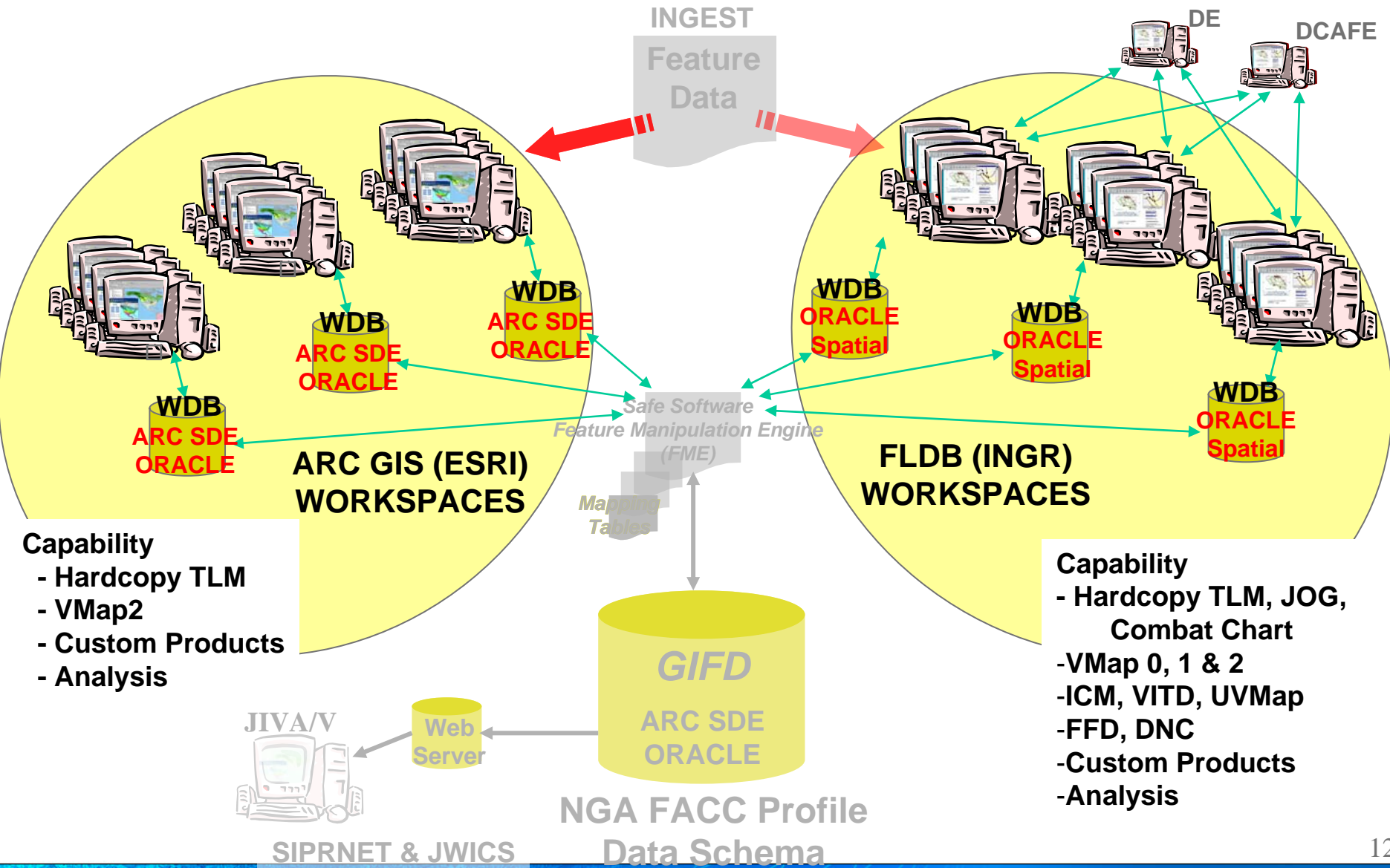
- Hardcopy
- VMap2
- Custom
- Analysis



Capability

- Hardcopy TLM, JOG, Combat Chart
- VMap 0, 1 & 2
- ICM, VITD, UVMap
- FFD, DNC
- Custom Products
- Analysis

► GIDI Output Capability



► Feature Level Metadata



- ACE – Absolute Circular Error
- ACE_EVAL_METHOD_CD – Absolute Circular Error Evaluation Method
- ALE – Absolute Linear Error
- ALE_EVAL_METHOD_CD – Absolute Linear Error Evaluation Method
- CREATION_DATE
- COMMENTS
- COMM_COPYRT_NOTICE – Commercial Copyright Notice
- COMM_LIC_TIER_NOTICE – Distribution of Commercial Data
- COMPLETENESS_CODE – Completeness Code
- OPERATOR
- ORIG_SOURCE_DATE
- ORIG_SOURCE_INFO – Originating Source Information
- ORIGINATING_SOURCE
- ORIGINATOR – Agency that supplied the data
- RSTRN_DCLS_XMPT_CD – Restriction Declassification Exemptions
- RSTRN_DECLASS – Restriction Declassification
- RSTRN_DSEM_CTRL_IC – Restriction Dissemination Control Intelligence Community
- RSTRN_DSEM_CTRL_NIC – Security Dissemination Control Non Intelligence Community
- RSTRN_FOREIGN_GOV – Restriction Foreign Government
- RSTRN_RELEASIBILITY – Restriction Releasability
- SCALE
- SEC_CLS_AUTHORITY – Classification Authority
- SEC_CLS_AUTH_DESC – Security Classification Authority Description
- SEC_CLS_AUTH_MULT – Security Classification Authority Multiple
- SEC_CD_CNTRL – Security Codeword Control
- SEC_CLASS – Security Classification
- SEC_CLASS_SYS_ID – Security Classification System Identifier
- SPEC_ID – Extraction Specification ID
- UPDATE_SOURCE_DATE
- UPDATE_SOURCE_INFO – Review Source Information
- UPDATE_SOURCE
- Z_VALUE_TYPE

► Current GIDI Development



- **Spiral 4 - delivery Jan 04**
 - Expansion of Homeland Security production, analysis, & dissemination capability
 - GIFD ingest validation checks
 - Air Defense Database
 - Contractor/Co-producer data maintenance process
 - Additional workstations joining enterprise - 90

► GDI Output Provided to Customers

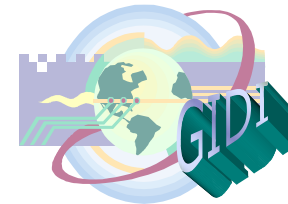


- 1:50K & 1:100K Topographic Line Maps (TLMs)
- Custom Graphics
- CD/DVD copies of data to customers
- Foundation Feature Data
- GA analysis against intelligence issues
- Customer access to data via SIPRNet & JWICS
 - Gateway DB copy updated weekly
 - Data downloads (Arc Shape)
 - .png or .bmp of map window
 - Print map window

► GeoScout Transition

- **GIDI transitioning from Raytheon to GeoScout contract - timeframe 1 Aug 03 - Feb 04.**
- **What is GeoScout**
 - Single contractor for National System for Geospatial Intelligence (NSGI) system integration
 - Data centric environment
 - COTS technology and rapid technology insertion
 - E business approach
 - Information fusion
- **First GIDI delivery under GeoScout 4th Qtr FY04 – under current GIDI architecture**
- **Current GIDI data model to be replaced by target GeoScout data model by Dec 04**

► Future GIDI Spirals



- **Spiral 5 – delivered under GeoScout (4th Qtr FY04)**
 - Integration of Aeronautical Obstruction Environment (AOE) (vertical obstructions)
 - GIFD Data Model Expansion
 - Latest Profile of NGA FACC – adds MSDS requirements
 - Intel attributes – BE#, CAT Code, O Suffix
 - AOE - features and attributes
 - Integrate Socet Set with the GIFD

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► GIFD Feature Data Guidelines

- **Content**
 - Minimum feature content objective for Feature Data to support geospatial intelligence analysis and production will be all 49 features and attributes contained in the Foundation Feature Data (FFD) Specification
 - Feature Data content above the minimum will be based on customer requirements

► GIFD Feature Data Guidelines

- **Metadata**
 - Must include GIFD required metadata
- **Seaming**
 - Must be seamed internally & with adjacent data
- **Accuracy**
 - Contract or in-house work, using existing products as source, must meet or exceed 50 meter horizontal accuracy
 - New feature extraction objective is to meet or exceed 25 meter horizontal accuracy
 - New stereo feature extraction objective is to meet or exceed 20 meter vertical accuracy

► GIFD Feature Data Guidelines

- **3D Data**
 - 3D data is the objective but will be collected based on mission need and available resources
- **Datum**
 - Horizontal & vertical datum - WGS84 ellipsoid
- **Currency**
 - Currency requirement determined by Offices based on mission requirements
- **Geometric/Topologic Integrity required**

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► GIFD Feature Data Population

- GIFD to be populated based on customer needs (variable density)
 - near-global - minimum feature data content at 1:250,000 density
 - key priority areas – densification to mission specific data
- Initial GIFD population:
 - Feature Data contracts - high priority areas, high resolution data, accuracy & currency updates
 - Near-global Database Initialization initiative (VMap1/FFD)
 - lower priority areas, medium resolution, no updates
 - Contract / In-house
- GIFD Maintenance
 - Accuracy & currency updates, densification in priority areas
 - Contract / Co-production / In-house
- Geospatial Co-Production Project being established

► Feature Data Contract Status

- Feature Data contracts focus on an entire country - as a general rule
- Contracts let based on customer priorities
- Deliverable is a DB ingestible into the GIFD
- 15 countries complete
- 25 countries in work
- 1 country in maintenance

► Near-Global DB Initialization Effort

- Effort initiated Mar 03
- Guiding Principles:
 - Ingest available digital data into the GIFD not covered under a Feature Data contract
 - target FY04 for completion
 - consider best available sources
 - VMap1
 - FFD
 - load data as is & add metadata - minimal seaming and no accuracy or currency update - does not meet GIFD Feature Data Standards
 - in-house/contract

► Agenda

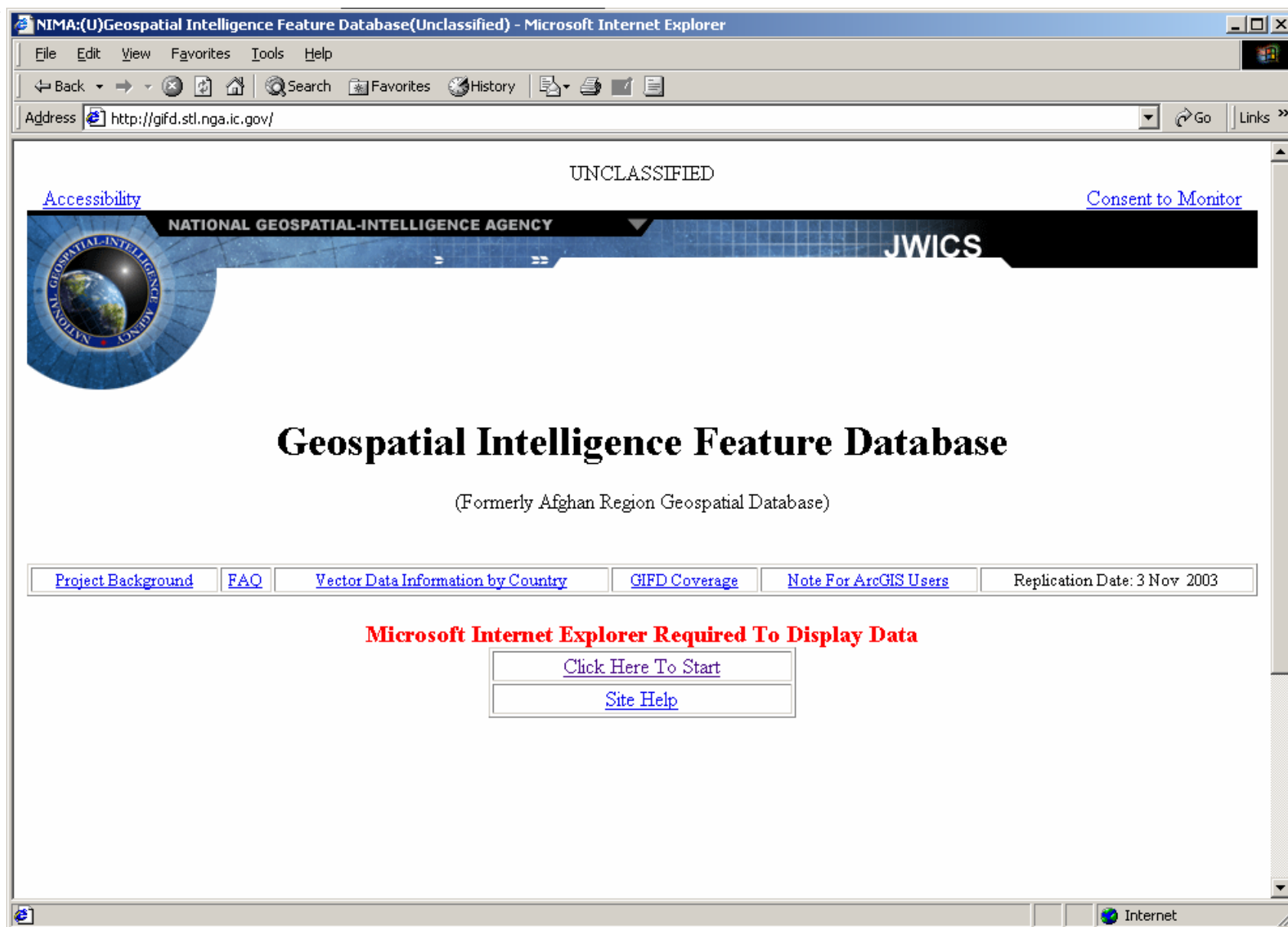
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GIFD Gateway Website

- Consists of:
 - Web map interface (JIVA/V)
 - Replicated copy of the GIFD (updated weekly) and access to Gateway CIB/DTED/CADRG
- Provides customers ability to:
 - perform terrain visualization/evaluation online
 - query GIFD features
 - download GIFD features in Arc Shape format
 - create and print custom views

SIPRNet: <http://gifd.stl.nga.smil.mil/>

JWICS: <http://gifd.stl.nga.ic.gov/>



Country Listing - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History Print

Address <http://gifd.stl.nga.ic.gov/country.html> Go Links

NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY JWICS

Vector Layers Available by Country

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

A:

Afghanistan	Albania	Algeria	American Samoa
Andorra	Angola	Anguilla	Antarctica
Antigua and Barbuda	Argentina	Armenia	Aruba
Ashmore/Cartier Islands	Australia	Austria	Azerbaijan

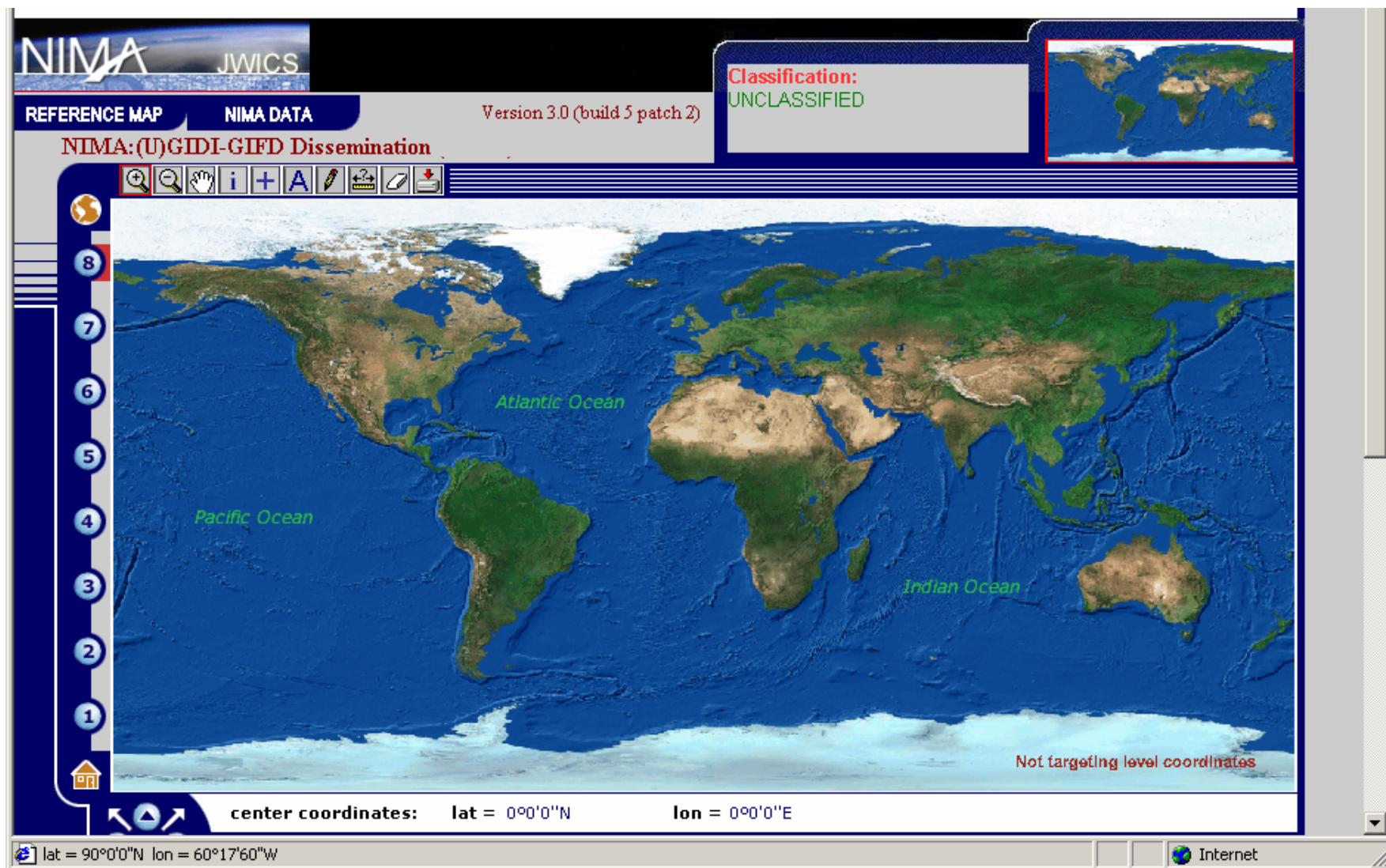
B:

Bahamas	Bahrain	Baker Island	Bangladesh
Barbados	Basra Da India	Belarus	Belgium

Done Internet

► Country Metadata Page

- Provides summary metadata for country feature data
 - Layers available
 - Data accuracy
 - Data density
 - Data currency
 - Security classification
 - Data limitations



NIMA JWICS

REFERENCE MAP NIMA DATA Version 3.0 (build 5 patch 2)

Classification: UNCLASSIFIED

NIMA:(U)GIDI-GIFD Dissemination

Map of the Middle East and surrounding regions, showing countries like Turkey, Iran, Saudi Arabia, Egypt, and others. Major cities labeled include Nicosia, Beirut, Amman, Cairo, Jerusalem, Baghdad, Tehran, Ashkhabad, Al Kuwait, Al-Manamah, Doha, Abu Dhabi, Masqat, and Ar Riyad. The Atlantic Ocean and Indian Ocean are also labeled.

center coordinates: lat = 30°19'12"N lon = 48°25'12"E

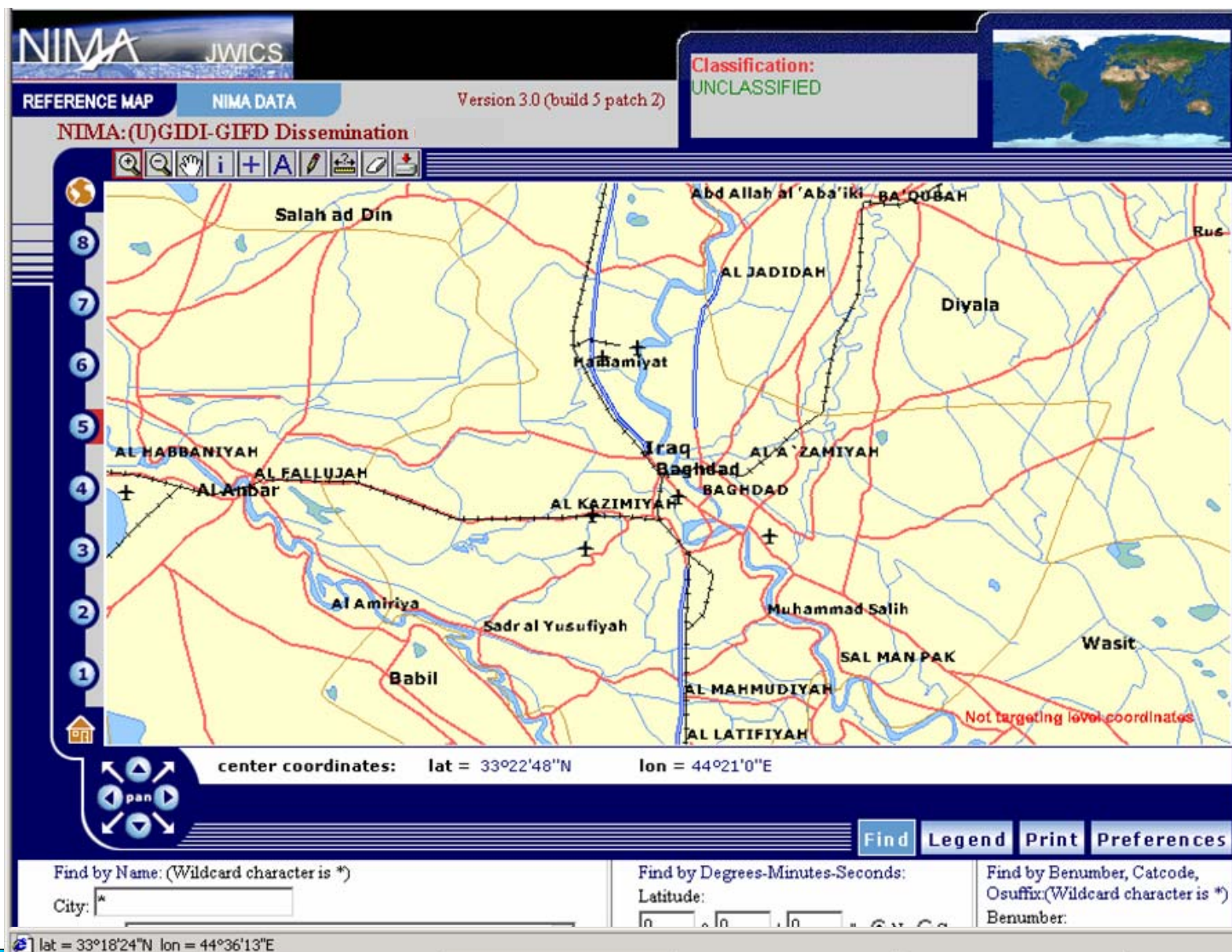
Find by Name: (Wildcard character is *)
City: *

Find by Degrees-Minutes-Seconds:
Latitude: [] [] [] [] [] [] [] [] [] []
Longitude: [] [] [] [] [] [] [] [] [] []

Find by Benumber, Catcode, Osuffix (Wildcard character is *)
Benumber: [] [] [] [] [] [] [] [] [] []

Find Legend Print Preferences

lat = 30°10'43"N lon = 48°2'53"E



Microsoft Internet Explorer

DGInet

NOTE: Click on links below to see subcategories

▼ **NIMA**

- Points
- Lines**
- Polygons
- NIMA GATEWAY CADRG
- NIMA GATEWAY CIB
- NIMA GATEWAY DTED

Refresh Map *Note Click "Refresh Map" after making selections below.

Lines

Security Marking

•

Selection Options

☐ Select Some ☐ Select All ☒ Clear All

- ☐ **Aeronautical**
- ☐ **Aids to Navigation**
- ☐ **Boundaries**
- ☐ **Defensive Structures**
- ☐ **Elevation**
- ☐ **Ground Transportation**
- ☐ **Inland Water**
- ☐ **Maritime Limits**
- ☐ **Ocean Environment**
- ☐ **Physiography**
- ☐ **Population**
- ☐ **Ports and Harbors**
- ☐ **Utilities and Industry**
- ☐ **Vegetation**

DGI-NET - Microsoft Internet Explorer



NOTE: Click on links below to see subcategories

▼ NIMA

[Points](#)[Lines](#)[Polygons](#)[NIMA GATEWAY CADRG](#)[NIMA GATEWAY CIB](#)[NIMA GATEWAY DTED](#)

Refresh Map

*Note Click "Refresh Map" after making selections below.

Selection Options

☒ Select Some ☐ Select All ☐ Clear All

▼ Aeronautical

- ☐ Airport/Airfield Line (GB005)
- ☐ Airport Lighting Line (GB010)
- ☐ Helicopter Landing Pad Line (GB030)
- ☐ Heliport Line (GB035)
- ☐ Overrun/Stopway Line (GB045)
- ☐ Revetment (Airfield/Equipment/Facilities) Line (GB050)
- ☐ Runway Line (GB055)
- ☐ Seaplane Landing/Seaplane Take-Off Area Line (GB070)
- ☐ Seaplane Base Line (GB065)
- ☐ Taxiway Line (GB075)

▼ Aids to Navigation

- ☐ Leading Line (BC100)
- ☐ Light Line (BC040)
- ☐ Light Sector Line (BC060)
- ☐ Lighthouse Line (BC050)

▼ Boundaries

- ☐ Administrative Boundary Line (FA000)
- ☐ Coastline/Shoreline (BA010)
- ☐ Fence Line (AL070)
- ☐ International Date Line (FA110)
- ☐ Wall Line (AL260)

▼ Defensive Structures

▼ Elevation

▼ Ground Transportation

▼ Inland Water

▼ Maritime Limits

▼ Ocean Environment

DGI-NET - Microsoft Internet Explorer



NOTE: Click on links below to see subcategories

▼ NIMA[Points](#)[Lines](#)[Polygons](#)[NIMA GATEWAY CADRG](#)[NIMA GATEWAY CIB](#)[NIMA GATEWAY DTED](#)**Refresh Map**

*Note Click "Refresh Map" after making selections below.

NIMA GATEWAY CIB**Security Marking****Selection Options**

☒ **Select Some** ☐ **Select All** ☐ **Clear All**

General☐ 10 Meter CIB☐ 5 Meter CIB☐ 1 Meter CIB

DGI-NET - Microsoft Internet Explorer



NOTE: Click on links below to see subcategories

▼ NIMA[Points](#)[Lines](#)[Polygons](#)[NIMA GATEWAY CADRG](#)[NIMA GATEWAY CIB](#)[NIMA GATEWAY DTED](#)**Refresh Map**

*Note Click "Refresh Map" after making selections below.

NIMA GATEWAY DTED**Security Marking****Selection Options**

☒ [Select Some](#) ☐ [Select All](#) ☐ [Clear All](#)

General

☐ DTED Level 0 (30 arc seconds)

☒ DTED Level 1 (3 arc seconds)

☐ DTED Level 2 (1 arc seconds)

DGI-NET - Microsoft Internet Explorer



NOTE: Click on links below to see subcategories

▼ NIMA

[Points](#)[Lines](#)[Polygons](#)[NIMA GATEWAY CADRG](#)[NIMA GATEWAY CIB](#)[NIMA GATEWAY DTED](#)

Refresh Map

*Note Click "Refresh Map" after making selections below.

NIMA GATEWAY CADRG

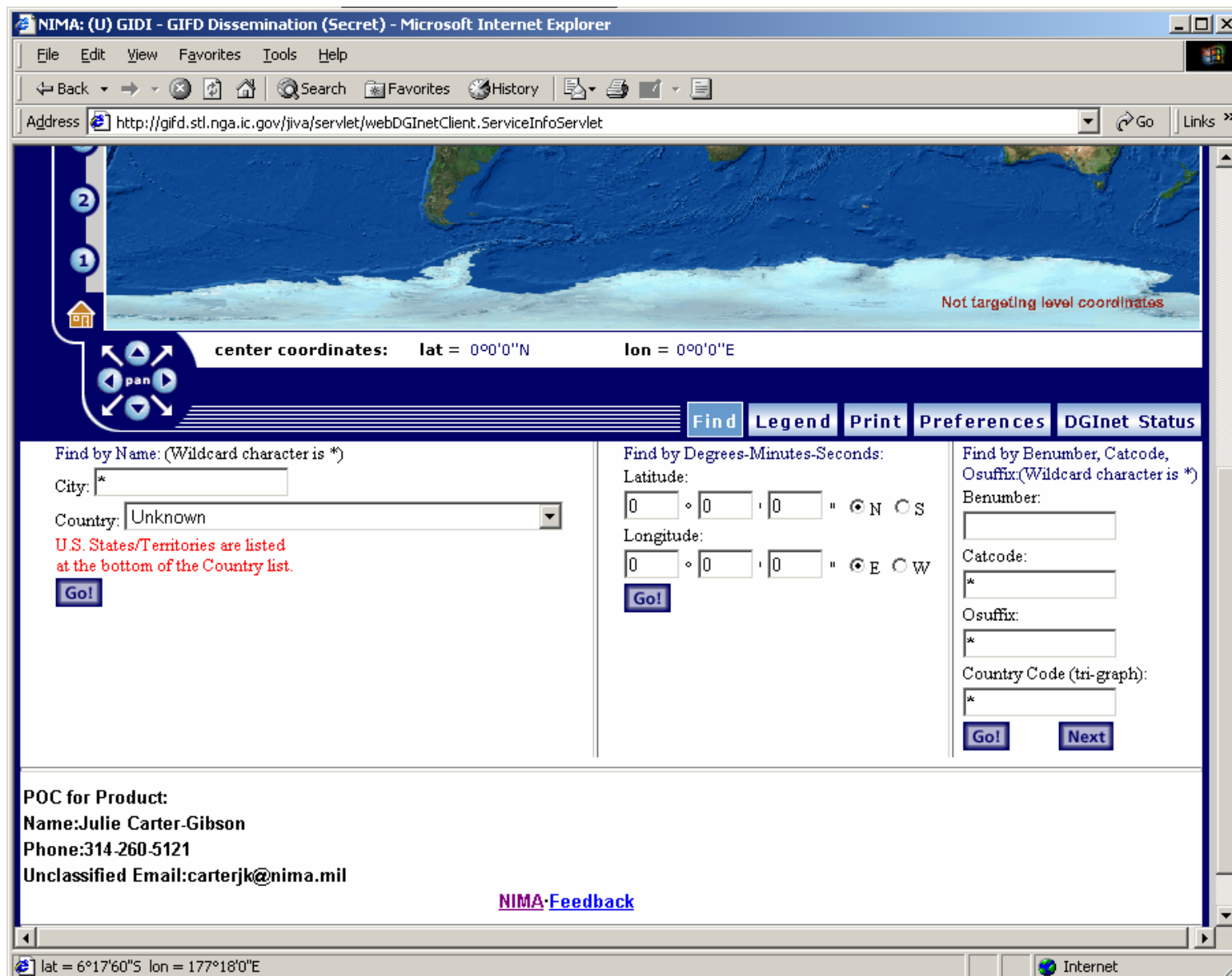
Security Marking

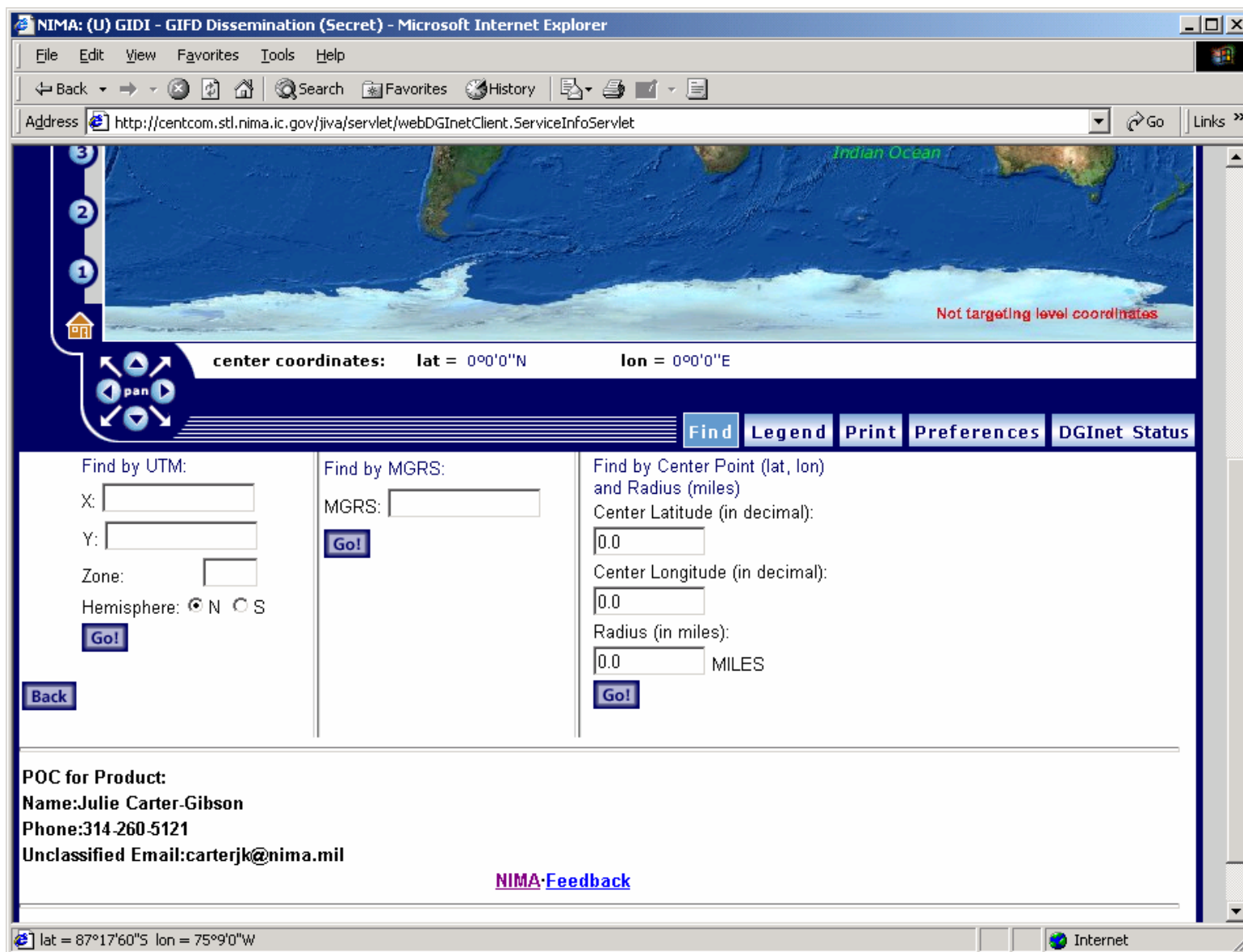
Selection Options

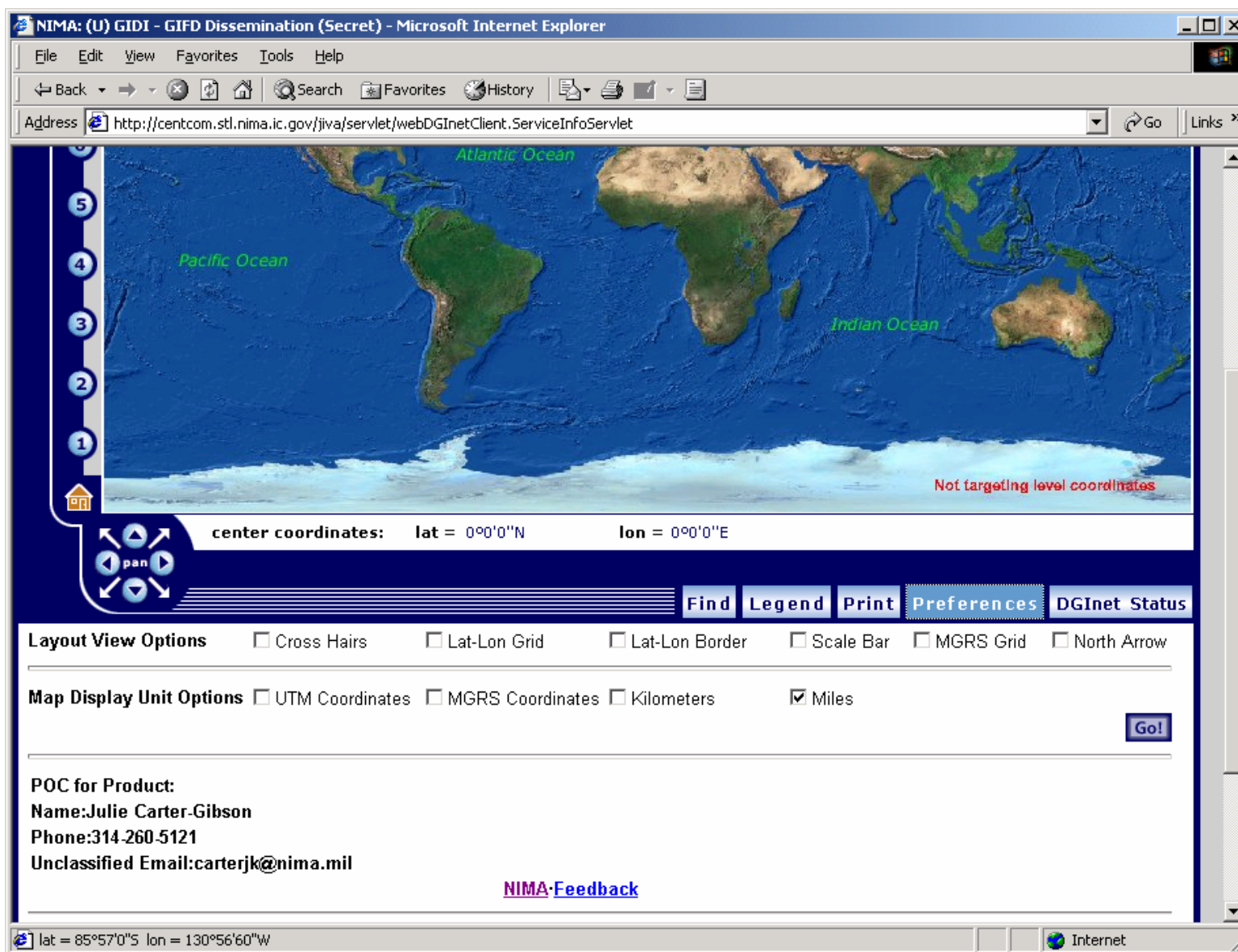
☒ Select Some ☐ Select All ☐ Clear All

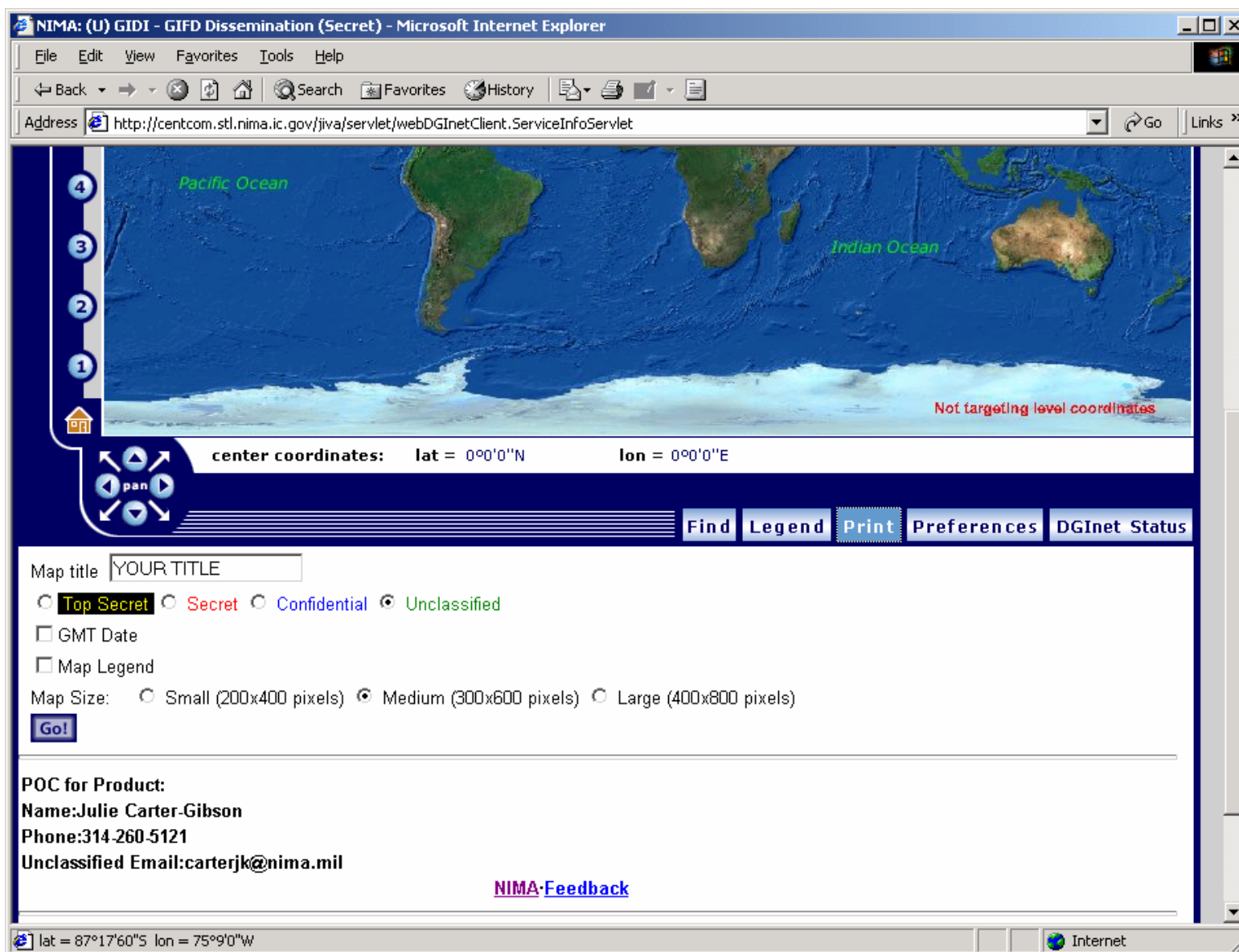
General

- ☐ 1:5M Global Navigational Chart (GNC) CADRG
- ☐ 1:2M Joint Navigational Chart (JNN) CADRG
- ☐ 1:1M Operational Navigational Chart (ONC) CADRG
- ☐ 1:500K Tactical Pilotage Chart (TPC) CADRG
- ☐ 1:250K Joint Operational Chart (JOG) CADRG
- ☐ 1:100K Topographic Line Map (TLM) CADRG
- ☐ 1:50K Topographic Line Map (TLM) CADRG









Microsoft Internet Explorer window titled "DGINET - Data Extraction". The page header is "Toolbox" with a yellow button labeled "data extraction".

Provider	Product	Security	File Size	Est. download time	Download
NIMA	Lines	SECRET	269.79 kb	37 secs for 56k 1 secs for T1	
NIMA	Polygons	SECRET	69.75 kb	9 secs for 56k 0 secs for T1	
NIMA	Points	SECRET	257.6 kb	35 secs for 56k 1 secs for T1	

► Summary

- **NGA continues its commitment to the Foundation Data Concept in support of Readiness & Responsiveness**
 - **Foundation Data**
 - **Mission Specific Data**
- **GIDI initiates NGA's effort to create a data-centric GIS Enterprise enabling responsive data production, analysis and dissemination**

NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ▼

➤ *Know the Earth...Show the Way* ➤➤ ➤

