



Enabling the GeoSpatial Warrior in the Expeditionary Site Mapping Environment



USCENTAF 9th AF - Expeditionary
GeoBase

Shaw AFB, SC

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In today's modern Air Force, the GeoSpatial Warrior has become critical to all forms of the military's expanded role in a highly technological, ever changing and fast paced world.

Our role is to prepare the warfighter to **Locate, Map, Assess and Enable** all elements in the modern war fighting environment.

Locate tools such as Survey and Map grade GPS equipment allow the **Mapping** of any and all pertinent entities.

Assessment tools such as the Software and Hardware to accurately determine spatial relationships among these entities.

Tools to serve out these assessments **Enable** end users to access critical information in near real-time via the World Wide Web.



A-7 Forward

Issues:

- Vacant GIO Position at USCENTAF Forward
- No Continuity
- No Direction
- Lack of skill sets
- Maps managed in CAD format
- Data not compliant to Spatial Data
- Standards for Facility Infrastructure and Environment.

Solutions

- GIO at USCENTAF Forward
 - Continuity
 - Direction
- Developed an in-residence Just-in-Time training course
- Created customized databases with digitized installation features

SURVEYING TOOLS

Trimble Geo XT



Accuracy : Sub-meter 30mm
(post processed)

Primary Purpose: Expeditionary
surveying of airfield areas during
assessments



SURVEYING TOOLS

Trimble 5700

Accuracy : Survey Grade 10mm

Primary Purpose: Sustainment
phase surveying of critical features





Reachback Support

(Shaw AFB)

➤ Learn

➤ Deploy

➤ Reachback

Location, Location, Location

- Accurate data? What's that?
- Good equipment and knowledgeable users
 - Easily avoid these issues
- Good software and knowledgeable users
 - Easily convert good data into good cartographic products



Field Collection



Globe image credit:
<http://www.garmin.com/aboutGPS/>

Assessment, Assessment, Assessment

The Common Installation Picture (CIP)



Is anybody listening to us?

- Are the forward personnel executing our directives?
- Have the attempts to standardize been frivolous?
- Let's check and see . . .

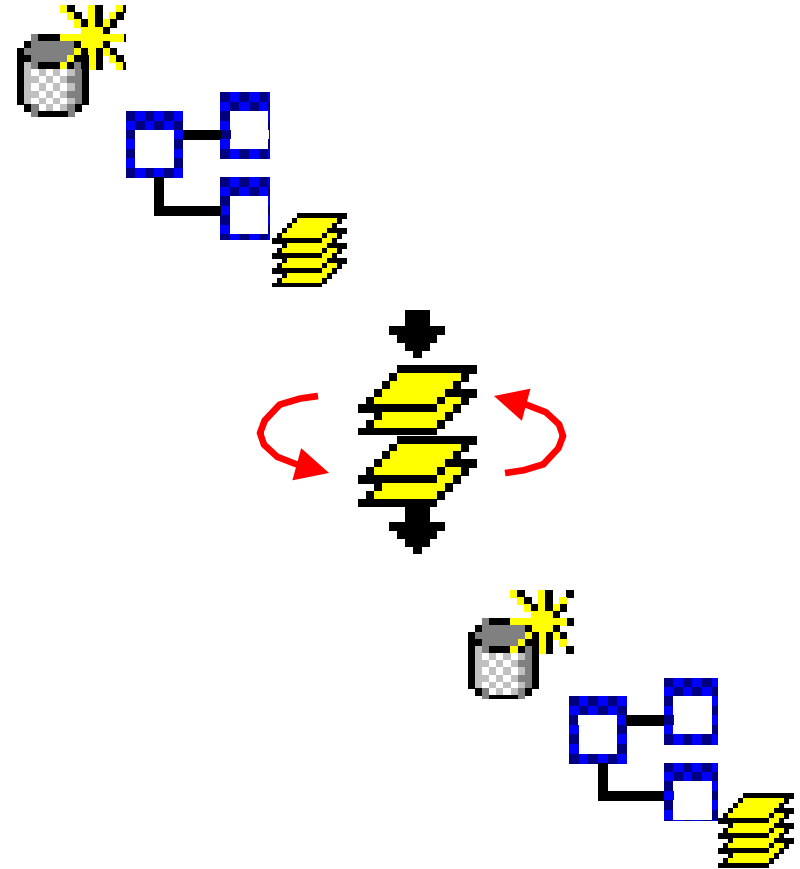
Master vs. Test PGDBs

My_Master_PGDB.mdb

- correct spatial reference
- correct feature datasets
- correct feature classes
- correct fields
 - ~ assigned domains
 - ~ proper subtypes
 - ~ data types, etc.

My_Test_PGDB.mdb

→ does it conform???



Why the CIP Checker?

- to reveal deviation from baseline CIP
- to ensure that select attribute fields which are essential to a usable “smart map” are present and populated
- to maintain a rigid standard which any and all successive rotations will understand and adhere to whether at Baghdad or Elsewhere.

Basic CIP Structure

- **Feature Datasets and Feature Classes**

- Are all of them present?
- Are there any extras?



- **Required Fields**

- Which are most important?
- Are they populated?

The screenshot shows a table window titled 'Attributes of runways'. The table has three columns: 'name', 'number_', and 'bearing'. There are two rows of data.

| | name | number_ | bearing |
|---|--------------|---------|---------|
| ▶ | green runway | 625 | 80dNE |
| | red runway | 338 | 80dNE |

Basic CIP Structure

✓ Move extra elements to separate container

✓ Create those that are missing

✓ Merge relevant data

Reports:

| Feature Dataset Comparison | | | 20% |
|----------------------------|-----------|------------|-----|
| Feature Dataset | In Master | In Testing | |
| AIRFIELD_ZONE | Yes | No | |
| ROAD | Yes | No | |
| WATER | Yes | No | |
| BUILDING | Yes | No | |

| Feature Class Comparison | | | | 85% |
|--------------------------|---------------|-----------|------------|-----|
| Feature Dataset | Feature Class | In Master | In Testing | |
| AIRFIELD_ZONE | RUNWAY | Yes | No | |
| AIRFIELD_ZONE | HANGAR | No | Yes | |
| AIRFIELD_ZONE | FUEL | Yes | No | |
| ROAD | INTERSECTION | No | Yes | |
| ROAD | LANE | Yes | No | |
| ROAD | PAINTED_LINES | No | Yes | |
| ROAD | CURB | Yes | No | |
| WATER | LAKE | No | Yes | |
| WATER | STREAM | Yes | No | |
| BUILDING | HOUSE | No | Yes | |
| BUILDING | OFFICE | Yes | No | |
| BUILDING | GYM | No | Yes | |
| BUILDING | LATRINE | Yes | No | |

Basic CIP Structure

Which bases have complied with the HAF CIP?

| BASE | Group 1 | baseline |
|--------|---------|----------|
| | | |
| base 1 | | Y |
| base 2 | | N |
| base 3 | | Y |
| base 4 | | Y |
| base 5 | | N |

Reporting Procedures

Of the required attribute fields, what percentage are populated?

| BASE | Group 1 | Avg. Complete | Priority 1 | Priority 2 | Priority 3 | Priority 4 |
|--------|---------|---------------|------------|------------|------------|------------|
| | | | name | number | location | ID |
| base 1 | | 35% | 0% | 40% | 0% | 40% |
| base 2 | | 66% | 75% | 75% | 75% | 75% |
| base 3 | | 17% | 25% | 50% | 0% | 0% |
| base 4 | | 53% | 75% | 75% | 50% | 50% |
| base 5 | | 5% | 25% | 25% | 0% | 0% |
| base 6 | | 38% | 56% | 52% | 25% | 25% |

These raw numbers are squeezed into some formulas and . . .

Reporting Procedures

Weighted Percentages

This weighted score shows the monthly progress of each base while considering the relative value of each element.

| BASE | JAN | FEB | MAR | |
|--------|-----|-----|-----|-----------------|
| base 1 | 25% | 65% | 80% | ≥ 90% |
| base 2 | 10% | 25% | 98% | |
| base 3 | 51% | 60% | 74% | ≥ 65% and < 90% |
| base 4 | 40% | 75% | 82% | |
| base 5 | 90% | 90% | 90% | < 65% |
| base 6 | 10% | 15% | 92% | |

| | |
|--|----------------------------|
| These percentages are derived by taking the weighted score of each group and adding them together. | Weighted Attribute % = 33% |
| | Geometry = 33% |
| | Metadata = 34% |

| |
|---|
| EXAMPLE: |
| base 1 Attributes = 77% |
| base 1 Geometry = 90% |
| base 1 Metadata = 90% |
| $77\% \times 33\% = 25\%$ >>> $90\% \times 33\% = 30\%$ >>> $90\% \times 34\% = 31\%$ >>> 86 % overall |



Reporting Procedures

These percentages are derived by taking the weighted score of each group and adding them together.

Weighted Attribute % = 33%

Geometry = 33%

Metadata = 34%

EXAMPLE:

base 1 Attributes = 77%

base 1 Geometry = 90%

base 1 Metadata = 90%

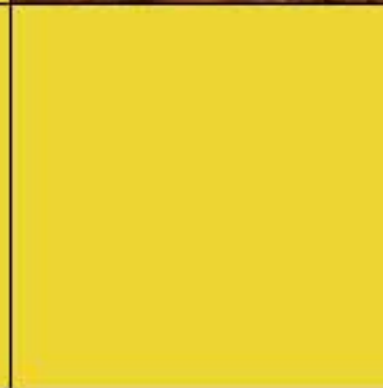
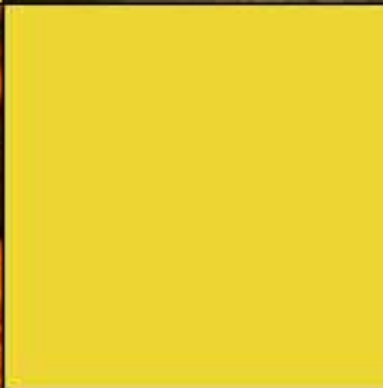
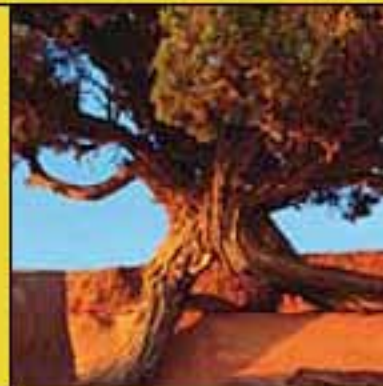
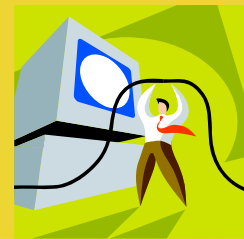
$77\% \times 33\% = 25\%$ >>>

$90\% \times 33\% = 30\%$ >>>

$90\% \times 34\% = 31\%$

>>> **86 % overall**

End User



Web Services

Publish to myriad DoD customers for daily use

Update frequently for nearly seamless continuity

Continue building operational excellence for sustained domination in the global War on Terror

USCENTAF 9th AF - Expeditionary GeoBase

QA/QC Support provided by:

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Implementation Plan created by:

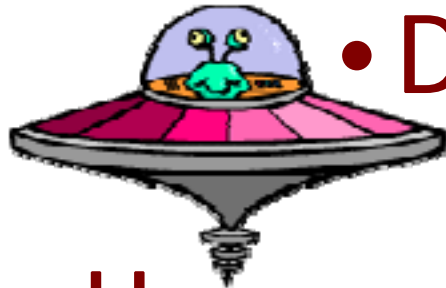
MSgt Robert Meadows-Shaw US

Plan amended through consultation with:

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- Don't drink and drive
- Have your pets spayed or neutered
- Reduce, reuse, recycle
- Have a great day!

