



SBCCOM Geospatial Initiatives

RestOps / TBMCS-UL
(The ROIM)

GeoBase
CASPOD

SBCCOM
Fall 2002

Report Documentation Page

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RestOps & TBMCS-UL

The ROIM



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RestOps:

*Geospatial Information Systems
Supporting Base Recovery After
Attack*

Joint Service GeoBase CIP Utilization
Wing Situation Awareness

- NBC
- Decision Systems
- Response and Recovery Operations



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TBMCS-UL:

*Theater Battle Management
Core System - Unit Level*

Joint Service GeoBase CIP Utilization *Theater Situation Awareness*

- Decision Systems
- Battle Management
- Air Operations



Operational Perspectives

Scoped Operations Through

- Joint Service Cooperation
- Multiple Stakeholders
- Decision System Integration
- Engineering/Requirements Share
- Technology/Requirements Migration

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Stakeholders

- DTRA (RestOps)
- SBCCOM (RestOps)
- AFRL (Rome Labs)
- TBMCS-UL PACAF/AFC2ISRC/ESC
- ACTD
 - Advanced Concept Technology Demonstration
- TBMCS-UL Spiral schedules

GeoBase:

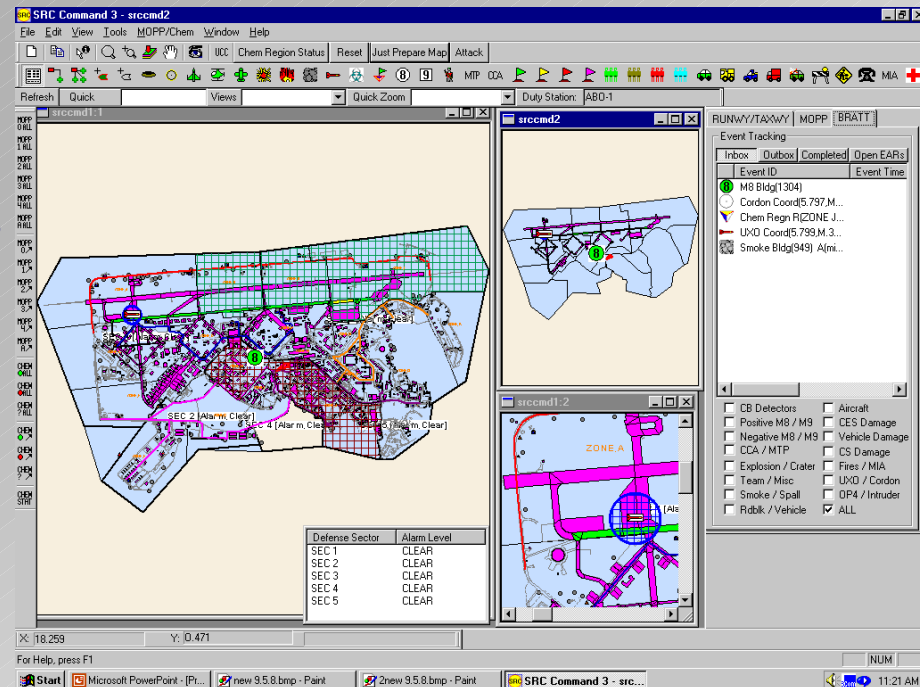
- HAF GIO
- MAJCOM GIO(s)
- FOA GIO



RestOps / TBMCS-UL SRC

- SRC 'Map Tool'
 - Map Objects 2.1/C++/Oracle 9i/Shapefiles
 - Geospatial Situation Awareness Decision System
 - *Not a GIS*
- Integration with TBMCS-UL Spirals
 - Technology and Distribution
 - Oracle 9i AODB RDBMS migration

1. Situation Awareness
2. NBC Operations
3. Recovery/Response
4. Event Management
5. Force Protection



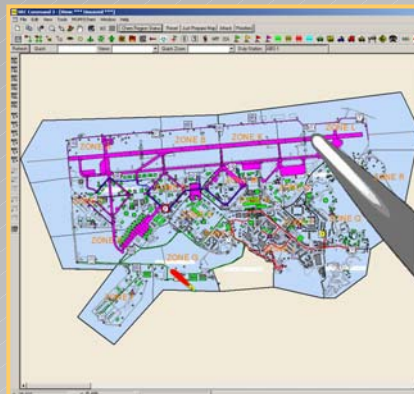
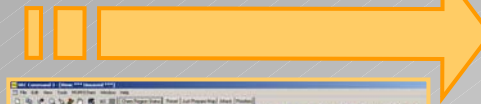
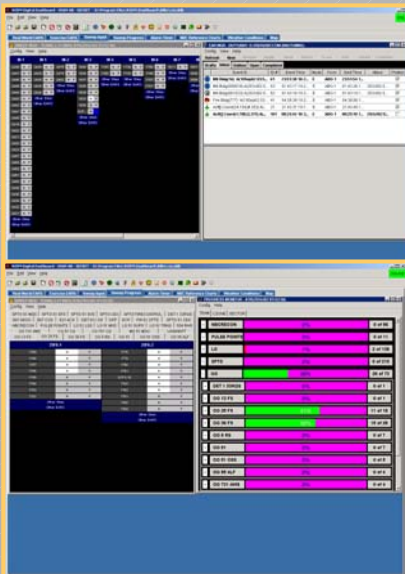
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RestOps IT Decision Systems

ROIM (RestOps Information Management) System

- Integrated, multi-system SA decision tool
 - SRC Map Tool: the Geospatial viewer
 - Digital Dashboard: post attack, response and recovery ops
 - NBC RPM Tool: sensor integration, hazard prediction, messaging tool



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Operational Scope

Common Operating Picture

- Automated Sweep Tool to input recon results
- Networked CB sensors providing real-time inputs
- Integrated NBC modeling and messaging
- Integrated command and control directives

Situational Awareness

- Enhanced sweep progress monitor showing team status and results
- Automated hazard and event visualization
- Seamless downwind hazard display
- Real-time weather feeds
- Advanced Data Wall display

Event Management

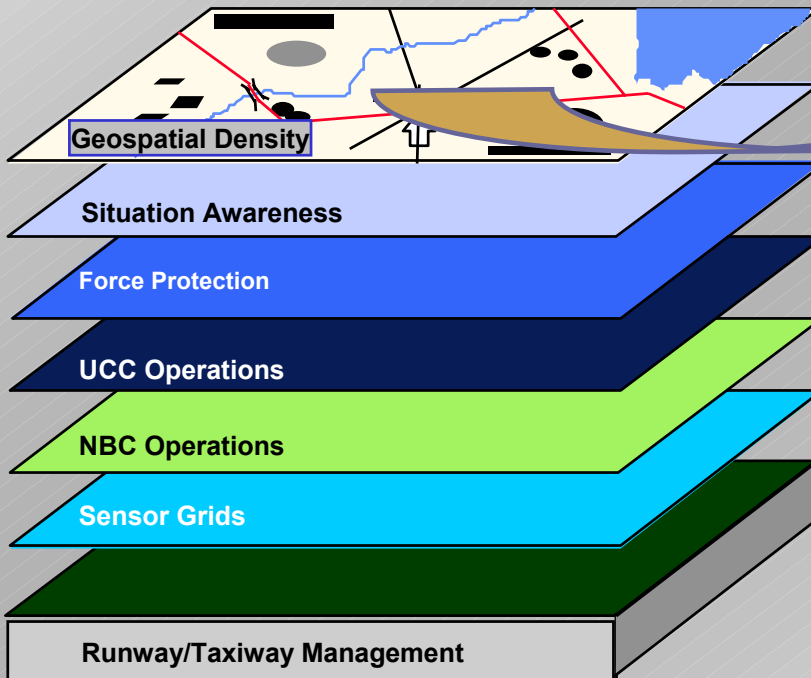
- Tools to set attacks & parameters (MOPP levels) and parse incoming data
- Electronic event reporting and tracking for the duration of the event
- User defined interface allowing for tailored views of the data
- After action tools



RestOps Scope

Wing NBC/Operational
Location - Extent - Attribution

Geospatial Processing
Symbolization
Tracking
Thematic Display



- Dense Thematic Layering
- Expansive and Specific Attribution
- NBC Data Format/Flow
- Heavy Facilities Functionality
- Situation Awareness High
- Force Protection

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RestOps & TBMCS-UL Operational Environments

TBMCS-UL

- i. SIPRNET
- ii. Spiral Driven Specifications
- iii. No Accuracy Standards
- iv. Spiral Geospatial procedures, methodologies, minimal toolsets
- v. Best-Fit Spiral Scope
- vi. Spiral Deployment Dependencies
- vii. AODB Oracle 9i Schema

RestOps

- i. SIPRNET
- ii. ACTD/Spiral Driven Geospatial Specifications
- iii. Spiral Accuracy Requirements
- iv. Spiral Geospatial procedures, methodologies, minimal toolsets
- v. ACTD/LUA Requirements
- vi. Spiral Deployment Dependencies
- vii. Oracle 9i ROIMS/AODB Schema



Decision Systems Scope

TBMCS-UL

Theater Battle Management

Unit Level



Theater Area of Interest

Air Operations
Facilities Status
Limited CIP Awareness
Resource Awareness

RestOps

Restoration of Operations



Wing Area of Responsibility

Wing Operations/Wing AOI
Airfield Operations and Resources
Facilities, Transportation, Utilities
CIP Awareness High
Situation Awareness High

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Dual Interface – Data Flow

- RestOps

 - Osan ACTD

 - Geospatial accuracies and Robust attribution

 - Flexible display parameters for

 - Sensors, Assets, MDS

 - EAR Data Entry

 - Real Time Situation Awareness; SRC

- TBMCS-UL

 - Base Specific (CAF wide)

 - Location with minimal attribution

 - Vectors of GeoBase CIP suffice

 - JSP Data Entry/Recovery

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System Structure

- Oracle 9i
Backbone

Database
Oracle 9i
Cascading Schemas
ULRMDB

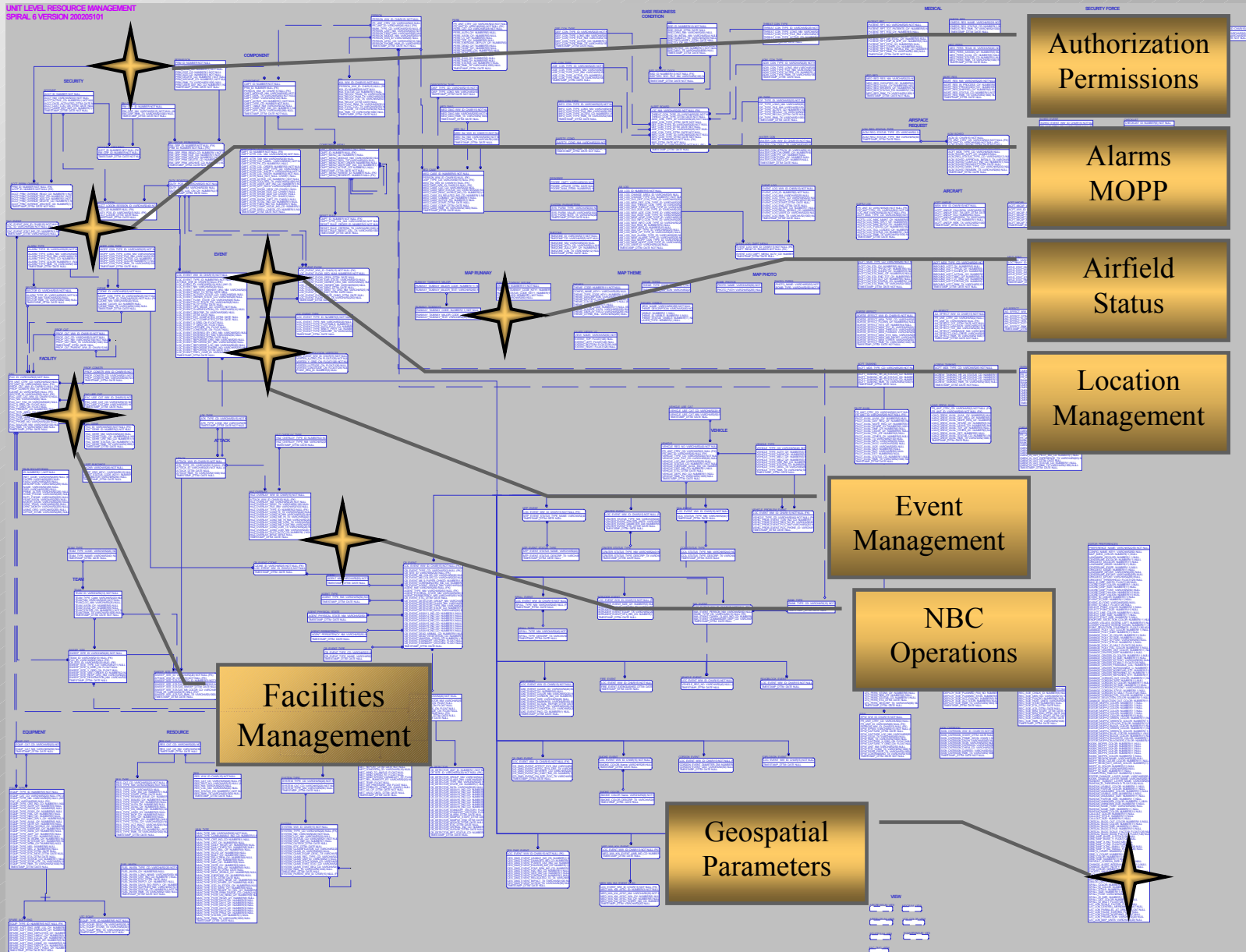
- ESRI Shapefile
Layers

Geospatial
Shapefiles
Populated Attribution
AODB - ULRMDB



Oracle AODB ULRMDB Tier Schema

UNITY LEVEL RESOURCE MANAGEMENT
SPIRAL 6 VERSION 200205101



Authorization
Permissions

Alarms
MOPP

Airfield
Status

Location
Management

Event
Management

NBC
Operations

Facilities
Management

Geospatial
Parameters

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C/JMTK

Joint Service Integration



C/JMTK

- **Thick Clients:**
ArcView/ArcObjects
extended by
ArcSDE, Spatial
Analyst and 3D
Analyst
 - **Thin Clients:**
MapObjects Java
Standard Edition (or
browsers such as
IE/Netscape).
 - **Application Server:**
ArcIMS
 - **Data Server:** ArcSDE
- Process/Production:**
- Military Overlay
Editor/Military
Analyst – Client and
Server
 - 'Tracking' Elements
- Client and Server
 - Extended Toolsets:



Core Products

ESRI Products

ArcInfo ArcEditor ArcView
ArcGIS 3D Analyst ArcGIS Spatial Analyst
ArcGIS Geostatistical Analyst ArcSDE
ArcIMS MOLE ArcPad MOJE

ERDAS Products

IMAGINE JMTK *Bundle Upgrade to IMAGINE Professional*
Imagizer Toolkit Radar-Mapping Suite Orthobase (Windows)
Stereo Analyst (Windows)

AGI Products

STK/Professional STK/Connect
STK/Visualization Option *Standard and Advanced*
STK/Pro/AVO Bundle HREI-GeoSphere
HREI-Basic FOTE HREI- Adv FOTE HREI- Planet Earth

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GeoBase

An Air Force Geospatial Initiative

RestOps Mission Data Set

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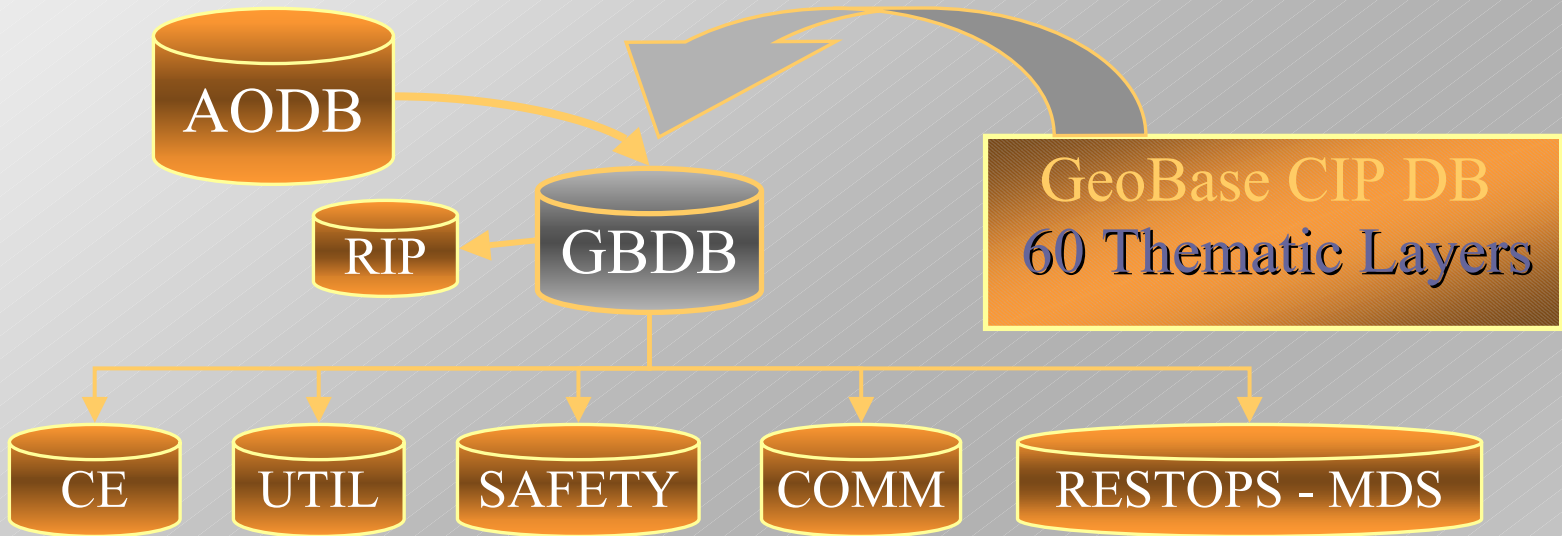
GeoBase c. Fall 2002

Dimensions

Strategic	Airspace & Ranges, BRAC Support, Homeland Security
Expeditionary	Expeditionary Base Planning, Operations (FOL)
Garrison	Garrison Basing Operations

The GeoBase CIP Concept

- Vision: “One Installation.....One Map
- Mission: “Attain, maintain, and sustain one Geospatial *info-structure* for breakthrough capability”



- AIRFIELD MARKING
- AIRFIELD PAVEMENT
- AFLD SAFETY FEAT.
- ATHLETIC COURT
- ATHLETIC FIELD
- BASE BOUNDARY
- BOAT RAMP
- BRIDGE
- BRIDGE CENTERLINE
- BUILDING
- CAMP SITE
- CAMPGROUND
- COMM. TOWER
- CURB
- DAM
- DRIVEWAY
- FENCE
- FIRING RANGE
- FLOOD ZONE

- FOOTBRIDGE
- FOOTBR. CENTERLI.
- GATE
- GOLF COURSE
- GOLF CRS. BUNKER
- GOLF CRS. FAIRWAY
- LAKE
- LEVEE
- MISC REC. AREA
- NAVAID
- PARK
- PARKING AREA
- PIER
- PLAYGROUND
- RAILROAD BRIDGE
- RR BRDG CENTERLI.
- RAILROAD CENTRLI.

- RECREA. FEATURE
- REVETMENT
- ROAD
- MET. SENSOR
- MET. STATION
- MIL TRAINING SITE
- MISC FEATURE
- ROAD CENTERLINE
- SAN. SEWER TR. PL.
- SHED
- SHORELINE
- SIDEWALK
- SLAB
- SPOT ELEVATION
- STREAM
- SWIMMING POOL

- TOPOGR. CONTOUR
- TOWER
- TRAIL
- TUNNEL
- TUNNEL CENTERLI.
- VEG AREA
- WATER TOWER

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GeoBase Operational Environments

- GeoBase (Garrison/Strategic)
 - SDS 2.0+
 - NIPRNET
 - Engineering Accuracy
 - Documented GIS Methods, Procedures, and Toolsets
 - Centralized and Integrated CIP
 - One Installation... One Map
 - SDS Schema/CIP
- GeoBase (Expeditionary)
 - SIPRNET
 - SDS 2.0+ / AAFIF / VPF
 - Variable Accuracy
 - Documented GIS Methodologies, Procedures, and Toolsets
 - Centralized and Integrated FOL deliverable
 - IMS solutions
 - Graded CIP

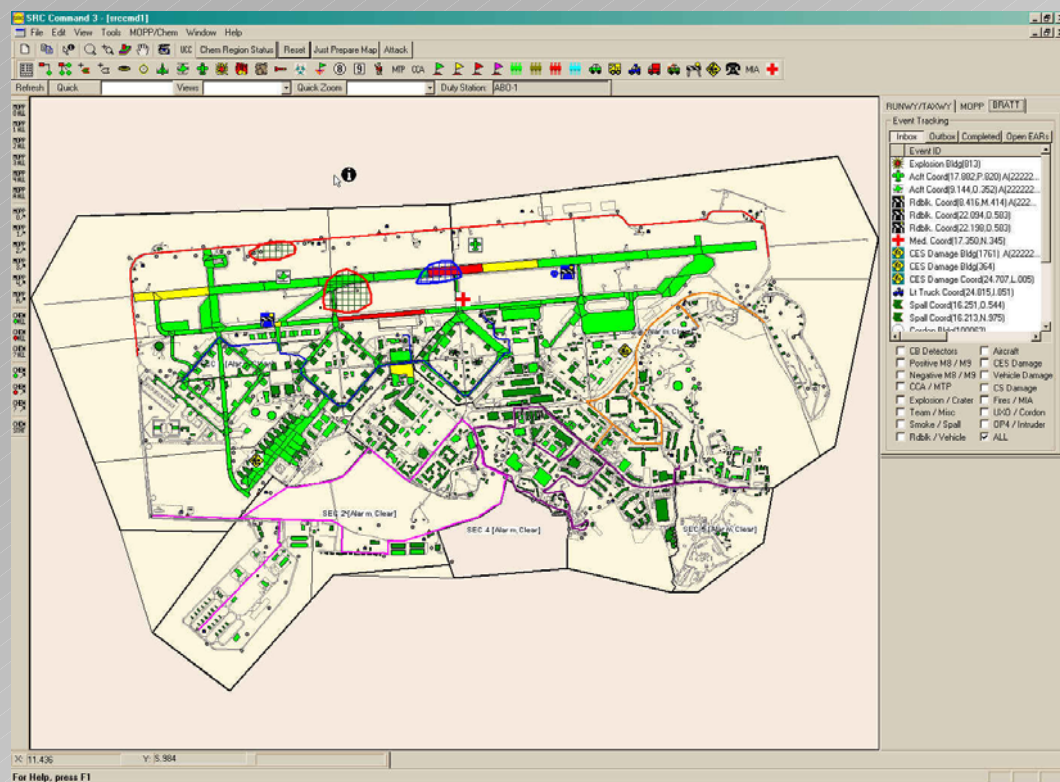


Present GeoBase CIP Utilization

- Spiral Implementation
 - Spiral 7
 - GeoBase CIP Utilization (Base Specific)
 - CAF Wide (ACC, USAFE working...)
- Active PACAF GeoBase

– 9 Bases

- Hickam
- Eielson
- Elmendorf
- Kadena
- Misawa
- Osan
- Kunsan
- Andersen
- Yokota



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GeoBase Enablement = Integrated Access

- Spiral 7/8 TBMCS-UL Schedules
 - RestOps extended engineering support
 - Titan AES, ITT AES, DTRA, SBCCOM, SAIC, (and Lockheed Martin through TBMCS-FL)

Migrate – Normalize

- Data Integrity and OPEN Utilization Priority
- Primary ‘Dynamic’ Schema Elements
 - Facilities
 - Events
 - Airfields
 - Scoped SA

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Data Relevancy



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Operating Picture

- NBC Operational Management
 - Integrated sensors, process, response-operations
 - Real Time inputs, modeling, messaging
 - C2, SA, FP, R/R

Situation Awareness

- Operational response visualization, status, display
- Response and Recovery
- Real Time data; operations, weather, sensors

Event Management

- Event recording, tracking, analyses
- Real Time visualization through Geospatial representation
- Active differentiation through symbology



'01 – '02 Lessons Learned

Relevance of SCOPE to Geospatial Utility

Importance of Joint Service Process and Development

Importance of Joint Service Solution Integration

Dynamic GeoBase CIP utilization

Relevance of Scoped Situation Awareness

Extended GeoBase CIP Flexibility Requirements

Enable Levels of Standardization (*not always easy*)

Importance of Base Level Communication; data

Normalization, Communication, Scheduling

Co-engineering Requires Proactive Oversight

Legacy Geospatial Functionality Assurance

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JSIPP

2002 – 2003 Geospatial Initiatives



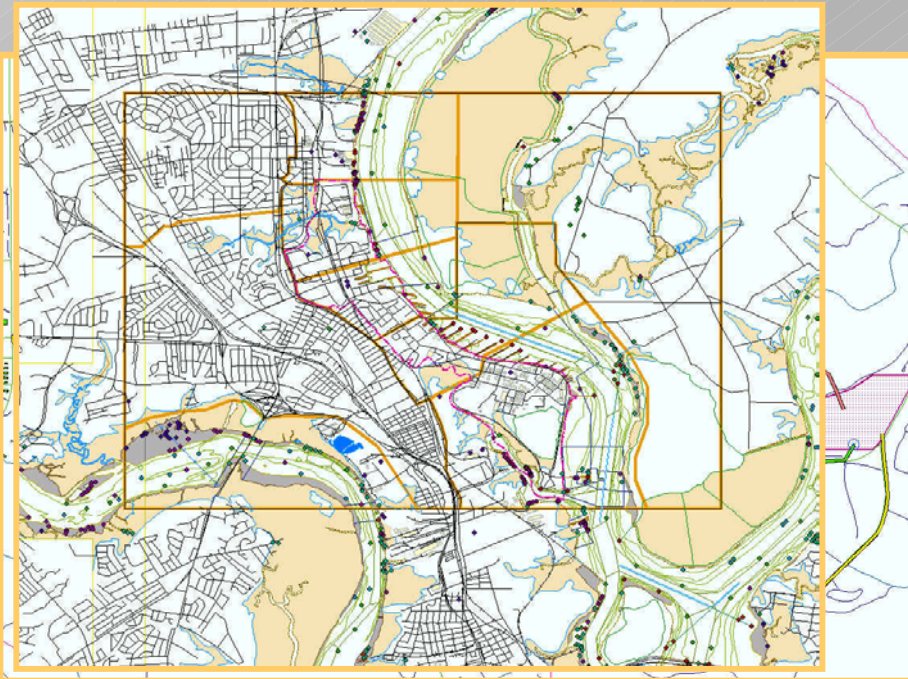
Geospatial Expansion

Directed Development

- Scope ←
- Coverage ←
- Interest ←
- Capability ←

Operations
Force Protection
Nuclear-Bio-Chem
Logistics

Functionality
Tracking
Real Time
Data Integration
Reporting Scopes
SA Multiplicities



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Priority Issues

SIPRNET/NIPRNET

Safeguarding "One installation...one map" vision?

SRC Geospatial Toolset Technology Migration

TBMCS-UL Spiral 8 – 9 2003

C/JMTK and Geospatial Web Enablement

CIP/COP Migration

1. MDS (Mission Data Sets) Host vs. Steward
2. Peripheral - Integrating Programs / Missions
3. Requirements Creep

1. Utility

2. Function

3. Availability

4. Integrated Access



Future Technical Developments

1-Real Time Geospatial Tracking Analyses
Mobile Sensors, Fire, Medical, SF

2-NIMA Data & Buffer AOI's
20km, Base AOR, Mission Specific AOI

3-Geospatial Analyses Tools
Thematic Layer generation and reporting

4-Imagery Commercial, NIMA, GeoBase
Orthophotography, NTM, Commercial

5-Integration: Local Jurisdictions
Federal, State, Municipal
Geospatial data
Situation Response
Jurisdiction operations



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