

## Port, Harbor and Base Force Protection


### GIS Plays a Critical Role

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## Presentation Perspectives

- User-oriented, particularly from the perspective of harbor, port, base protection
- Intent is to provide some insight into the needs of a specific end-user community
- Mostly non-technical



## Elements of Force Protection

- Deter
- Detect
- Warn
- Respond
- Manage consequences
- All hazards – natural and human
- Includes Homeland Security


**GIS plays a key role in all of these elements!**



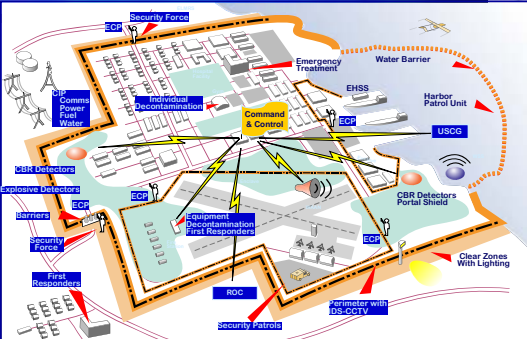
## Typical Base Attributes

- Location
- Area and boundaries
- Relationship to surroundings (urban or rural)
- Ingress/egress patterns
- Perimeter with entry control points (pedestrian, vehicle, rail)
- Infrastructure types and locations

**These are all geo-referenced!**




## Typical Elements of Base Force Protection

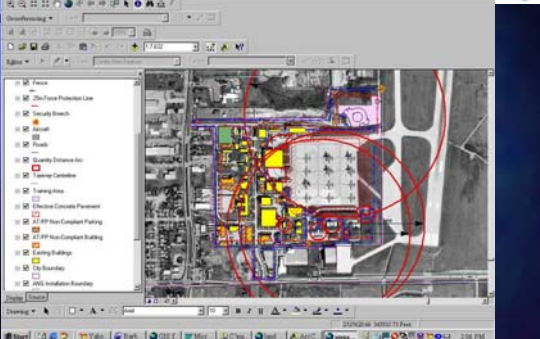


The diagram illustrates a complex base layout with various security and protection elements. Key components include:
 

- Security Force**: Positioned around the perimeter and at entry points.
- Command & Control**: Central hub for operations.
- ECH (Explosive Charge Handling)** and **EGR (Explosive Detection)**: Critical for hazardous material management.
- ROC (Restricted Operations Control)**: Manages movement within the base.
- Perimeter with Obstacle**: Physical barriers and security patrols.
- Water Barrier** and **Emergency Treatment**: Environmental and medical safety features.
- Harbor Patrol Unit** and **USCG**: Maritime security elements.
- Clear Zones With Lighting**: Safety areas around buildings.
- Equipment Decontamination** and **First Responders**: Facilities for handling incidents.
- CBR Detectors** and **Portal Shield**: Radiation and chemical/biological hazard detection.
- Explosive Detectors** and **Barriers**: Additional security layers.
- First Response** and **Security Patrols**: On-site emergency and monitoring capabilities.



## Force Protection Elements in GIS



The screenshot shows a GIS interface with a map of a base. The map displays various force protection elements overlaid on a satellite or aerial view. The elements include:
 

- Security Force**: Represented by red lines and points.
- Command & Control**: A central yellow area.
- ECH and EGR**: Specific zones or points marked on the map.
- Perimeter with Obstacle**: A red dashed line representing the base boundary.
- Water Barrier**: A blue area representing a body of water or barrier.
- Harbor Patrol Unit** and **USCG**: Maritime security elements.
- Clear Zones With Lighting**: Yellow areas around buildings.
- Explosive Detectors** and **Barriers**: Additional security layers.
- First Response** and **Security Patrols**: On-site emergency and monitoring capabilities.

## Deter

- Identify entry/egress paths
- Vulnerabilities – assess effectiveness of mitigation measures

## Deter (VBIED Example)

- VBIED access routes identified on base map allows establishing Traffic Control Points to limit target access
- Also allows concentration of deterrence assets at better-defined choke points and more efficient utilization of resources
- Increased presence at more highly controlled entry points acts as deterrent

## Detect

- GIS provides basis for merging/fusion of multi-sensor data overlaid on base map in real time
  - Terrestrial (visual, IR, radar, thermal imager)
  - Maritime surface and subsurface
- GIS provides the “common” in “Common Operating Picture”

## Underwater Intrusion Detection

- Passive acoustic underwater intrusion detection system for detection of divers, surface craft, U/W vehicles
- Demonstration system installed at Port Hueneme CA 2004, upgraded 2006
- Multi-sensor data integrated into GIS for target location and tracking

## Modeling & Simulation (M&S) for Anti-Terrorism

- GIS provides base map for implementation of ATRP systems
- Use of standard M&S tools to model and assess performance of perimeter defense systems

*High-resolution 3-D rendering image of Bremerton allows assessment of effectiveness of ATRP systems with M&S tools*

## Warn

CBRN Attack      Hurricane

Overlay of risks on base map allows efficient identification of population at risk, warning, dispatch, evacuation,

## Respond



- Response is centrally dispatched
- Requires common geographic reference for dispatcher, responder
  - More attributes, the better
  - Examples: building drawings, electrical and other utilities, underground features
  - Hazards locations

## Consequence Management



- **National Incident Management System (all hazards)**
- **Consequence Management Interactive Mapping Service**
- **CM/EM tools are GIS-based (currently ESRI)**

## Implications for X3D World Requirements



- **Target ATFP users:**
  - Base, port, facility planners
  - System/equipment specifiers/purchasers
  - Force protection officers
  - Security planners/staff
- **X3D World requirements**
  - Complete compatibility with ESRI files
  - **EASE OF USE!**
  - Ease of changes in GIS (add or move sensors, change access points for red or blue, etc.)