



Contamination Avoidance at Seaports of Debarkation

A Study in the Importance of Early User Involvement During User Interface and System Capabilities Development

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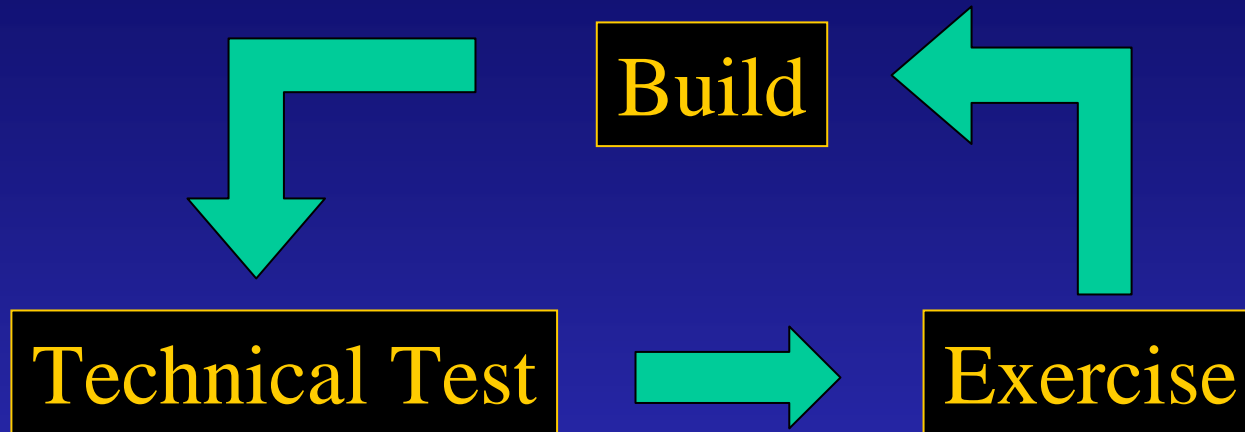


The Premise

- Every successful program must take the user needs and requirements into consideration when design alternatives are evaluated.
- Early buy in by the user and defined points for user evaluation are necessary for a successful program.
- An iterative process of build, technical test, exercise, update build, retest, and exercise is critical in providing the war-fighter a valuable system.



The Iterative Process



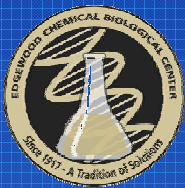
- **Build** – System is built to the basic requirements first. Follow on builds incorporate user requirements.
- **Technical Test** – Technical Testing completed after each build to verify functionality before being released to the user for evaluation.
- **Exercise** – Venue to provide operators/users with training and hands on experience in an operational scenario that is as representative of real world operations as possible.



Evolution of a System

Contamination Avoidance at Seaports of Debarcation (CASPOD) Advanced Concept Demonstration (ACTD): Information Technology Solution

Port Warning and Reporting Network (PortWARN)
2002 -2005



What is CASPOD?

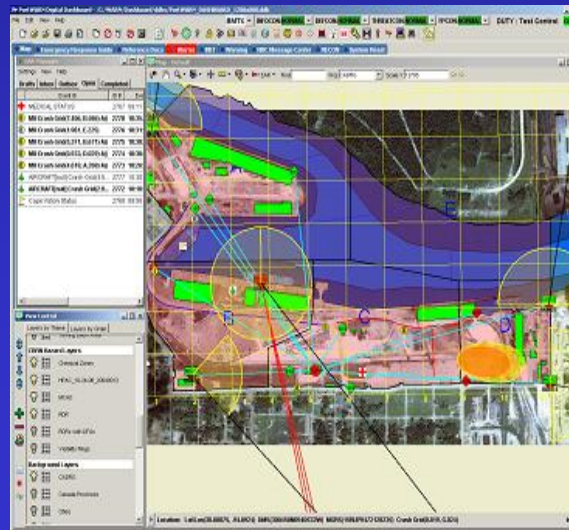
Five Year program to address and demonstrate those mitigating actions taken before, during, and after an attack to protect against and immediately react to the consequences of the chemical or biological attack at a Seaport of Debarkation

- 3 year Technology Identification and Evaluation Phase
- 2 year Residual Support Phase
- 5 Functional Areas of Concern

Detection



Protection



Decontamination



Medical

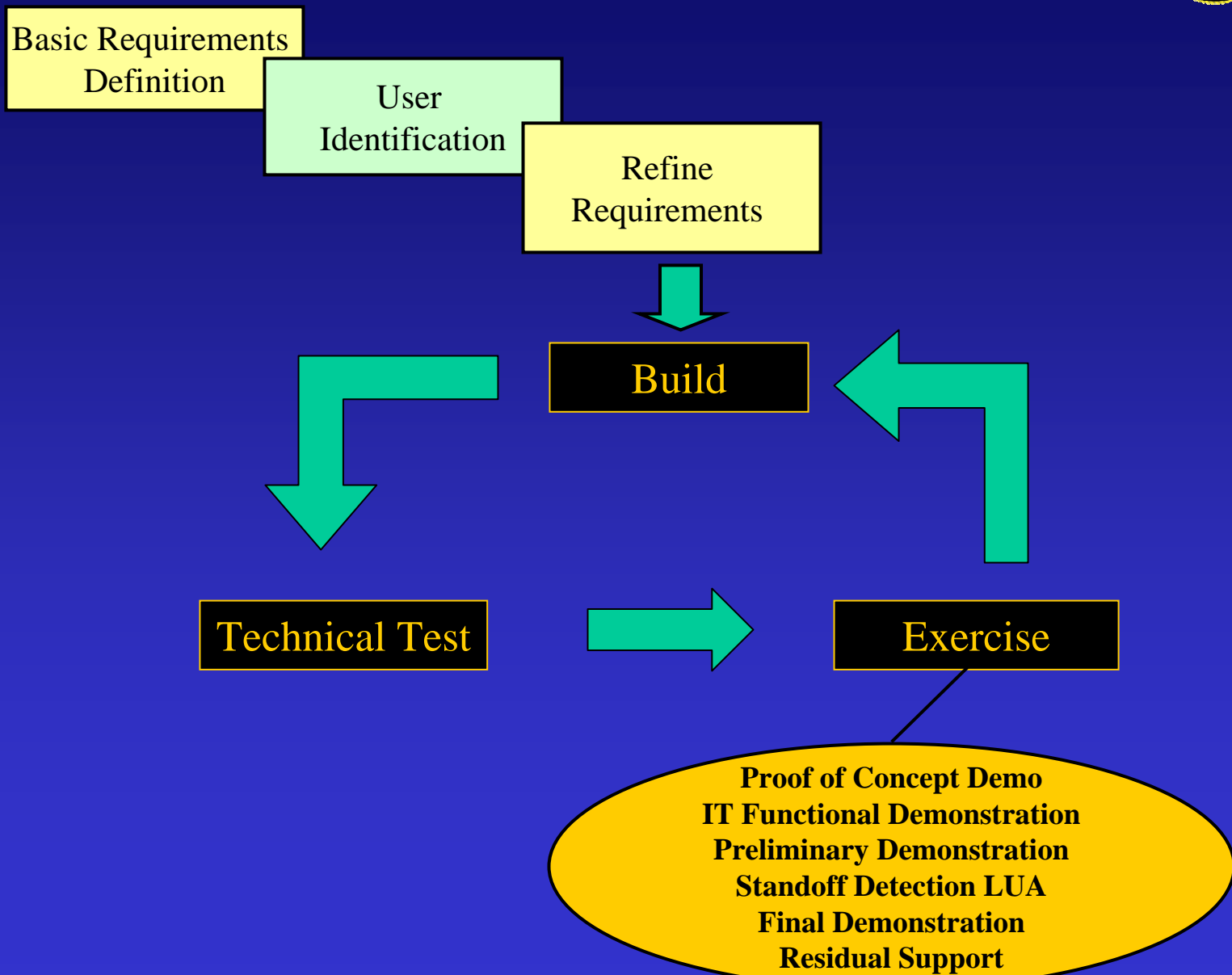


Information Technology

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CASPOD ITERATIVE PROCESS





CASPOD ITERATIVE PROCESS



- Basic Requirements (Management Plan) Mar 02
- Build and test concept Mar – Dec 02
- Proof of Concept Demonstration Dec 02
- Refine and test Jan – May 03
- IT Functional Demonstration May 03
- Refine and test May – Aug 03
- Preliminary Demonstration Aug – Sep 03
- Refine and test Sep 03 – May 04
- Standoff Detection LUA May 04
- Refine and test May – Aug 04
- Final Demonstration Aug – Sep 04



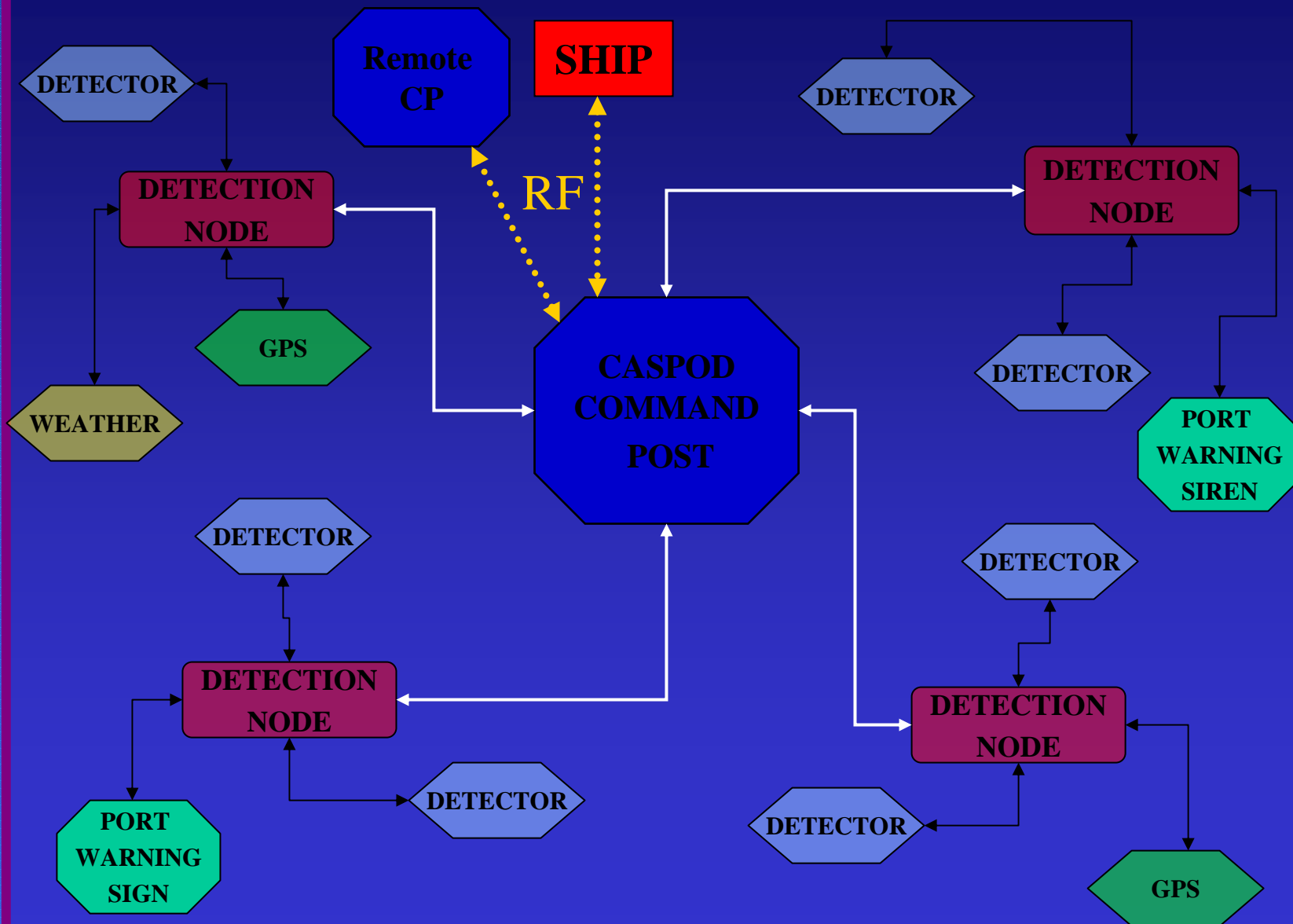
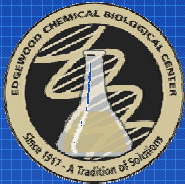
The Beginning – Basic CASPOD IT Requirements



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- Networked Detectors - Identify a networked system of detectors that can detect to warn SPOD command center, as well as USCENTCOM and USTRANSCOM Joint Operations Centers.
- Situational Awareness - Provide situational display on a common user system that gives the Commander an overall defense picture of the port , such as contamination, fires, locations of unexploded ordinance, battle damage assessment, etc.
- Audio/Visual Port Warning (Giant Voice) - Integrated alert and warning system not reliant on local power grid, providing repetitive visual and audible warning announcements to port workers.

THE ORIGINAL/BASELINE CONCEPT Detection Network



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THE ORIGINAL/BASELINE CONCEPT

Situational Awareness



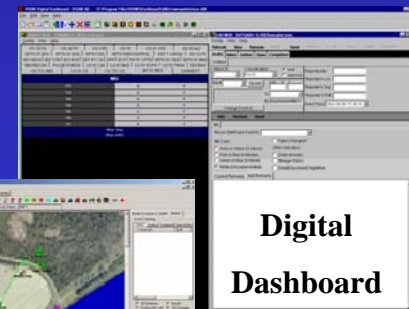
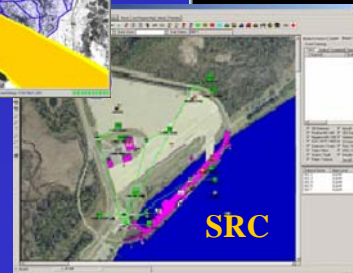
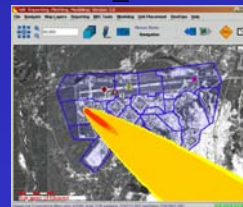
- Makes maximum use of the RestOps Information Management System
- Applicable for expeditionary force mission
- Flexible data entry
- Compatibility with multiple NBC modeling and reporting systems (NBC_RPM and JWARN)

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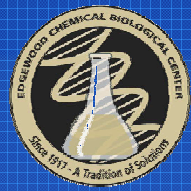


RestOps Information Mgmt System

NBC_RPM



Digital
Dashboard

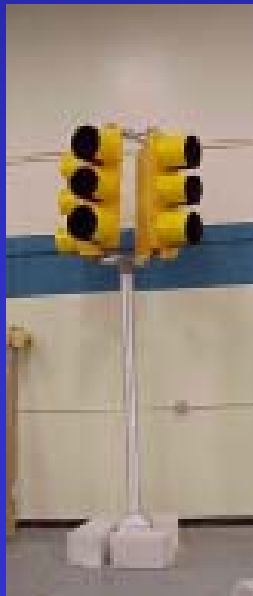


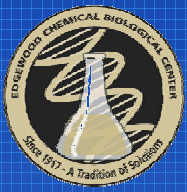
THE ORIGINAL/BASELINE CONCEPT

Port Warning



- Port Warning System
 - Audible and visible warning
 - Connected to the network via detection nodes
 - Controlled from the command post
 - Algorithm for automated network alarm



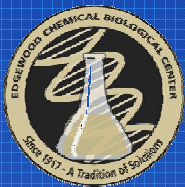


Identifying a User and Their Mission



- **The Players in Port Operations**
 - 143rd Transportation Command
 - 95th Chemical Company
 - 377th Theater Support Command
 - Surface Deployment and Distribution Command
- **The Difficulties**
 - Real world demands on the war-fighters after 9/11
 - Access to the war-fighter
 - Rotating Personnel
 - Evolving Command Structure





The Exercises



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Proof Of Concept Demonstration (Dec 2002)



- Objectives
 - Demonstrate a network of varying sensors for detection, weather, and positioning that provided data to a central database
 - Demonstrate control of port warning from a central location
 - Demonstrate data and information flow
 - Obtain buy in for the concept from the CASPOD Management
- Capabilities
 - Situational Awareness (SRC, NBC_RPM, Digital Dashboard)
 - Detection Network (Remote Data Relay, ACADA, Met)
 - Port Warning (Concepts being explored)
- User Community Input
 - Little or no interaction with users
 - Integrate detection data with messaging
 - Improve GUI for NBC Modeling

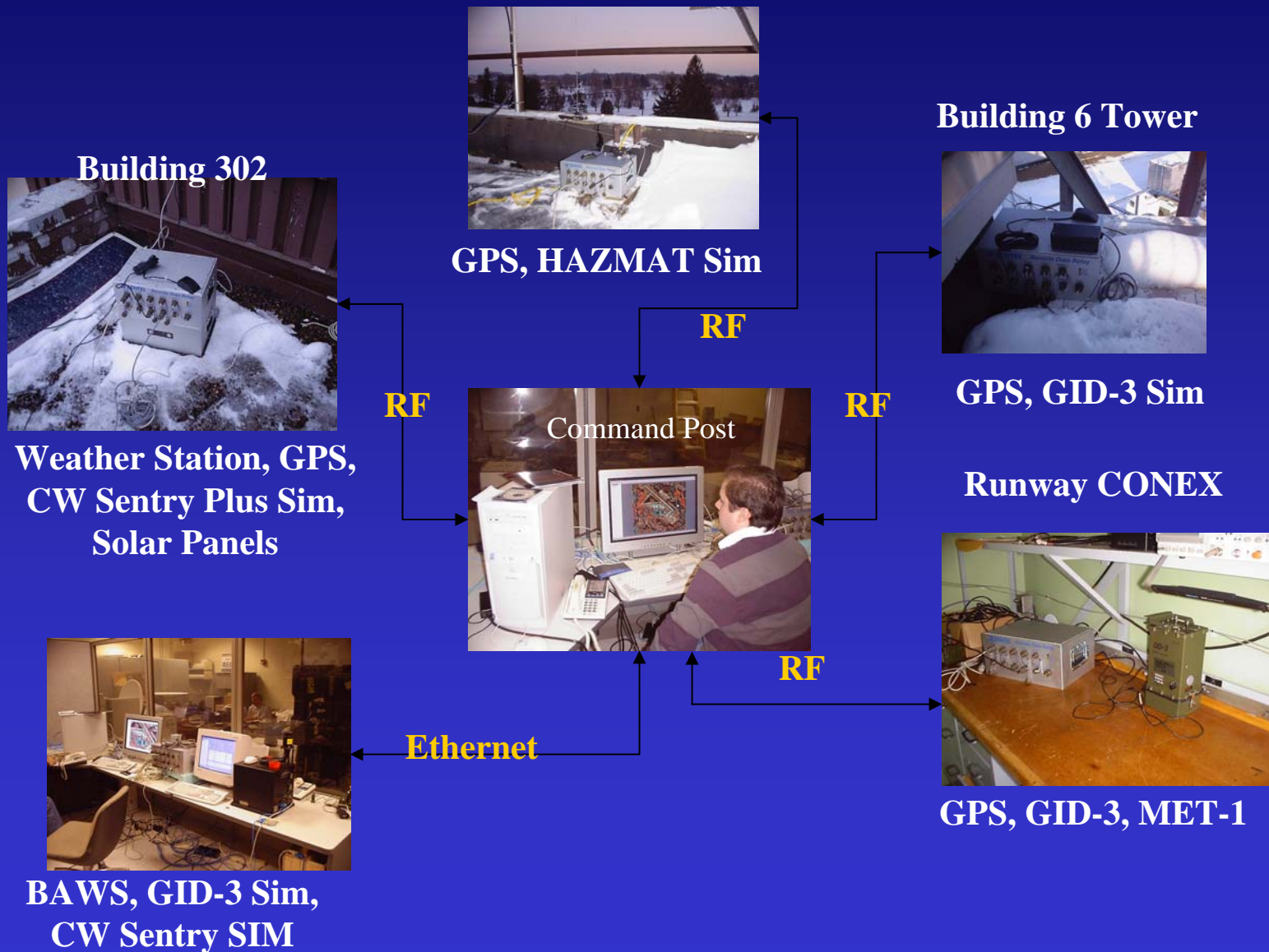




Proof Of Concept Demonstration (Dec 2002)



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IT Functional Demonstration (May 03)



- Objectives

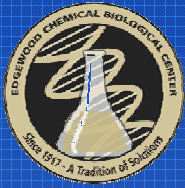
- Demonstrate a network of varying sensors for detection, weather, and positioning that provided data to a central database
- Demonstrate control of port warning from a central location
- Demonstrate data and information flow
- Demonstrate wireless data flow

- Participants

- 143rd Transportation Command
- 95th Chemical Company
- US Army Medical Research Institute for Chemical Defense



IT Functional Demonstration (May 03)



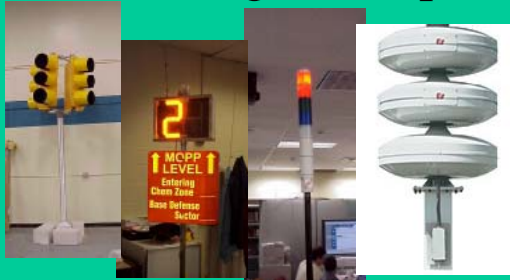
- **Capabilities**

- Situational Awareness (SRC, Digital Dashboard & NBC_RPM)
- Detection Network (Remote Data Relay, LCD-3, ACADA, Met, Port Warning Control)
- Port Warning (Concepts tested, but needed refinement)

- **User Community Input**

- Expand capability of NBC Modeling. Can only be run off an event.
- Requested additional electronic attack report types.
- Multiple recipients of Electronic Attack Reports
- Liked the idea of merging SW tools to simplify the user interface

Port Warning Concepts



Early PortWARN Tools





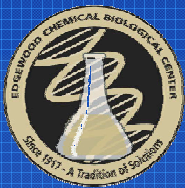
Preliminary Demonstration (Aug - Sep 03)



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- **Objectives**
 - Demonstrate partially integrated PortWARN software
 - Demonstrate improved visual port warning concept
 - Demonstrate information flow to include NBC messaging
 - Demonstrate improved NBC Hazard Prediction user interface
 - Demonstrate audible port warning
- **Participants**
 - 348th Transportation Battalion
 - 95th Chemical Company
 - 807th Medical Command
 - Surface Deployment and Distribution Command (SDDC)





Preliminary Demonstration (Aug- Sep 03)



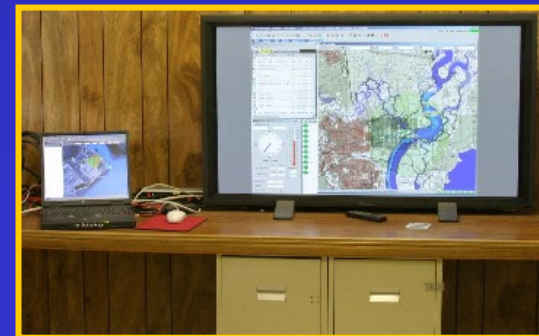
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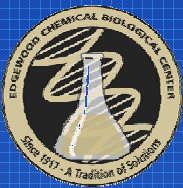
- **Capabilities**

- Situational Awareness (PortWARN & NBC_RPM)
- Detection Network (Remote Data Relay, LCD-3, ACADA, Met, Port Warning Control)
- Port Warning (Multiple visual warning concepts and two speaker systems for audible warning)
- NBC Messaging

- **User Community Input**

- Integrate NBC Modeling with PortWARN for a simplified user interface
- Requested additional electronic attack report types.
- Multiple recipients of Electronic Attack Reports
- Port Warning lights need to be brighter for daytime visibility





Standoff Detection LUA (May 04)

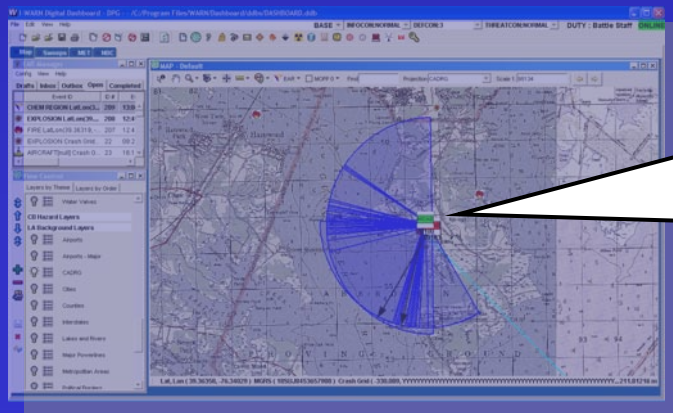


- Objectives

- Demonstrate the suitability of standoff detection with port operations
- Demonstrate an integrated standoff off capability controlled from a central location
- Demonstrate data and information flow

- Participants

- 143rd Transportation Command
- 95th Chemical Company



PortWARN
Standoff Detection
Display



Standoff Detection LUA (May 04)



- **Capabilities**
 - Situational Awareness (Fully Integrated PortWARN)
 - Detection Network (Standoff Detection, Remote Data Relay, LCD-3, ACADA, Met, Port Warning Control)
 - Port Warning
 - NBC Messaging
- **User Community Input**
 - Add multiple recipients of Electronic Attack Reports.



Final Demonstration (Aug - Sep 04)



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- **Objectives**
 - Demonstrate fully integrated PortWARN software
 - Demonstrate improved visual port warning concept
 - Demonstrate information flow to include NBC messaging
 - Demonstrate integrated NBC Hazard Prediction
- **Participants**
 - 143rd Transportation Command
 - Surface Deployment and Distribution Command (SDDC)
 - 348th Transportation Battalion
 - Beaumont Fire Department





Final Demonstration (Aug- Sep 04)



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- **Capabilities**
 - Situational Awareness (Fully Integrated PortWARN)
 - Detection Network (Remote Data Relay, LCD-3, ACADA, Met, Port Warning Control)
 - LCD-3 Toxic Industrial Chemical Detection Added (Chlorine, Phosgene, Hydrogen Fluoride, Hydrogen Chloride, Hydrogen Sulfide)
 - Port Warning (Light Tower w/3 lights tested during FD, Omni-directional and Bi-directional speaker system integrated with PortWARN)
 - NBC Messaging
- **User Community Input**
 - Expand capability of NBC Modeling.
 - Add multiple recipients of Electronic Attack Reports.
 - Add warning by base defined sectors.
 - Add remote switching of LCD-3 from CW to TIC mode





Residual Support of Deployed System 2005 - 2007



- Objectives
 - Provide training to the war-fighter
 - Install fully operational PortWARN capability
 - Provide continued support through the 2 year Residual Phase
- Participants
 - 143rd Transportation Command
 - Surface Deployment & Distribution Command





Residual Support of Deployed System 2005 - 2007

- **Capabilities**
 - Situational Awareness (Fully Integrated PortWARN)
 - Detection Network (Remote Data Relay, LCD-3, ACADA, Met, Port Warning Control)
 - Port Warning (Light Tower w/4 lights tested during Residual Install)
 - NBC Messaging Compatible with JWARN (Demonstrated June 05 during CWID)
 - CW/TIC switching beta version in testing to be installed Feb 06
 - Port warning beta version in testing to be installed Feb 06
 - Mobile Detection Node
- **User Community Input**
 - Installation Sep 05 & Feb 06
 - Expand the Toxic Industrial Chemical List
 - Provide Audible Port Warning using existing port speaker system

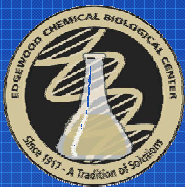




Exercise Limitations

Challenge – Representing the Real World

- **Environment**
 - Exercise site limitations (i.e., Impacts on Residential Community)
 - Power (Availability, source, voltage, etc...)
 - Resources (Limited hardware and test personnel)
 - Sensor stimulation and simulation
 - Weather
- **Mission – Providing representative scenarios**
- **User – Availability of the right user given real world mission requirements**



Lessons Learned



- *Early and constant user involvement is vital*
- *No matter how much a system is exercised and tested, the real world will be different*
- Build systems for the real world, but also build them for training contingencies
- Don't mix installation and training activities
 - Causes a battle for resources (people and equipment)
 - Capabilities for training may impact live system performance.



Questions?



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