



The Navy Distributed Engineering Plant

NSWCDD-T305

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Agenda



- ◆ **Background**
- ◆ **DEP and BGIT Concept Overview**
- ◆ **DEP Value Added**
- ◆ **Summary – Relevance to CNO SSG XXI**

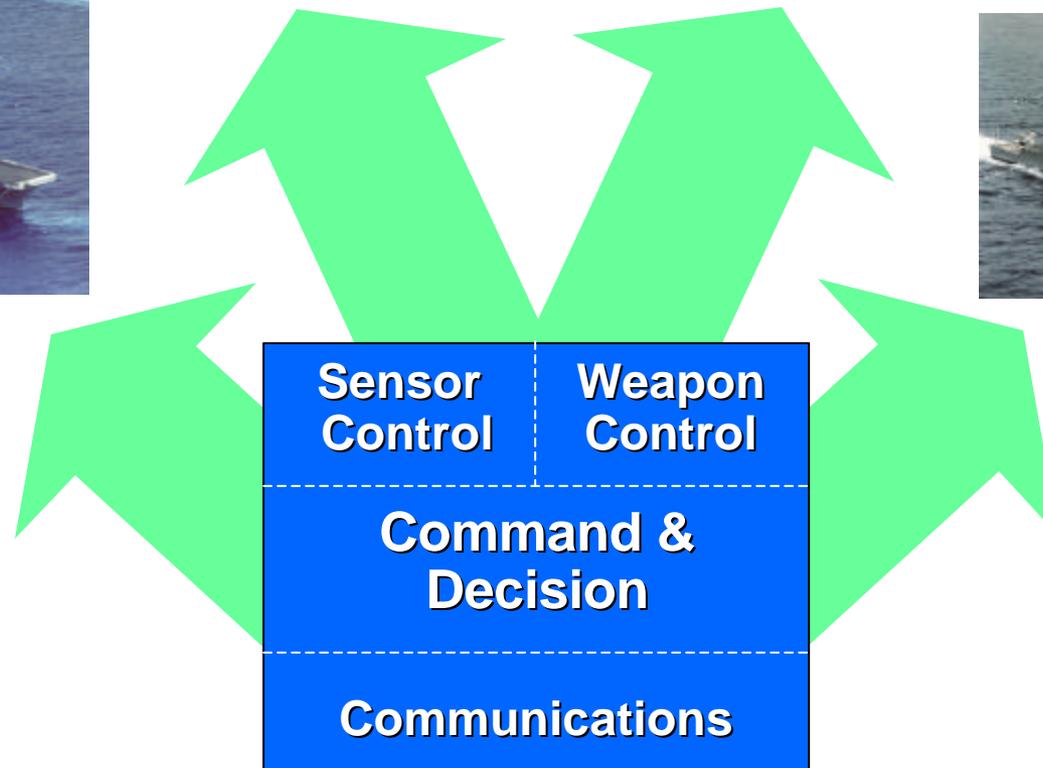


DEP Concept Overview

Combat Systems: - The DEP Foundation



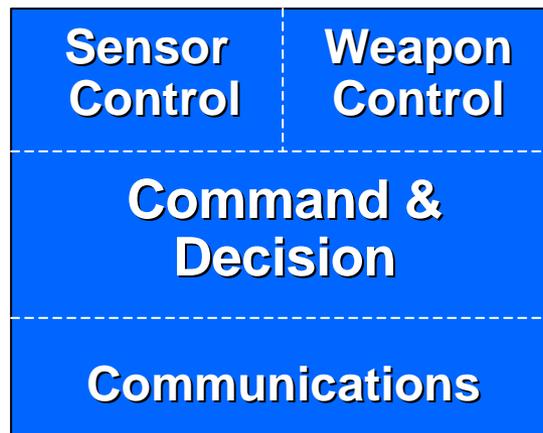
Combat Systems: - Core Functions



The four functional groups in general exist on all combatants.

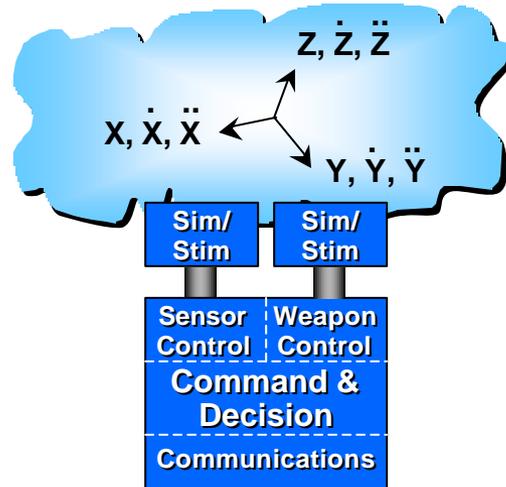


Combat Systems: - Shorebased Replicas



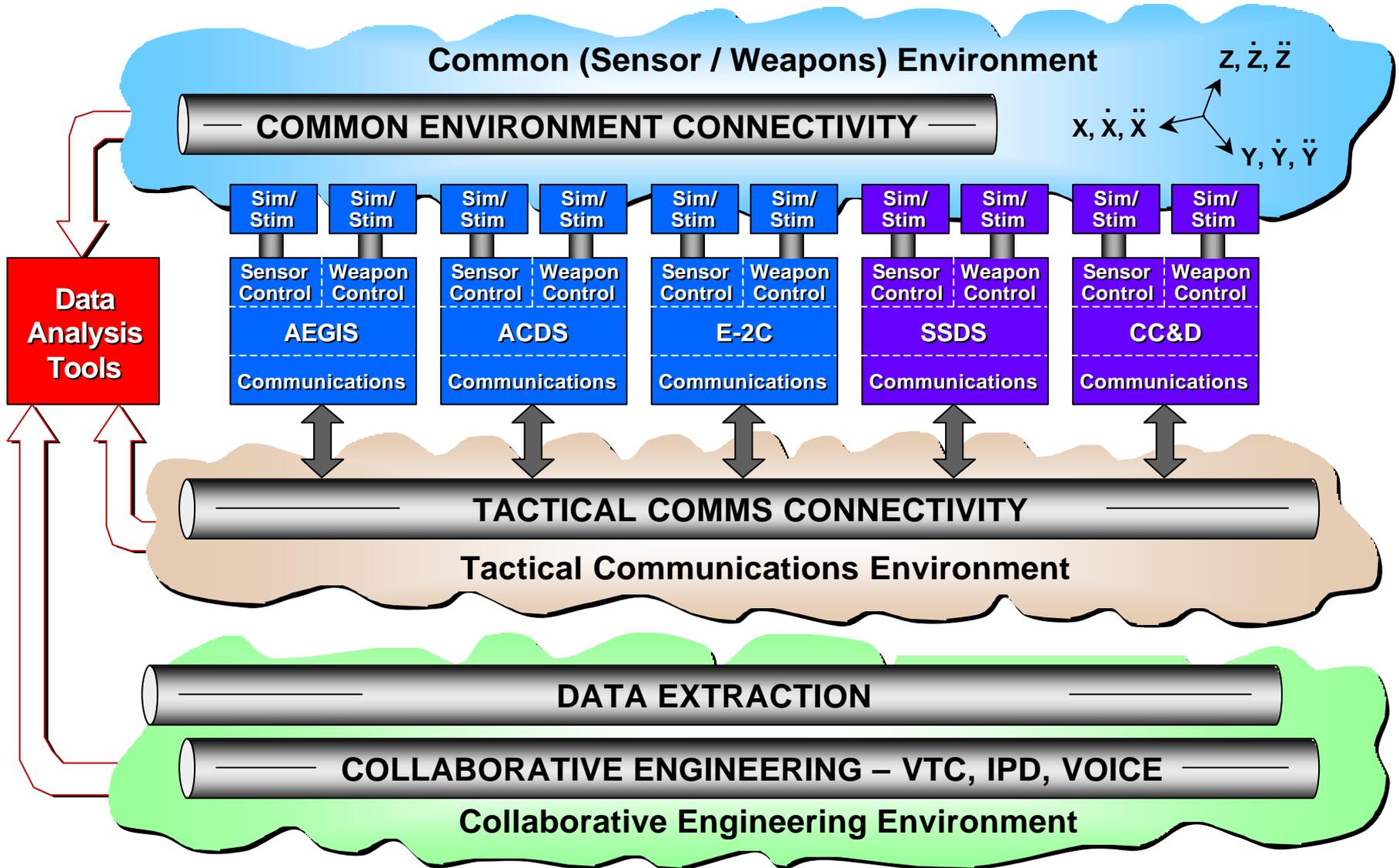
Shorebased combat systems generally replicate all of the computer hardware and computer programs represented by this box. A few sites include more elements such as sensors or antennae.

Combat Systems: - Simulators and Stimulators



Any weapon, sensor or system not available to a shorebased combat system is emulated via a simulation or a stimulator. In addition, the sensor and weapon sims/stims generate a common environment representing the real world and entities (aircraft, ships, clouds, etc.) within it.

Pulling the Pieces Together: The Landbased Battlegroup





The DEP Network Today



F-14D
NAWCWD
Pt. Mugu



Air Force / Industry
AWACS
Boeing-Seattle



AEGIS CGs/DDGs
ATRC - Dahlgren

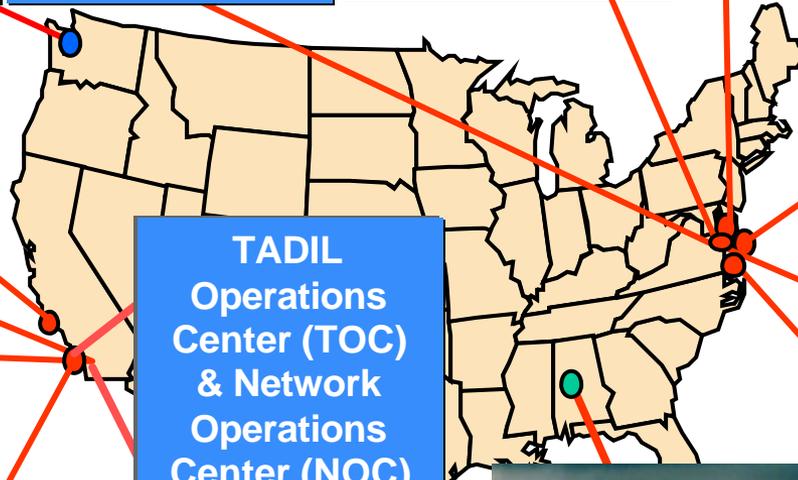


DEP Operations Center
NAVSEA - Dahlgren

E-2C GII & HE 2000
NAWCAD - PAX River



Battle Group LINK Monitor
NCTSI - San Diego



TADIL
Operations Center (TOC) & Network Operations Center (NOC)
San Diego, CA

E-2C G0 & GII
SSC - San Diego SIF



AEGIS CGs/DDGs
ACSC - Wallops Island



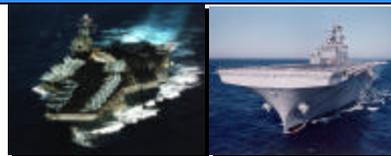
AEGIS CGs/DDGs
ACC - Dahlgren



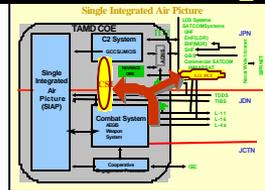
CV/CVN Class
LHA/LHD Class
DD/FFG Class
NAVSEA/ Dam Neck



CV/CVN Class
LHA/LHD Class
ICSTF - San Diego



C4ISR
SSC - San Diego



U.S Army
PAC-3
Huntsville

Pulling the Pieces Together: The Land-Based Battle Group



- DIS Architecture
- Repeatable Scenarios
- 1000+ Tracks

- Many DIS Generators
- DS3, ICE, WASP
- Multi-Spectral PDUs

- COBRA
- DARP*
- REAP*
- PET
- SNOW
- Net Tools
- Sim Tool
- Work Flow

- 9 AEGIS Platforms
- 2 ACDS BLK 0
- 2 ACDS BLK 1

- 5 CDS Platforms
- 2 SSDS MK2
- F-14D
- E-2C (G2 and MCU/HE2000)

- LINK-11A
- LINK-11B
- LINK-16

...TICAL COMMS CONN...
...Communications E...

- CEC
- Satellite TADIL-J,A
- GCCS-M, ADSI

- Data Extraction
- Data Repository
- Mbps FTP

...DATA EXTRACTION...
...GINEERING...
...Engineering

- Secure Conference
- Whiteboard
- VTC, ASTI Voice Comm



DEP Value Added



Accomplishments



- ◆ **10 BFITs Completed – 16 Battle Groups Tested**
- ◆ **Products Delivered**
 - ❖ Capabilities – Limitations – Workarounds
 - ❖ Trouble Reports Documented
 - ❖ Battle Group Performance Baseline and Measurement
 - ❖ Tactics, Techniques and Procedures (TTP) Assistance
 - ❖ Direct Information Exchange With Each Battle Group Staff
- ◆ **Some Battle Group [System] Integration Moved Ashore**
 - ❖ Totally Performed Underway by Sailors Prior to DEP
 - ❖ Allows the Fleet to Focus on ...
 - ◆ Other Aspects of System Integration [Non-AAW]
 - ◆ Training
 - ◆ Workups



Fleet Feedback



Navy SYSCOMs “A View From the Fleet”



April 2002

RADM Dale Baugh
Director Fleet Maintenance
United States Atlantic Fleet

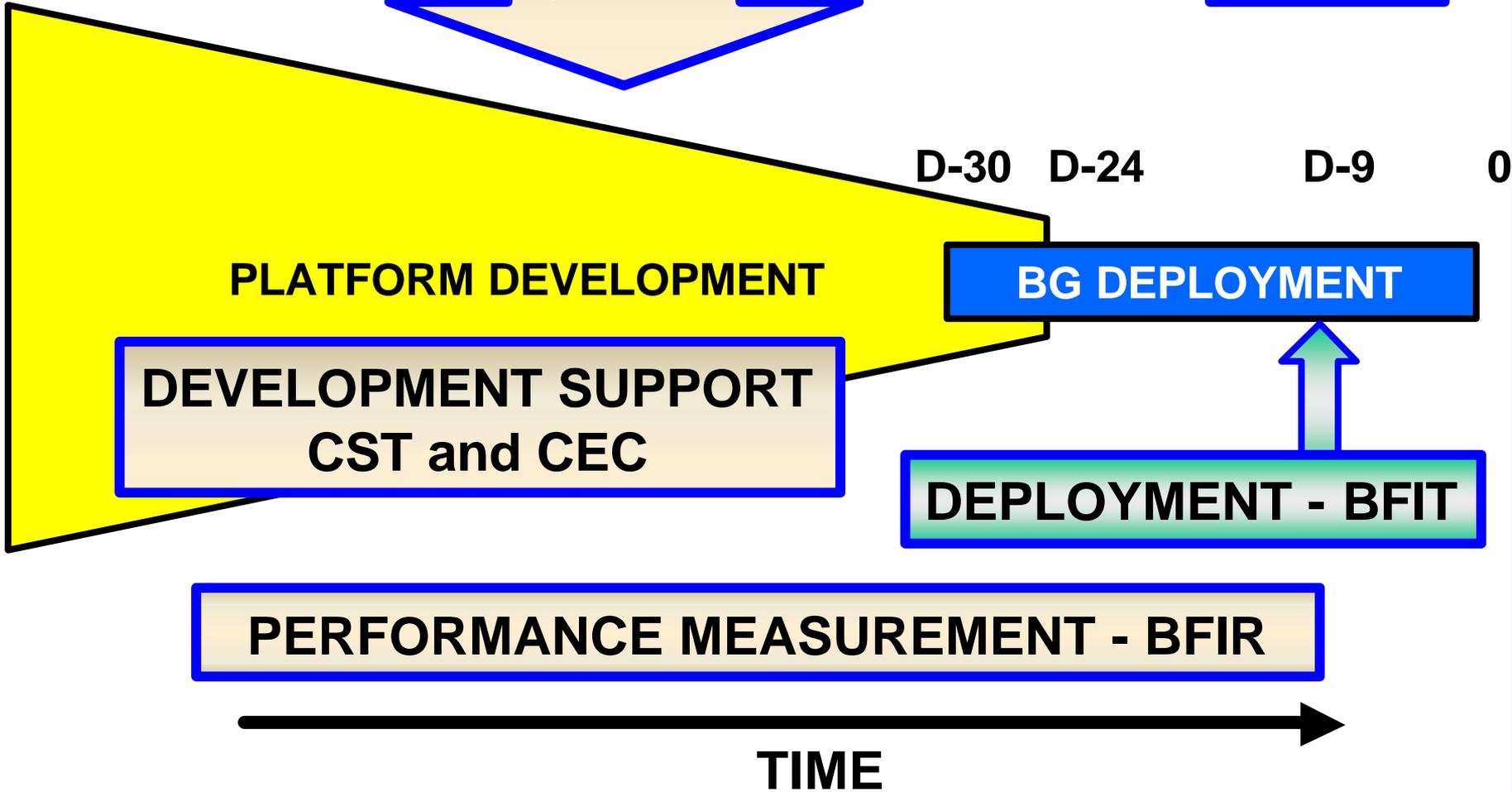


NAVSEA – What Works



- **MRS**
- **Sub scheduling durations –11/20**
- **Distance Support**
- **AT/FP responsiveness**
- **NAVSEA 53 configuration management efforts for the CLF/CPF D-30 process for C4I/combat systems**
- **NAVSEA 53 interoperability testing using the Distributed Engineering Plan (DEP)**
- **NAVSEA 53 SEMCIP work to resolve EMI problems**

Supporting Force Systems Engineering

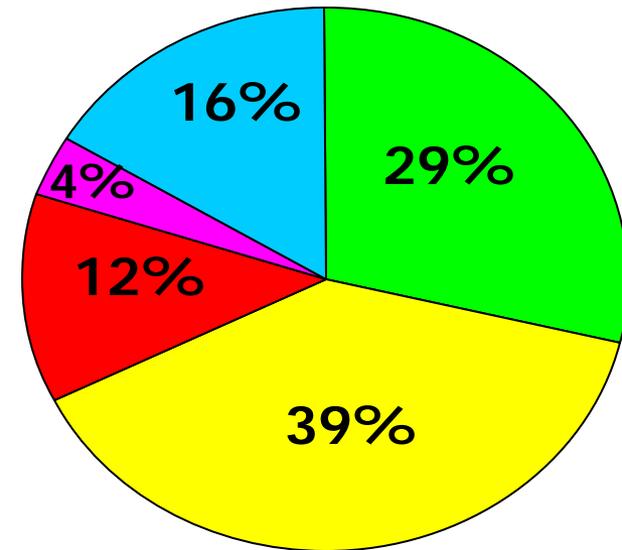


DEP FY01 Utilization



- ◆ **BFIT**
 - ❖ Test all deploying BGs
- **Development Support**
 - CEC, AEGIS, CST, ISET
- **Battlegroup Performance**
 - Warfighter Metrics (BFIR)
- **Support Services**
 - Upgrades, Validation, VTC, ...
- **JDEP**
 - Site Establishment/Checkout

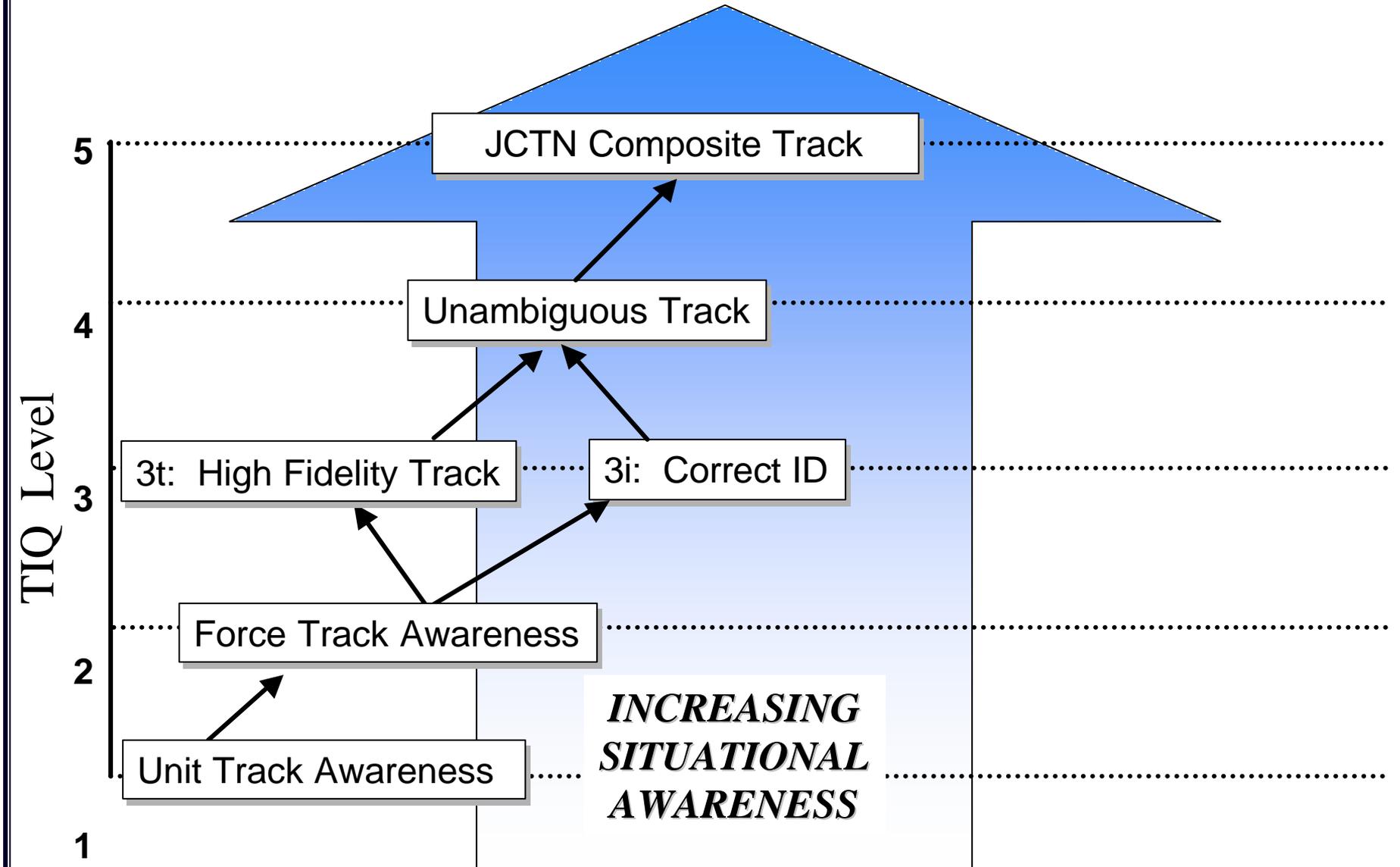
FY01 – 2832 Hours



■ BFIT - 818	■ DEV - 1093
■ PERF - 353	■ JDEP - 107
■ SUPP - 461	

DEP Is Moving Left in the Acquisition / Development Cycle

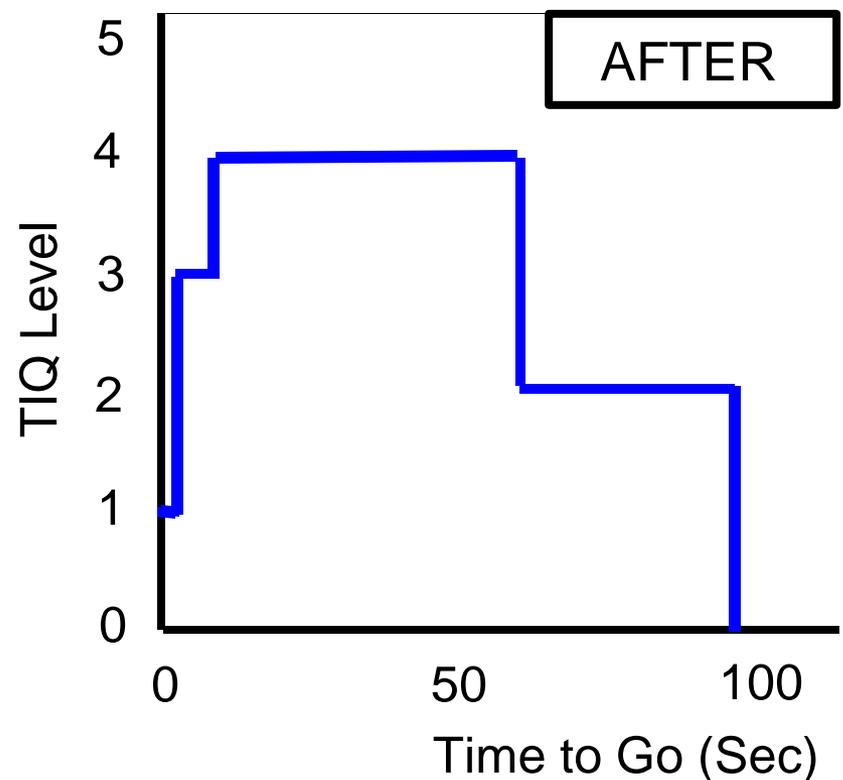
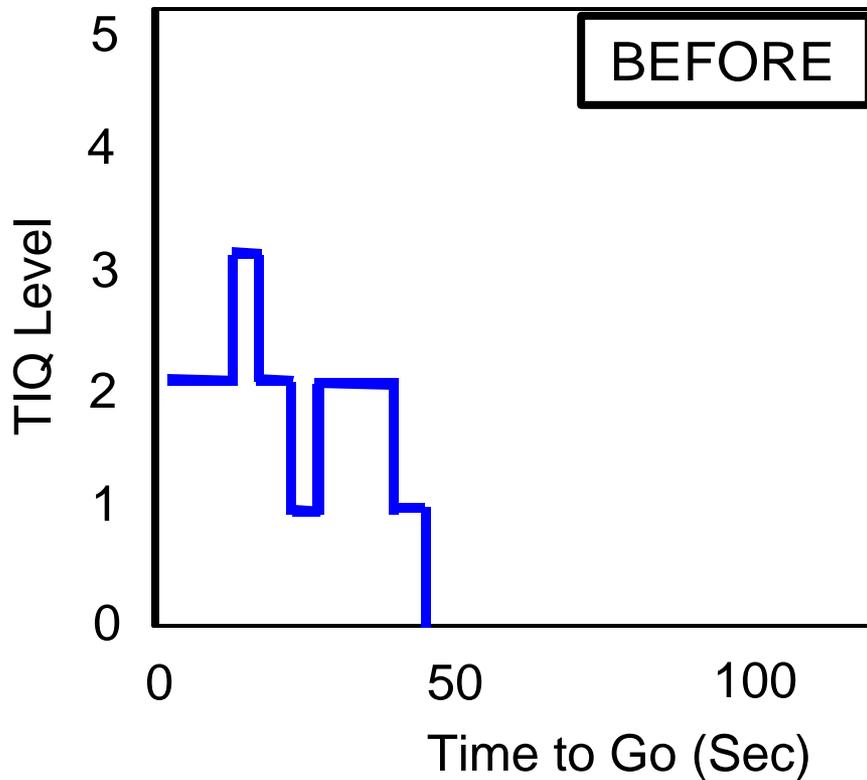
Track Information Quality (TIQ)



System Performance Comparisons

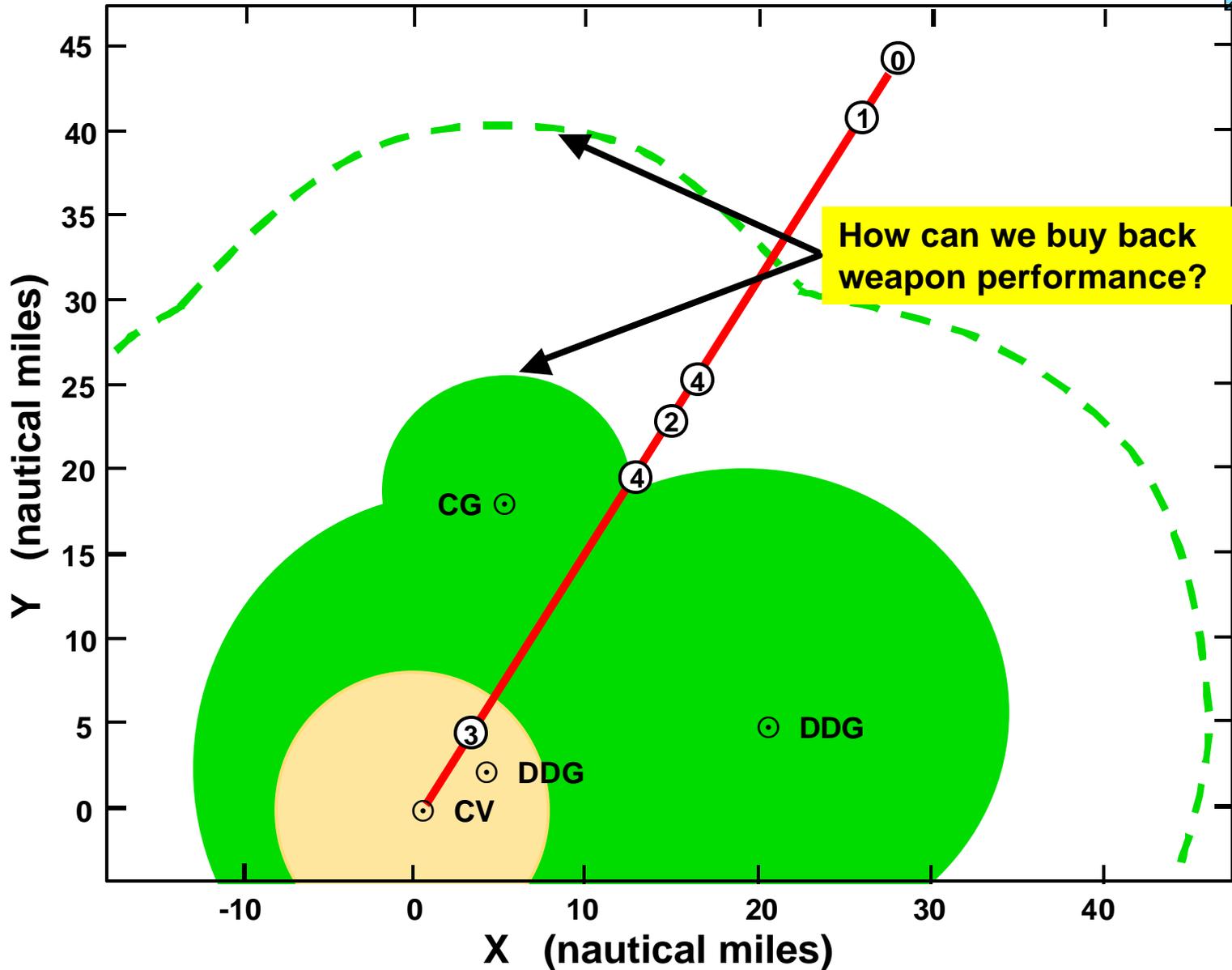


Lincoln/ Truman BFIT	CVN 75	LHA 4	CG 56
	DDG 51	DDG 57	DD 978
	FFG 52	E-2C / GRP II	



Changed the AEGIS DDG-51 and DDG-57
Computer Programs from Baseline 5.3.6 to 5.3.7

Impact to Force Protection – Taking Back Our Battle Space



DEP vs Live Cost Avoidance



384 Battle Force test days executed (JAN 1999 – MAY 2002)

◆ **DEP Cost: \$38,400,000**

◆ **Other Cost:**

- ❖ Theater CommAir replicated
- ❖ Dozens of stressing threat A/C and TBMs flown per BFIT
 - ◆ Cost: 'Free'
- ❖ Centralized, Secure, Real-time data capture

◆ **Intangibles:**

- ❖ BF (and OPTASK LINK) Tested in deployment Op-Area
- ❖ Repeatable and controlled
- ❖ Replicate all known and emerging threats
- ❖ Accurate time/location (ground truth) for all objects in-theater

◆ **At-Sea Cost: \$384,000,000**

◆ **Other Cost:**

- ❖ Not Possible
- ❖ Very limited funds and inventory to 'fly the threat'
 - ◆ Cost: x\$K per Aircraft, x\$M per drone, xx\$M per TBM launch
- ❖ Work-months required to collect data recorded per event

◆ **Intangibles:**

- ❖ BF Tested near-CONUS; deploy to Op-Area
- ❖ Not-Repeatable or controlled
- ❖ Not possible

- ❖ Not possible



***Relevance to
CNO SSG XXI
(ForceNet)***



FORCENET: DEP Relevance I



◆ **DEP Experience and Capabilities appear to be very relevant to the objectives of the CNO SSG XXI**

◆ **Information Capabilities CGT**

- ❖ INTEROPERABILITY
- ❖ Data/Info Collection
- ❖ Connectivity and Communications
- ❖ Sensor Linkage
- ❖ Distributed Computing Capability
 - ◆ Security
 - ◆ Scalability
 - ◆ Flexibility - Ao



FORCENET: DEP Relevance II



◆ Cognitive Capabilities CGT

❖ “Actionable Knowledge”

- ◆ Support to Total Force Decision Making
- ◆ BFIR program
- ◆ TIQ
- ◆ Anti-Air Decision Point
- ◆ Impact to Force Protection
- ◆ “Buying Back” Weapons Engagement capability
 - Versus Beyond Visual ROE
 - Resolve TIQ 3t faster
 - Better Sensors
 - Sensor Netting
 - Multi-spectral sensors
 - Resolve TIQ 3i faster
 - Better ID systems (cooperative and non-cooperative)
 - Netted ID systems (e.g. CEC composite ID)



FORCENET: DEP Relevance III



◆ CNO SSG XXI

❖ Physical Capabilities CGT

- ◆ SSG XXI tasked to emphasize the mix of capabilities needed to delivery FORCENet's Distributed Combat Capability
- ◆ Prioritize R&D technologies for the CNO and focus efforts in Navy and industry to move FORCENet forward
- ◆ This CGT will examine how to actualize FORCENet with select groups of current platforms...
- ◆ Provide metrics for progress with regards to platforms and weapons in the FORCENet environment
- ◆ Focusing R&D to get the Navy new technology in a more expeditious manner