CHANGING ROLES AND REDUCING RISK IN TESTING THE BATTLESPACE OF THE FUTURE

NDIA T&E SUMMIT, CANADA

RADM BERT JOHNSTON

VICE COMMANDER, NAVAL AIR SYSTEMS COMMAND

26 FEB 2003

NAVAIR SITES

AIRCRAFT DIVISION, LAKEHURST, NJ

Provides aircraft launch and recovery expertise to the fleet.

AIRCRAFT DIVISION, PATUXENT RIVER, MD

Provides acquisition management, research and development capabilities, air and ground test and evaluation, aircraft logistics and maintenance management for Naval Aviation.

TRAINING SYSTEMS DIVISION, ORLANDO, FL

Center for research, development, test and evaluation, acquisition and product support of training systems for the world.

WEAPONS DIVISION, CHINA LAKE & PT MUGU, CA

Provides our forces with effective and affordable integrated warfare systems and life cycle support to ensure battlespace dominance.

NAVAIR DEPOT, NORTH ISLAND, CA

Provides comprehensive quality aviation support to the nation's warfighters.

Aircraft: F/A-18 Hornet; E-2C Hawkeye; C-2 Greyhound; S-3 Viking; H-60 Seahawk

NAVAIR DEPOT, CHERRY POINT, NC

Delivers on time quality products and services for Naval Aviation as service to the fleet.

Aircraft: AV-8B, Harrier; H-53, Sea Stallion; C-130, Hercules; H-46, Sea Knight; V-22, Osprey; VH-3, Presidential Helicopter

NAVAIR DEPOT, JACKSONVILLE, FL

Delivers high quality maintenance, engineering, logistics and support services to the fleet.

Aircraft: P-3 Orion; EA-6B Prowler, F-14 Tomcat, F/A-18 Hornet; S-3 Viking; SH-60 Seahawk

NAVAIR

NAVAIR'S ROLE IN NAVAL AVIATION IS . . .

. . . ***TO DEVELOP, ACQUIRE AND SUPPORT*** **AIRCRAFT AND RELATED SYSTEMS WHICH CAN BE OPERATED AND SUSTAINED *AT SEA***

. . . **TO WORK WITH INDUSTRY ON BEHALF OF THE USER TO DELIVER OUR PRODUCTS AND SERVICES**

COMPARATIVE SCALING

USS GEORGE WASHINGTON (CVN-73)
OVERLAID ON TYPICAL AIRFIELD RUNWAY
(12,000 FT.X150 FT)

OUR CORE FOCUSES ON WHERE WE ARE DIFFERENT

SIZE OF WORKFORCE

WORKLOAD TRENDS . . FY89 THRU FY03

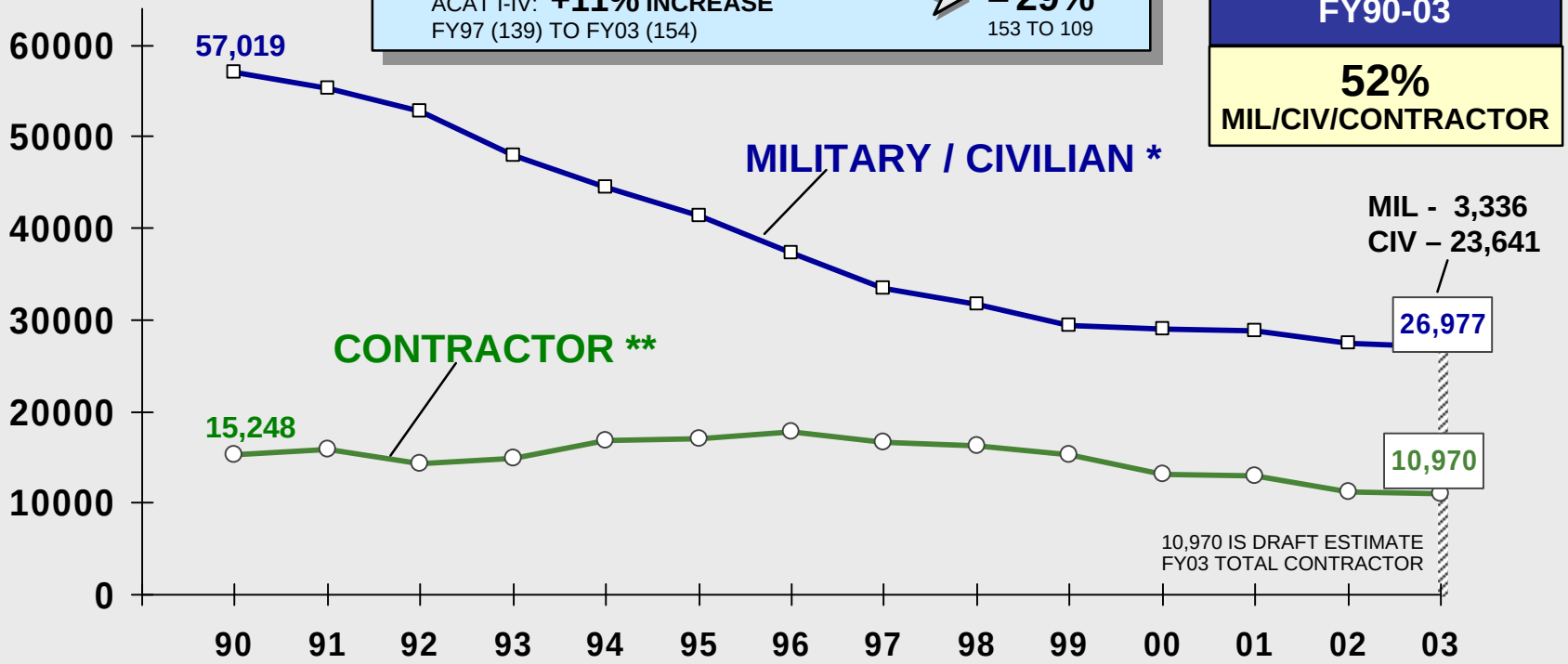
ACAT PROGRAMS	– 17% (185 TO 154)
ACTIVE AIRCRAFT	– 24% (5.5K TO 4.2K)
ACTIVE TMS	– 29% (153 TO 109)

ACAT I-IV: **+11% INCREASE**
FY97 (139) TO FY03 (154)

53%
MIL/CIV REDUCTION FY90-03

52%
MIL/CIV/CONTRACTOR

NAVAIR WORKFORCE



COMBINED MILITARY, CIVILIAN AND CONTRACTOR WORKYEARS FOR FY90-03 REDUCED BY **52%**

* CIVILIAN: FY90-01 ARE CERTIFIED E/S NORMALIZED TO POST BRAC 95 ALIGNMENT; FY02-03 IS FY03 PRESIDENT'S BUDGET
MILITARY: FY90-01 ARE CERTIFIED E/S NORMALIZED TO POST BRAC 95 ALIGNMENT; FY02-03 IS SEP02 FYDP

** FSC CODES "R" (PROF, ADMIN, MGMT), 5.0 T&E AND RANGE, NAVFAC BASE OPER SPT, "B" (SPEC STUDIES), "D" (ADP), "L" (TECH REP SVCS), "U" (EDUC, TRNG), AND "V" (TRANSP, TRAVEL, RELOC), "A" (RDT&E STUDIES)

NOTE: FY90-FY94 – INCLUDES ESTIMATES FOR FACILITIES IN BASE OPERATING SUPPORT FY91 FSC "A" CODE DATA IS NORMALIZED DUE TO DATA UNAVAILABILITY

SLIDE UPDATE: 2 DEC 02

RANGE WORKLOAD FACTS

WEST LAND RANGE

- REVENUE: +40%
- TEST EVENTS: +19%
- TEST HOURS: +28%

PACIFIC SEA RANGE

- REVENUE: +49%
- TEST EVENTS: +17%
- TEST HOURS: +30%

** WORKLOAD INCREASE OF 25-30% OVER FY01

ATLANTIC TEST RANGE

- REVENUE: +30%
- TEST EVENTS: -2%
- TEST HOURS: +27%

T&E AIRCRAFT

- REVENUE: +8%
- TEST HOURS: +14%

TEST EVENTS DECREASED WHILE AVERAGE LENGTH INCREASED AN HOUR PER EVENT

PRELIMINARY CONCLUSIONS

- **NAVAIR HAS REDUCED WORKFORCE & FACILITIES, YET…**
- **NAVAIR RANGE USE HAS INCREASED AND BECOME INCREASINGLY COMPLEX**
  - CENTERS OF EXCELLENCE OFFER SOPHISTICATED FACILITIES
  - WIDE USER BASE, INCLUDING
    - **FLEET**
    - **NAVY'S SISTER SERVICES**
    - **INDUSTRY**

EVOLUTION FROM "RDT&E" TO "RDT²E²"

EVOLUTION IS DRIVEN BY CHANGING TECHNOLOGY AND NEW OPERATIONAL REQUIREMENTS.

THE OLD PARADIGM. . .RDT&E

RESEARCH & DEVELOPMENT, TEST & EVALUATION

THE NEW PARADIGM. . .RDT²E²

RESEARCH & DEVELOPMENT, TEST & TRAINING, EVALUATION & EXPERIMENTATION

UNDER THIS NEW APPROACH, NAVAIR RANGES:

- ***ARE WORKING WITH FLEET EXERCISE PLANNERS TO DEVELOP TRAINING RANGE STRATEGY (TRS) – THE ROADMAP FOR ALL FUTURE PLANNING***
- ***PROVIDE SUPPORT TO MAJOR FLEET BATTLE EXPERIMENTS & OTHER FLEET EXERCISES***

THE BATTLESPACE HAS BECOME MORE COMPLEX

NAVAIR'S T&E ROLE HAS CHANGED

- **FROM 1920'S-1950'S, BuAER HAD MORE EXTENSIVE T&E ROLE AND ALSO BUILT OWN TEST AIRCRAFT (AT NAVAL AIRCRAFT FACTORY)**
- **NAVAIR HAS SINCE MOVED AWAY FROM CONSTRUCTION AND TOWARD SETTING SPECS FOR CONTRACTORS**
- **NAVAIR'S NEW ROLE: TO DETERMINE THE PARAMETERS OF THE "BATTLESPACE"**
  - **SET REQUIREMENTS FOR A "SYSTEM OF SYSTEMS"**
    - A SYSTEM TO LINK ALL PLATFORMS AND COMMANDERS AND WEAPONS, BY MEANS OF REAL-TIME COMMUNICATIONS

MILITARY TECH INCREASES SINCE 1950

"LET ME GIVE YOU SOME EXAMPLES OF HOW MILITARY TECHNOLOGY HAS PROGRESSED BETWEEN 1950 AND TODAY, AS A RESULT OF NUMEROUS TECHNOLOGICAL BREAKTHROUGHS.

"AIRCRAFT RANGE HAD QUADRUPLED FROM 2,000 TO 8,000 MILES.

"AIRCRAFT SPEED HAS INCREASED FROM 500 MILES TO 2,000 MILES.

"MAXIMUM AIRCRAFT PAYLOAD HAS QUINTUPLED FROM 10 TONS TO 50 TONS.

"NAVIGATION PRECISION HAS FALLEN FROM A TENTH OF A MILE TO A THOUSANDTH OF A MILE.

"AND RADAR RESOLUTION AND RANGE HAVE IMPROVED BY TEN THOUSAND-FOLD AND FIVE HUNDRED-FOLD, RESPECTIVELY."

– LOREN B. THOMPSON, PH.D., CHIEF OPERATING OFFICER OF THE LEXINGTON INSTITUTE, IN LECTURE "KEY TECHNOLOGICAL TRENDS SINCE WORLD WAR TWO." PART OF EMERGING TECHNOLOGIES & SECURITY SERIES, SECURITY STUDIES PROGRAM AT GEORGETOWN UNIVERSITY, 20 SEPTEMBER 2001.

NAVAL AIR IN AFGHANISTAN

"IN DESERT STORM, WE SCHEDULED INTO THE TENS OF AIRCRAFT PER TARGET. IN OPERATION ENDURING FREEDOM, NAVY TACTICAL AIR ON AVERAGE STRUCK MORE THAN TWO TARGETS PER AIRCRAFT THAT DELIVERED ORDNANCE."

-- VADM JOHN B. NATHMAN, COMMANDER, NAVAL AIR FORCE, U.S. PACIFIC FLEET, U.S. NAVAL INSTITUTE "PROCEEDINGS," MARCH 2002.

HISTORICAL "SPECTRUM OF CONFLICT":
THE TALE OF TWO BRIDGES

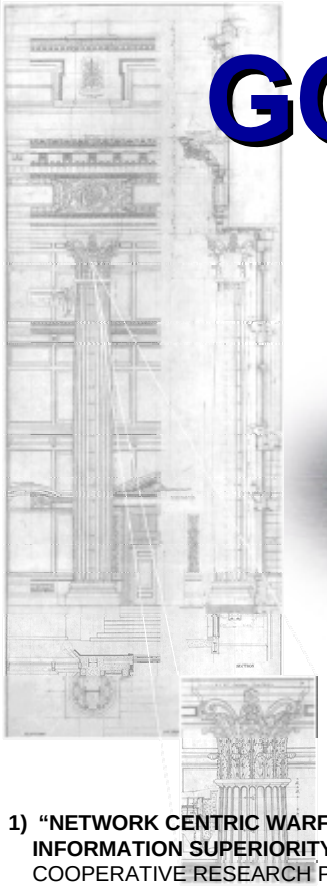
APPROACH TO THANH HOA BRIDGE -
"VALLEY OF THE MOON"

WEAPON	SORTIES	LOSSES	RESULTS
UNGUIDED BOMBS	800	10	BRIDGE STANDING
LASER GUIDED BOMBS	4	0	BRIDGE DESTROYED
INS/GPS GUIDED BOMBS	1/2	0	BRIDGE DESTROYED IN ADV WX

NAVAL AVIATION AND NETWORK-CENTRIC WARFARE

BLUEPRINTING FUTURE COMBAT CAPABILITY

WHERE WE ARE GOING . . .



NETWORK CENTRIC WARFARE

". . . AN INFORMATION SUPERIORITY-ENABLED CONCEPT OF OPERATIONS THAT GENERATES INCREASED COMBAT POWER BY NETWORKING SENSORS, DECISION MAKERS, AND SHOOTERS" [1]

1) **"NETWORK CENTRIC WARFARE - DEVELOPING AND LEVERAGING INFORMATION SUPERIORITY"**, 2ND EDITION (REVISED), DoD C4ISR COOPERATIVE RESEARCH PROGRAM, 1999

NAVAIR'S CHANGES IN FOCUS

WE WILL FOCUS LESS ON . . .

- NEW PLATFORM DEVELOPMENT
- ORGANIC SHORE-STATION SUPPORT
- ORGANIC T&E RANGE SUPPORT
- MATERIAL AND DATA MGT.
- TRANSACTION PROCESSING

AND MORE ON . . .

- EXPLOITATION OF PLATFORMS' CAPABILITIES (NETWORK NODES)
- INTEGRATION OF SYSTEMS
- INTEROPERABILITY (JOINT, ALLIED)
- SIMULATION / INTEGRATED FLIGHT & SIMULATED ASSET TESTING (& TRAINING)
- SENSORS / FUSION
- PRECISION / TIME-SENSITIVE STRIKE
- UNMANNED VEHICLES
- TOTAL OWNERSHIP COST (TOC)
- AGING AIRCRAFT
- PRIVATE SECTOR "PARTNERSHIPS" AND COMMERCIAL PRACTICE
- WARFIGHTER INTERACTIONS
- WEB-BASED / ENABLED SYSTEMS

MIGRATION OF CONTRACTOR-GOV'T RELATIONSHIP

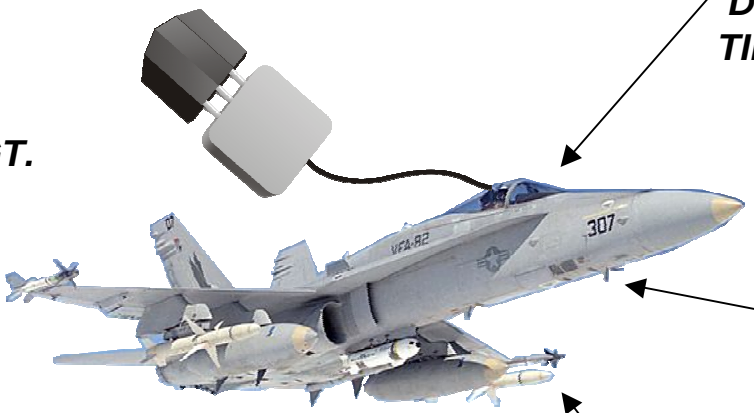
FORMER MODEL		NEW MODEL
• OVERSIGHT	→	INSIGHT
• CUSTOMER	→	CUSTOMER / PARTNER / SUPPLIER
• PLATFORM-CENTRIC	→	NETWORK-CENTRIC
• SERVICE ORIENTATION	→	JOINT ORIENTATION
• "CREATE RUBBLE" OF TARGET	→	EFFECTS-BASED TARGETING
• TECHNICAL SPECS	→	PERFORMANCE SPECS

21ST CENTURY AVIATION SOLUTIONS

NAVAL AVIATION IS POSITIONED TO FULLY LEVERAGE INFORMATION-AGE TECHNOLOGIES TO EFFECT AND OPTIMIZE NET-CENTRIC CAPABILITIES

"PLUG & PLAY" ACCESS
- *INTEROPERABILITY*
- *SPECTRUM MGT.*
- *BANDWITH MGT.*
- *NETWORK MGT.*
- *INFORMATION MGT.*

DISTRIBUTED MEMORY
- *LOCAL DATA STORAGE WITH DEFINED SCOPE, SCALE, AND TIMEFRAME*



USER GETS:

FUNCTIONAL COLLABORATION WITH OTHER NODES

ACCESS TO INFORMATION TO CREATE OWN KNOWLEDGE DOMAIN

BENEFITS OF SHARED NET AND KNOWLEDGE MGT.

NETWORK PROVIDES:

LARGER SCOPE, SCALE, TIMEFRAME ON CALL BACKPLANE FOR SHARED SITUATIONAL AWARENESS

CONVEYANCE FOR COLLABORATIVE FUNCTIONS

CHARGE-UP OF LOCAL STORAGE

DISTRIBUTED SENSING
- *ORGANIC SENSORS FOR LOCAL DETAIL AND BASIC BACK-UP*

USER ADDS:

LOCAL DEFINITION TO BACKPLANE

CORRECTIVE AND LEARNED FEEDBACK

DISTRIBUTED PROCESSING
- *LOCAL PROCESSING = COMPUTING + MAN-IN-THE-LOOP*

METHODS FOR SETTING STANDARDS

TWO MAIN ALTERNATIVES EXIST:

"THE INTERNET MODEL": *SELF-ORGANIZING GROUPS*

- NO SINGLE GROUP DOMINATES
- GROUPS ORGANIZE THEMSELVES, ARE INDEPENDENT OR SEMI-INDEPENDENT
- GROUPS ESTABLISH STANDARDS WHICH GAIN GRADUAL AND UNIVERSAL ACCEPTANCE THROUGHOUT THE INDUSTRY
    - E.G., HTTP PROTOCOL

"THE MICROSOFT MODEL": *A DOMINANT ORGANIZATION*

- A SINGLE ORGANIZATION DOMINATES
- THE GROUP IS ESTABLISHED AND CONTROLLED CENTRALLY
- THE DOMINANT ORGANIZATION IS ABLE TO ENFORCE ITS OWN STANDARDS THROUGHOUT THE INDUSTRY
    - E.G., "WINDOWS" OPERATING SYSTEM

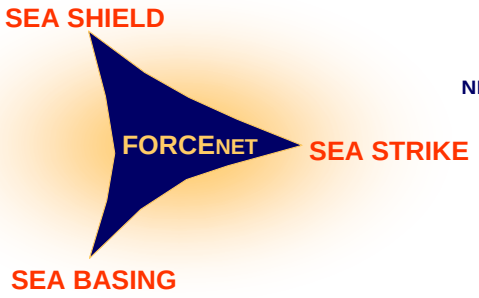
SEA POWER 21
NAVAL AVIATION CAPABILITIES

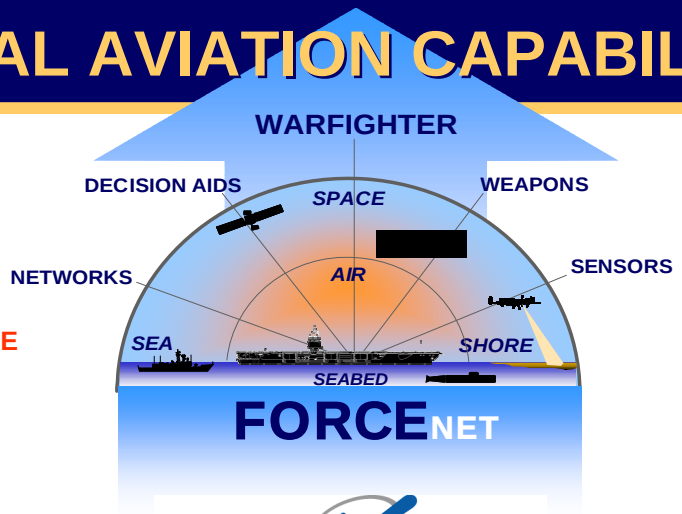
SEA SHIELD
- THEATER AIR & MISSILE DEFENSE
- LITTORAL SEA CONTROL
- HOMELAND DEFENSE

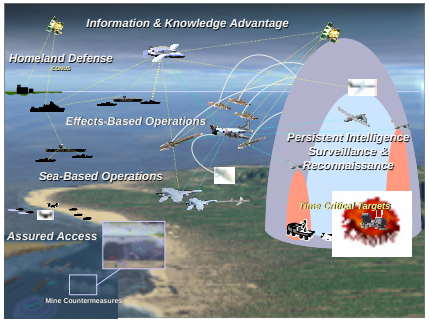
SEA STRIKE
- TIME SENSITIVE STRIKE
- PERSISTENT ISR
- INFORMATION OPERATIONS
- SHIP-TO-OBJECTIVE MANEUVER

SEA BASING
- ENHANCED SEA-BORNE POSITIONING OF JOINT ASSETS
- ACCELERATED DEPLOYMENT & EMPLOYMENT TIME

NAVAL AVIATION CAPABILITIES







NAVAIR

ACQUISITION & LIFE CYCLE SUPPORT

SENSORS
- ATFLIR AESA PHASE II
- SHARP
- AEA DIGITAL SYS
- MMA
- JMOD II
- MH-60R MMRS (ISAR/PD)
- RMP
- AQS-22

NETWORKS
- LINK 16
- JSIP FOLLOW-ON
- CDL-N
- JMPS
- CEC / JCTN
- TBMCS

WEAPONS
- JASSM
- JSOW, AARGM/QB
- PJDAM, SDB
- HELLFIRE FOLLOW-ON
- AIM-120
- AMRAAM P3I
- AIM-9X
- TOMAHAWK

PLATFORMS
- CVNX
- AEA
- F/A-18C/D/E/F
- JSF
- UCAV-N
- E-2C RMP
- E-6B
- MMA
- MH-60R & S

NAVAIR

WHAT IS FORCEnet?

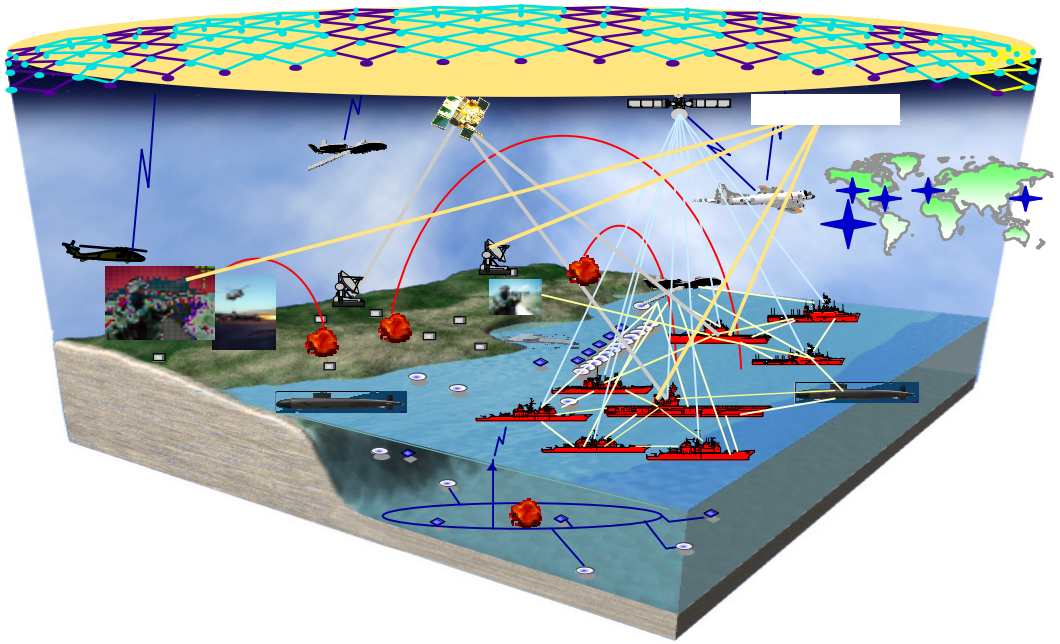
DEFINITION FROM CNO'S STRATEGIC STUDIES GROUP

"NETWORK CENTRIC WARFARE IS THE THEORY.

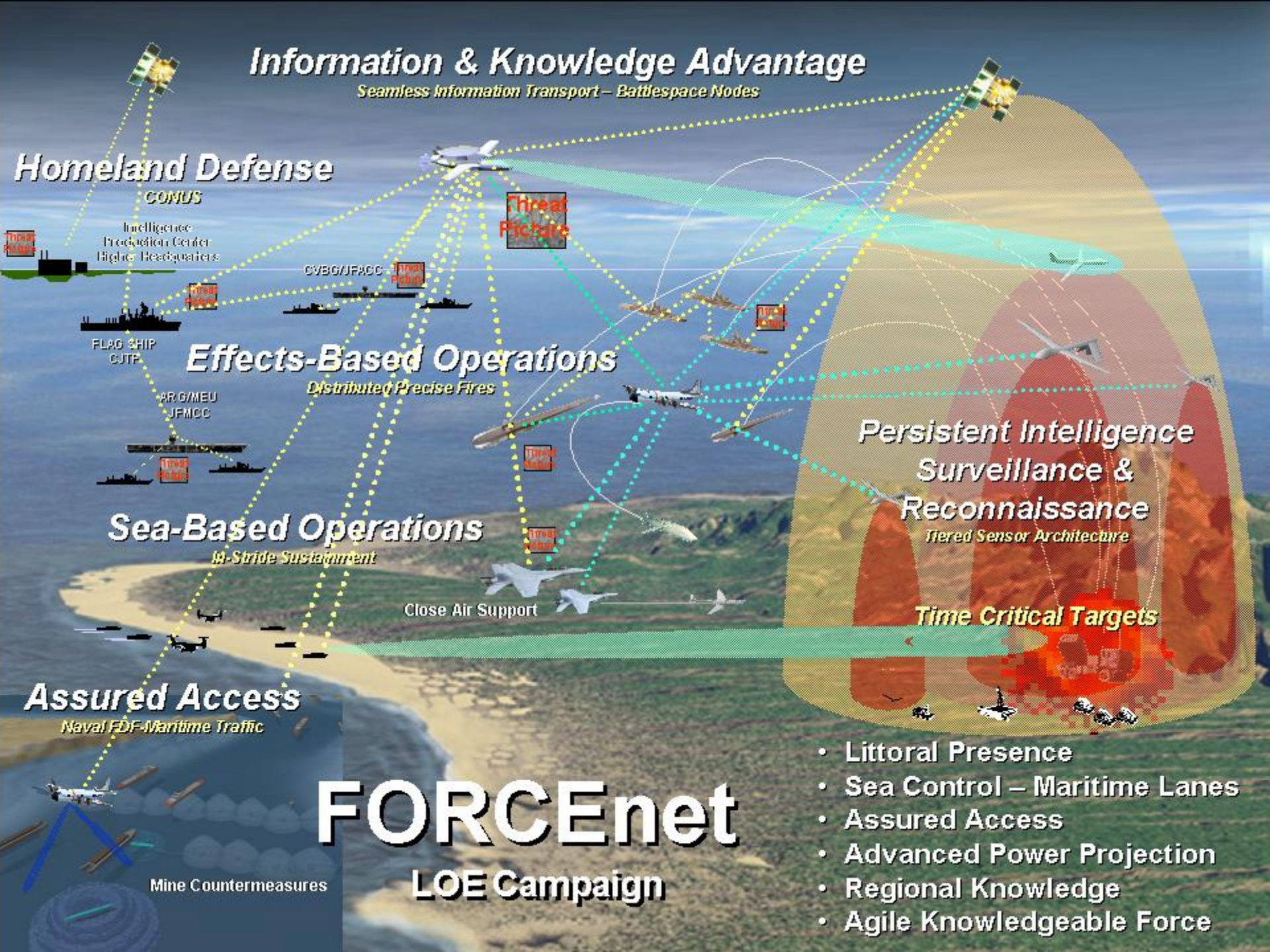
NET-CENTRIC OPERATIONS IS THE CONCEPT.

FORCENET IS THE PROCESS OF MAKING THE THEORY AND CONCEPT A REALITY.

"FORCENET (SEA POWER 21) IS THE OPERATIONAL CONSTRUCT AND ARCHITECTURAL FRAMEWORK FOR NAVAL WARFARE IN THE INFORMATION AGE THAT INTEGRATES WARRIORS, SENSORS, NETWORKS, COMMAND AND CONTROL, PLATFORMS AND WEAPONS INTO A NETWORKED, DISTRIBUTED COMBAT FORCE, SCALABLE ACROSS THE SPECTRUM OF CONFLICT FROM SEABED TO SPACE AND SEA TO LAND."*

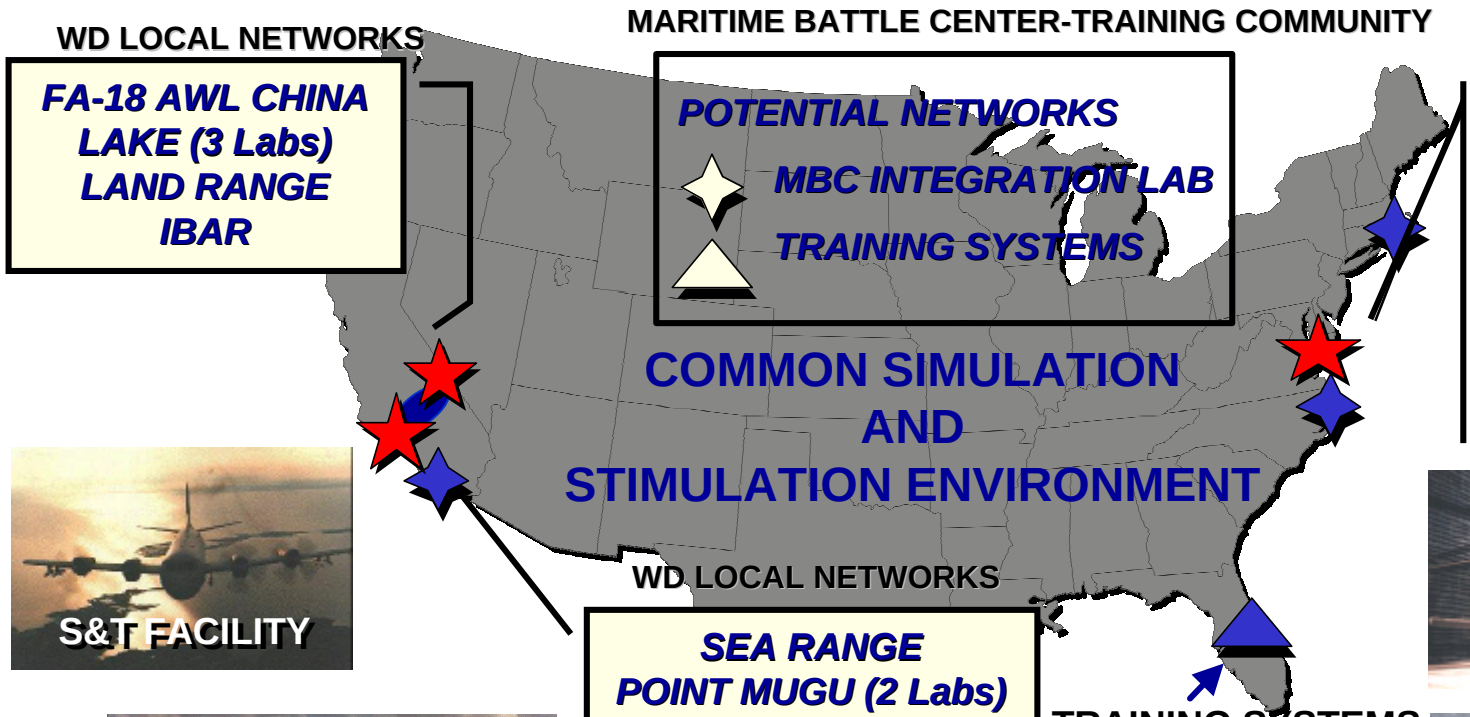


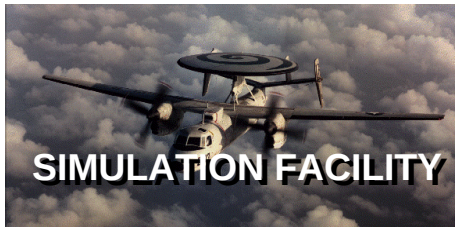
***CNO'S STRATEGIC STUDIES GROUP - XXI DEFINITION FROM 22 JULY 02 CNO BRIEFING**


Information & Knowledge Advantage
Seamless Information Transport – Battlespace Nodes
Homeland Defense
CONUS
Intelligence Production Center Higher Headquarters
Threat Picture
CVBG/JFACC
FLAG SHIP CJTF
Effects-Based Operations
Distributed Precise Fires
ARG/MEU JFMCC
Sea-Based Operations
In-Stride Sustainment
Close Air Support
Persistent Intelligence Surveillance & Reconnaissance
Tiered Sensor Architecture
Time Critical Targets
Assured Access
Naval EDF-Maritime Traffic
Mine Countermeasures
FORCEnet
LOE Campaign
• Littoral Presence
• Sea Control – Maritime Lanes
• Assured Access
• Advanced Power Projection
• Regional Knowledge
• Agile Knowledgeable Force

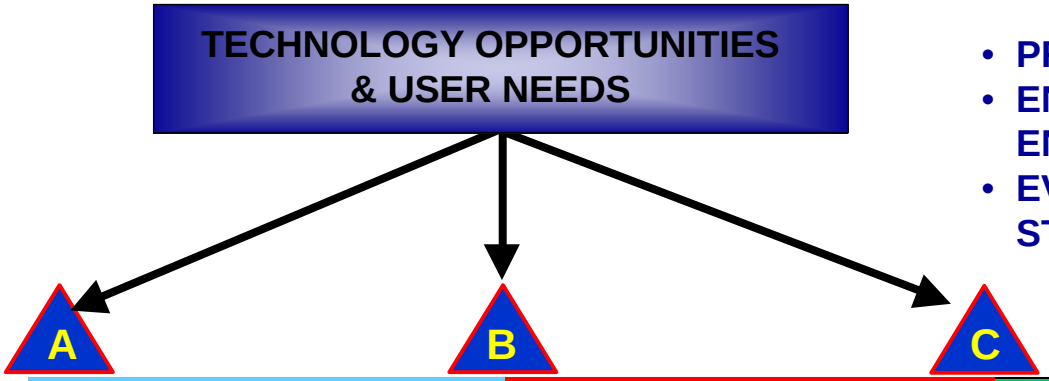
FORWARD. . . FROM THE LABS

LEVERAGING EXISTING TECHNICAL INFRASTRUCTURE

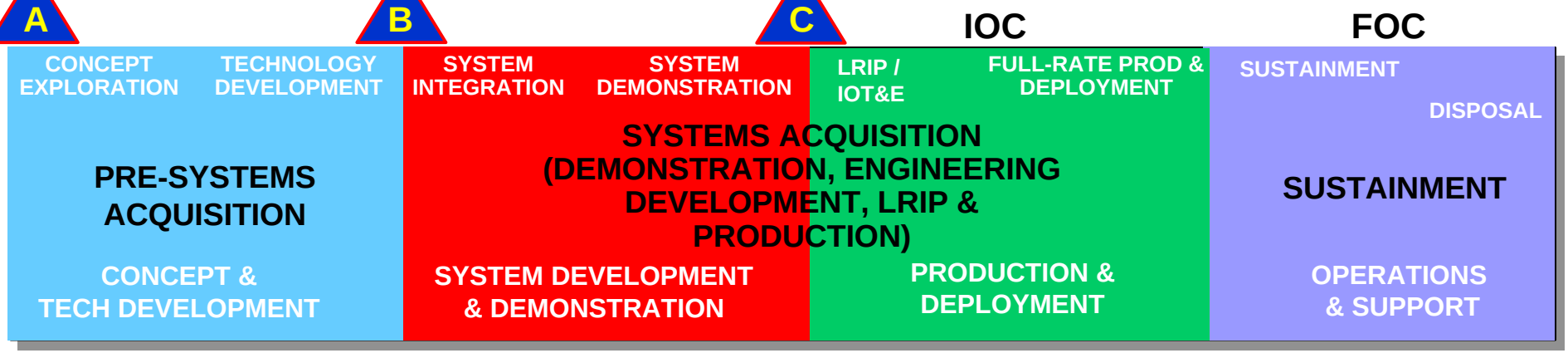




THE DOD 5000 MODEL AND TEST & EVALUATION



- PROCESS ENTRY AT MILESTONES A, B, OR C
- ENTRANCE CRITERIA MET BEFORE ENTERING PHASES
- EVOLUTIONARY ACQUISITION OR SINGLE STEP TO FULL CAPABILITY



TECHNOLOGY DEVELOPMENT

- DEVELOP OVERALL ACQUISITION T&E STRATEGY.
- PREPARE TEST & EVALUATION MASTER PLAN (TEMP).
- PREPARE LFT&E WAIVER (IF REQUIRED).

SYSTEM INTEGRATION

- CONDUCT EARLY OPERATIONAL ASSESSMENT (EOA).
- UPDATE TEMP PRIOR TO MS B.

SYSTEM DEMONSTRATION

- CONDUCT EXTENSIVE TESTING: DEVELOPMENTAL, OPERATIONAL, AND SURVIVABILITY/LETHALITY AS APPROPRIATE.

LRIP / IOT&E

- INTENSIVE TESTING: DT, FULL-UP SYSTEM LEVEL LFT&E AND IOT&E.
- UPDATE TEMP PRIOR TO MS C.

FULL RATE PROD & DEPLOYMENT

- CONDUCT FOLLOW-ON OPERATIONAL TEST AND EVALUATION (FOT&E), AS APPROPRIATE.

SUSTAINMENT

- CONDUCT DT&E / FOT&E AS REQUIRED.

NAVAIR'S T&E VALUE TO THE FLEET

WE SHOW THEM "THE ART OF THE POSSIBLE"


SEE THE WORLD
THROUGH THE FLEET'S EYES,
AND MEASURE OUR SUCCESS
BY THEIR SUCCESS