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DEPARTMENT OF DEFENSE'S CORPORATE INFORMATION MANAGEMENT AND ENTERPRISE INTEGRATION

PROCEEDINGS

13-14 December 1994
Reston, VA
Event #574

supported by
THE AMERICAN DEFENSE PREPAREDNESS ASSOCIATION

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14. Abstract This document contains the presentations and speeches from the DoD Corporate Information Management and Enterprise Integration Symposium. The symposium was held in Reston, Virginia on December 13-14, 1994. It includes speeches and presentations from the Honorable Emmett Paige, Jr., Assistant Secretary of Defense (C3I), Lt Gen Albert Edmonds, USAF, Director, Defense Information Systems Agency (DISA), Ms. Cynthia Kendall, Deputy Assistant Secretary of Defense (IM), MG James Klugh, USA (ret.), Deputy Undersecretary of Defense (Logistics), Maj Gen George Anderson, M.D., USAF, MC, Deputy Assistant Secretary of Defense (Health Services Operations & Readiness), and Mr. Richard Keevey, Deputy Undersecretary of Defense (Comptroller/Financial Management). The Corporate Information Management and Enterprise Integration Initiatives cover the areas of Business Process Reengineering, Data Administration, Migration Systems, and Computer and Communication Infrastructure.

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KEYNOTE ADDRESS

BY

THE HONORABLE EMMETT PAIGE, JR.

ASSISTANT SECRETARY OF DEFENSE

COMMAND, CONTROL, COMMUNICATIONS

AND INTELLIGENCE

WASHINGTON, DC

TO THE

AMERICAN DEFENSE

PREPAREDNESS ASSOCIATION

CORPORATE INFORMATION MANAGEMENT

AND ENTERPRISE INTEGRATION

SYMPOSIUM

HYATT REGENCY HOTEL

RESTON, VIRGINIA

DECEMBER 13, 1994

GOOD MORNING! THANK YOU, MS. RAND, YOUR WARM WORDS OF INTRODUCTION, AND THANKS ALSO GOES TO THE AMERICAN DEFENSE PREPAREDNESS ASSOCIATION FOR HOSTING THIS MEETING.

THIS SYMPOSIUM BRINGS TOGETHER A DIVERSITY OF INTERESTS IN CORPORATE INFORMATION MANAGEMENT AND ENTERPRISE INTEGRATION. IT ALSO BRINGS TOGETHER A WEALTH OF EXPERIENCE AND A WIDE RANGE OF OPINIONS ABOUT ACTIONS THAT HAVE TAKEN PLACE AND THOSE THAT ARE ON THE HORIZON.

I WANT THE BOTTOM LINE OF THIS SYMPOSIUM TO BE ACTION. I COULD STAND HEAR AND GIVE YOU QUOTES AND PLATITUDES, AND ALL THAT MIGHT BE INTELLECTUALLY ENLIGHTENING, BUT THAT'S NOT WHAT'S GOING TO GET THE JOB DONE.

BEFORE I GO TOO FAR WITH THIS, LET ME TELL YOU IN A FEW STATEMENTS WHAT I HAVE TO SAY: AFTER THAT I WILL GET MORE SPECIFIC ABOUT ACTIONS AND GIVE YOU A LITTLE MORE GRIST FOR THE MILL.

I'D LIKE TO SHARE WITH YOU MY MODE OF OPERATION FOR GETTING THINGS DONE. AFTER YOU REALIZE THAT SOMETHING NEEDS TO BE DONE AND THAT YOU HAVE GATHERED AN ADEQUATE AMOUNT OF INFORMATION, THEN YOU MAKE A DECISION. YOU LATCH ONTO SOMETHING, AND HAVE THE STAYING POWER AND PERSEVERANCE TO MAKE IT SUCCESSFUL.

IF THERE IS A NEED FOR COURSE ADJUSTMENTS, YOU DO SO IF THERE IS A COMPELLING REASON. OTHERWISE YOU STAY THE COURSE AND WEATHER THE STORMS OF THE NAYSAYERS.

I CAME BACK TO THE DEPARTMENT OF DEFENSE ON A MISSION. I WOULD SUGGEST THAT YOU JOIN ME -- BUT THIS IS NOT FOR THE FAINT OF HEART OR THE WEAK OF EGO. IT TAKES A LOT OF STRENGTH OF CHARACTER TO BE ABLE TO LEAD AS NEEDED AND TO BE ABLE TO PLAY THE SUPPORTIVE ROLE WHEN THAT NEED ARISES.

WE HAVE ALL GATHERED HERE TO PULL TOGETHER TO GET ON WITH THE IMPLEMENTATION OF CORPORATE INFORMATION MANAGEMENT AND BRING ABOUT ENTERPRISE INTEGRATION. AS THE POET ROBERT FROST TOLD US, WE HAVE PROMISES TO KEEP AND MILES TO GO BEFORE WE SLEEP.

WHAT ARE THE MILES? ACTUALLY, THE DISTANCES COULD BE MEASURED IN MICRONS OR LESS. HOW FAR OFF MUST AN ELECTRON BE TO CAUSE A MISMATCH IN TARGETING INFORMATION? TO CAUSE THE NONPAYMENT OR THE OVERPAYMENT ON A CONTRACT? TO NOT UPDATE A MEDICAL RECORD BEFORE AN UNEXPECTED EMERGENCY?

THERE ARE ANY NUMBER OF EMOTIONALLY CHARGED EXAMPLES I COULD USE, BUT WE NEED NOT RUN ON FEELINGS. WE MUST RUN ON FACTS AND THE NEED TO MEET MISSION DEMANDS AND ON PLANS THAT LAY OUT REAL ACTIONS.

I APPLAUD THE AMERICAN DEFENSE PREPAREDNESS ASSOCIATION FOR BRINGING US ALL HERE. ALL THE MAJOR STAKEHOLDERS IN CIM AND ENTERPRISE INTEGRATION ARE HERE OR ARE REPRESENTED HERE TODAY.

FIRST, THERE ARE THE MILITARY SERVICES, WHO, I SUBMIT, MUST BE OUR MOST IMPORTANT STAKEHOLDERS. THE NEEDS OF OUR FIGHTING FORCES MUST REMAIN PARAMOUNT.

THIS IS NOT HERESAY AGAINST DEPARTMENTAL EFFORTS IN CIM BEING HEADED BY THE FUNCTIONAL LEADERSHIP WITHIN THE OFFICE OF THE SECRETARY OF DEFENSE. I BELIEVE THAT THIS IS THE BEST CONFIGURATION FOR PROVIDING SUPPORT FOR OUR TROOPS.

SO WHAT OF THE FUNCTIONS? WHICH IS MORE IMPORTANT THAN THE OTHERS? IS IT THE COMMAND AND CONTROL FUNCTION? THE INTELLIGENCE FUNCTION THAT GIVES EYES AND EARS TO OUR FIGHTING FORCES? IS IT THE ACQUISITION FUNCTION TO PROVIDE WEAPONS, BOMBS, BULLETS, SPARE PARTS AND SUPPLIES? IS IT THE FINANCIAL FUNCTION THAT PAY THE TROOPS AND TRANSLATES TAXPAYER DOLLARS INTO DEFENSE CAPABILITIES? IS IT PERSONNEL AND READINESS, THAT RECRUITS OUR FORCES, ASSIGNS THEM TO UNITS, AND TAKES CARE OF THEIR FAMILIES AS IT DEPLOYS THEM TO ALMOST ANY LOCATION ON THE GLOBE?

I ASSURE YOU, THERE IS NO FUNCTION EITHER MORE OR LESS IMPORTANT THAN ANY OTHER. THOSE OF US WHO HAVE BEEN ASKED BY THE PRESIDENT TO MAINTAIN AND MAKE OUR FIGHTING FORCES THE BEST TRAINED, BEST EQUIPPED, BEST PREPARED IN THE WORLD ARE WORKING TOGETHER AS A TEAM.

AS MOST OF YOU KNOW FROM HEARING MY THOUGHTS OVER THE YEARS, I CONSIDER ALL SYSTEMS TO BE COMMAND AND CONTROL SYSTEMS. I AM SURE THAT THE LEADERSHIP OF EACH FUNCTIONAL AREA ALSO VIEWS THEIR SYSTEMS AS COMMAND AND CONTROL SYSTEMS AS WELL.

USING THE CONCEPT OF JOINT OWNERSHIP, WE ARE JOINTLY RESPONSIBLE FOR THE SUCCESS OR FAILURE OF OUR FUNCTIONS AND SYSTEMS.

FROM MY PERSPECTIVE, OUR BUSINESS SYSTEMS WHICH ARE SOMETIMES REFERRED TO AS MANAGEMENT INFORMATION SYSTEMS ARE ESSENTIAL TO COMMAND AND CONTROL OF OUR FORCES.

WE HAVE BILLIONS OF LINES OF CODE IN THOSE SYSTEMS, AND THE COST OF MAINTAINING THOSE SYSTEMS IS JUST AS EXPENSIVE AS IT IS TO MAINTAIN THE CONVENTIONAL C3I SYSTEMS OR WEAPON SYSTEMS.

WE ARE TRYING TO REDUCE OUR SOFTWARE OVERHEAD AS WE MOVE AWAY FROM LEGACY SYSTEMS OF YESTERDAY AND ON TO MIGRATION SYSTEMS OF THE FUTURE, BUT THE SYSTEMS THAT REMAIN AS WE TRANSITION ALSO NEED ATTENTION.

THESE SYSTEMS MUST INTEROPERATE WITH THEMSELVES AND WITH OUR CONVENTIONAL C3 AND COMBAT SUPPORT SYSTEMS.

MUTUAL DEPENDENCY IS A FACT OF LIFE SO MUTUAL COOPERATION MUST BE ALSO. AS BENJAMIN FRANKLIN SAID AS HE SIGNED THE DECLARATION OF INDEPENDENCE, "WE MUST ALL HANG TOGETHER OR SURELY WE WILL ALL HANG SEPARATELY." THE DEPARTMENT OF DEFENSE MUST DRAW UPON THE STRENGTHS OF ITS DIVERSITY OF CAPABILITIES AND EXPERIENCE TO MAKE THE AMALGAM STRONGER AND MORE USEFUL THAN ITS INDIVIDUAL COMPONENT PARTS.

LET ME GIVE YOU AN EXAMPLE OF ONE OF THESE EFFORTS, ONE WHICH IS CUTTING TO THE CORE OF MANY OF OUR SYSTEMS PROBLEMS, THAT BEING THOSE BILLIONS OF LINES OF CODE THAT I JUST MENTIONED.

AS MOST OF YOU KNOW I STRONGLY BELIEVE WE HAVE A SOFTWARE CRISIS IN DOD. THE ASD(C3I) IS GENERALLY REGARDED AS THE PROPONENT FOR SOFTWARE POLICY WITHIN DOD WHILE

USD(A&T), AND SPECIFICALLY DDR&E, IS RESPONSIBLE FOR SOFTWARE R&D.

NOEL LONGUEMARE, THE PRINCIPAL DEPUTY USD(A&T), AND I CO-CHAIR THE SOFTWARE MANAGEMENT EXECUTIVE COUNCIL. WE HAVE INITIATED A SOFTWARE MANAGEMENT REVIEW BOARD AND PROCESS ACTION TEAMS.

I LIKE THE IDEA OF THE USD(A&T) FOLK, IN THEIR ROLE OF OVERSIGHT FOR ALL THE WEAPONS SYSTEMS AND COMBAT SUPPORT SYSTEMS, BEING INVOLVED IN THE DAY-TO-DAY SOFTWARE BUSINESS. IN THE PAST, THEY HAVE BEEN IN THE R&D OF SOFTWARE SUCH AS THEY WERE WITH ADA, BUT THEY HAVE NOT ENFORCED THE USE OF THEIR PRODUCTS.

WHEN THE RESEARCH COMMUNITY IS DEALING WITH SOFTWARE FOR A SPECIFIC WEAPON SYSTEMS, THEY ARE WORKING LARGELY IN THE REALM OF APPLIED RESEARCH. IN ANY TYPE OF RESEARCH, THERE ARE PARAMETERS THAT ARE HELD CONSTANT -- THESE ARE THE "GIVENS" -- AND THERE ARE ALSO PARAMETERS THAT ARE ALLOWED TO VARY.

I ASSERT THAT THE SOFTWARE FOR WEAPON SYSTEMS SHOULD BE DEVELOPED WITH AN EXPANDED SET OF "GIVENS."

MORE STANDARDIZATION OF SOFTWARE LANGUAGES, TOOLS, AND PROCESSES IN THE SYSTEMS DEVELOPMENT AREA WOULD YIELD SYSTEMS THAT WILL INTEROPERATE BETTER AND SAVE BILLIONS TO BUILD AND MAINTAIN OVER THEIR LIFE CYCLE.

THIS DEPARTMENT-WIDE SOFTWARE MANAGEMENT INITIATIVE COVERS ALL ASPECTS OF SOFTWARE MANAGEMENT AND ACQUISITION IMPROVEMENT, REGARDLESS OF THE USE OF THE SOFTWARE.

OUR SOFTWARE INITIATIVE COVERS IMPLEMENTATION OF THE MANAGEMENT IMPROVEMENTS AND RECOMMENDATIONS CONTAINED IN THE JUNE 1994 DEFENSE SCIENCE BOARD STUDY ON "ACQUIRING DEFENSE SOFTWARE COMMERCIALLY."

THE FIRST TWO PROCESS ACTION TEAMS HAVE ALREADY BEEN CONVENED ON SOFTWARE ACQUISITION BEST PRACTICES AND ON EDUCATION. ADDITIONAL TEAMS WILL BE FORMED AS NEEDED.

ADDITIONAL CROSS-FUNCTIONAL COOPERATION IS TAKING PLACE IN THE ACQUISITION ARENA. WHILE I BELIEVE THAT THE FEDERAL ACQUISITION STREAMLINING ACT WILL DO MUCH TO ALLEVIATE THE CUMBERSOME ACQUISITION PROCESS, THERE IS MUCH THAT WE CAN AND MUST DO OURSELVES.

THE RATE OF CHANGE IN TECHNOLOGY IS SO RAPID THAT WE MUST ACCELERATE THE SYSTEMS ACQUISITION PROCESS TO GUARD AGAINST OBSOLESCENSE IN THE SYSTEMS -- AND THIS INCLUDES WEAPON SYSTEMS -- FOR OUR FORCES.

THE OBJECT, AFTER ALL, IS TO ACQUIRE DEFENSE CAPABILITIES RATHER THAN TO FEED THE ACQUISITION PROCESS ITSELF.

IN THE AREA OF ACQUISITION STREAMLINING, THE UNDER SECRETARY OF DEFENSE FOR ACQUISITION AND TECHNOLOGY, DR. KAMINSKI, HAS APPROVED THE SELECTION OF THE SPACE BASED INFRARED (SBIR) SYSTEM AS A PILOT PROGRAM FOR ACQUISITION STREAMLINING. THIS IS AN AGGRESSIVE ATTEMPT TO DO IN 60 DAYS WHAT HISTORICALLY HAS TAKEN 6-9 MONTHS.

DR. KAMINSKI IS DEFINITELY A CHANGE AGENT AND IS DETERMINED TO MAKE THINGS HAPPEN.

THE GOAL IS TO STREAMLINE THE SYSTEM ACQUISITION PROCESS, WHILE MEETING ALL LEGAL REQUIREMENTS AND MAINTAINING RIGOROUS OVERSIGHT OF THE ACQUISITION.

HE HAS ALSO ASKED THE DAB COMMITTEE CHAIRMEN TO DEVELOP STREAMLINED ALTERNATIVES TO THE CURRENT COMMITTEE AND DAB OVERSIGHT PROCESS.

WHAT ARE THE OVERALL IMPLICATIONS FOR C3 OR OTHER SYSTEMS?

LOOKING AT THE LESSONS TO BE LEARNED FROM SBIR, WE MAY BE ABLE TO REDUCE THE DOCUMENTATION BURDEN LEVIED IN THE OVERSIGHT PROCESS FOR MANY ACQUISITIONS, INCLUDING C3 OR INFORMATION SYSTEMS.

ALSO, WE MAY FIND INNOVATIVE TECHNIQUES FOR OVERSIGHT THAT WILL GET US AWAY FROM THE SERIAL MILESTONE REVIEW PROCESS.

WE HAVE ADVOCATED RAPID PROTOTYPING, EVOLUTIONARY DEVELOPMENTS AND INCREMENTAL DEVELOPMENTS FOR QUITE SOME TIME, YET THE MILESTONE SEQUENCE FOR OVERSIGHT REVIEWS KEEPS US TIED RATHER CLOSELY TO THE OLD "GRAND DESIGN" OR WATERFALL MODEL FOR SYSTEM ACQUISITION.

MUCH OF THIS IS THE RESULT OF SOCIAL OPPOSITION TO CHANGE.

WE HAVE A VERY SUCCESSFUL MODEL FOR ACQUISITION OF HIGH TECHNOLOGY, HIGH COST SPACE BASED SYSTEMS ALREADY. THE NRO HAS BEEN A VERY SUCCESSFUL ACQUISITION ACTIVITY, AND THEY HAVE A TREMENDOUS TRACK RECORD.

THE STREAMLINING PROCESS THAT WE ARE TRYING TO BRING ABOUT IN THE NORMAL SYSTEM WOULD BE AUTOMATIC WITH THE NRO.

THIS WOULD STREAMLINE THIS PARTICULAR CLASS OF ACQUISITIONS, BUT NOT NECESSARILY THE OVERALL ACQUISITION PROCESS.

ON THE OTHER HAND, WE MAY WANT TO USE THE WAY THAT NRO DOES ITS ACQUISITIONS AS A COMPARATIVE MODEL FOR DETERMINING THE MOST RAPID, ALLOWABLE PATH FOR ALL ACQUISITIONS.

THIS COMING WEEKEND, DR. KAMINSKI WILL BE HOLDING AN INTENSIVE SESSION ON ACQUISITION IMPROVEMENT. I LOOK FORWARD TO SITTING DOWN AT THE TABLE TO EXCHANGE IDEAS WITH THE DEPARTMENT'S ACQUISITION SENIOR LEADERSHIP. I BELIEVE THAT THIS SYMPOSIUM IS FERTILE GROUND FOR DEVELOPING OTHER IDEAS FOR ACQUISITION IMPROVEMENT.

PINPOINTING ACQUISITION AS AN AREA THAT REQUIRES CROSS-FUNCTIONAL COOPERATION BRINGS ME TO ANOTHER SET OF STAKEHOLDERS IN THIS PROCESS -- WHICH IS THE AMERICAN INDUSTRIAL BASE.

COOPERATION WITHIN AND INDUSTRY AND THE DOD IS MORE IMPORTANT TODAY THAN EVER BEFORE AS DOD MOVES TO MORE AND MORE RELIANCE ON OUR NATION'S INDUSTRIES TO MAINTAIN

THE ADVANTAGE FOR OUR WARFIGHTERS AND TO IMPROVE THE ECONOMIC SECURITY OF OUR COUNTRY.

WITH UNEMPLOYMENT BEING AT ITS LOWEST LEVEL FOR YEARS, THEY MUST BE DOING A LOT THAT'S RIGHT.

WE IN THE C3I COMMUNITY HAVE ALREADY MADE STRIDES IN MAKING STRUCTURAL AND PROCEDURAL CHANGES SO THAT WE CAN PROVIDE BETTER SERVICE TO THE REST OF THE DEPARTMENT. I EXPECT THE BUSINESS RE-ENGINEERING THRUST IN DOD TO GAIN MOMENTUM AS TIME MOVES ON AND DOLLARS GET LESS. IMPROVEMENT IN CYCLE TIME CAN ONLY BE ACHIEVED BY REVOLUTIONARY CHANGES IN THE BUSINESS PROCESSES.

THE INFORMATION MANAGEMENT SERVICE PROVIDERS HAVE A MAJOR TASK AHEAD OF THEM TO PROVIDE A DEFENSE INFORMATION INFRASTRUCTURE THAT THE FUNCTIONAL AND OPERATIONAL IMPROVEMENTS OF THE DEPARTMENT CAN RIDE UPON.

I AM ASKING GENERAL EDMONDS TO SHOULDER THE LOAD ON THIS. DISA HAS ALREADY SHOWN ITS ABILITY TO SCRAP THE OLD AND MOVE ON WITH THE NEW WHEN IT TOSSED OUT THE OLD WAYS OF SELECTING STANDARD ELEMENTS.

AFTER 30 YEARS OF STANDARDIZATION EFFORTS, DOD HAD 2 APPROVED STANDARD DATA ELEMENTS AT THE BEGINNING OF THIS

YEAR. BY EARLY SEPTEMBER, WE HAD OVER 1,000 STANDARD DATA ELEMENTS. NOW WE MUST MOVE TO USING THEM.

OUR GOAL OF HAVING TOTAL INFORMATION CONNECTIVITY AMONG ALL DEFENSE UNITS, THAT IS TOTAL, SEAMLESS, EASY TO USE IF YOU NEED IT, AND IMPOSSIBLE TO USE IF YOU AREN'T ENTITLED, MUST BE REACHED. SECURITY MUST BE A CORNERSTONE OF OUR SYSTEMS AS WE DESIGN THEM.

THERE IS ONE IMPORTANT GROUP OF STAKEHOLDERS THAT I HAVEN'T MENTIONED -- AND THAT IS THE CITIZENRY OF OUR GREAT NATION. WE ARE HERE TO SERVE THEM AND TO GET THE BEST RETURN ON THE INVESTMENT OF THEIR TAX DOLLARS.

I AM PLEASED ABOUT THE PARTICIPATION OF CONGRESSIONAL STAFF MEMBERS, WHO ARE OUR REPRESENTATIVES OF THE TAXPAYERS, IN THIS SYMPOSIUM.

WE CANNOT SLOW DOWN OUR STREAMLINING EFFORTS. IF ANYTHING, WE NEED TO SPEED THEM UP.

THERE ARE STILL ANTICIPATED UPTURNS IN TOTAL DEFENSE COSTS AROUND THE TURN OF THE CENTURY. WE MUST DO WHAT WE CAN TO MAKE LASTING IMPROVEMENTS IN TERMS OF COST REDUCTIONS AND IMPROVEMENTS IN MISSION CAPABILITIES.

THE BUSINESS PROCESS RE-ENGINEERING STUDIES ALREADY PERFORMED HAVE YIELDED A LONG LIST OF IMPROVEMENTS THAT CAN BE MADE. BUT STUDIES DON'T GIVE RESULTS, ACTIONS DO.

IN LOOKING AT 130 BPR STUDIES THAT HAVE TAKEN PLACE IN DOD, NEARLY 1450 IMPROVEMENT OPPORTUNITIES HAVE BEEN IDENTIFIED.

ABOUT 30 OF THESE PROJECTS HAVE BEEN EVALUATED IN DEPTH USING FUNCTIONAL ECONOMIC ANALYSIS TECHNIQUES. BASED ON THESE ANALYSES, AN INVESTMENT OF $1.7 BILLION TO IMPLEMENT RE-ENGINEERED PROCESSES WOULD YIELD $10.5 BILLION IN POTENTIAL NET SAVINGS.

THIS IS A SIZABLE OUTLAY, BUT THE RESULTS ARE EVEN MORE SIZABLE. IN ADDITION, THERE ARE NON-FINANCIAL SAVINGS, AS IN LIVES SAVED OR DEPLOYMENT TIMES SHORTENED.

I ASSERT THAT THE DOD MUST MOVE OUT BOLDLY NOW AND IMPLEMENT THE IMPROVEMENTS THAT HAVE ALREADY BEEN IDENTIFIED.

AS MS. KENDALL AND GENERAL EDMONDS WILL BE TELLING YOU, WE ARE EMBARKING ON A NEW PHASE OF STRATEGIC ACTION IN CORPORATE INFORMATION MANAGEMENT AND ENTERPRISE INTEGRATION.

WE ALREADY HAVE A SMATTERING OF SIGNIFICANT RESULTS, AS IN REDUCING UNMATCHED DISBURSEMENTS, AND QUANTUM IMPROVEMENTS IN BATTLEFIELD MEDICAL EVACUATION. WE ARE JUST SCRATCHING THE SURFACE ON APPLYING ELECTRONIC COMMERCE AND ELECTRONIC DATA INTERCHANGE.

BUT LET'S NOT SETTLE FOR A FEW SUCCESSES. I'VE FOUND THAT IF YOU ARE USING A HAND TO PAT YOURSELF ON THE BACK, YOU CAN'T USE IT TO LEND A HAND TO SOMEONE ELSE. WE SHOULD CELEBRATE THESE SUCCESSES BY USING THEM AS EVIDENCE THAT MORE ARE FEASIBLE AND DOABLE.

WITH THESE AS THE WEIGHT ON THE LEVER OF CHANGE, ENTERPRISE INTEGRATION IS THE FULCRUM.

UNDER THE LEADERSHIP OF SECRETARY PERRY AND DEPUTY SECRETARY DEUTCH, WE MUST ACT AS A TEAM. WE MUST FORM OUR GAME PLAN AND EXECUTE IT TO THE BEST OF OUR ABILITIES.

AS GENERAL CHAPPY JAMES USED TO POINT OUT, GETTING TO THIRD BASE ADDS NO MORE TO THE SCORE THAN A STRIKE-OUT. THE STATS FOR AN INDIVIDUAL MEAN LITTLE IF THE TEAM DOES NOT WIN.

I RETURNED TO THE DEPARTMENT OF DEFENSE TO MAKE A DIFFERENCE, NOT AS AN INDIVIDUAL, AND NOT IN AN INDIVIDUAL AREA. THE OTHER MEMBERS OF THE LEADERSHIP TEAM ALSO CAME

HERE TO HELP MAKE THE IMPROVEMENTS THAT OUR NATION EXPECTS AND THAT THE WORLD SITUATION REQUIRES.

WE MUST MOVE AHEAD IN IMPLEMENTING JOINT SOLUTIONS THAT WILL GIVE INTEGRITY, RELIABILITY, FLEXIBILITY, SECURITY AND STRENGTH TO DEFENSE CAPABILITIES.

WARS CANNOT BE FOUGHT AND WON WITH A SINGLE SET OF SOLUTIONS. AND THEY CANNOT BE WON WITH THE LAST WAR'S CAPABILITIES AND STRATEGIES.

LET'S GET ON WITH IT.

I WOULD BE GLAD TO ENTERTAIN YOUR QUESTIONS AT THIS TIME.

Outline

- Background
- CIM/EI Goals
- Management Structure
- Functional Strategic Plans
- Key Success Factors
- Next Steps

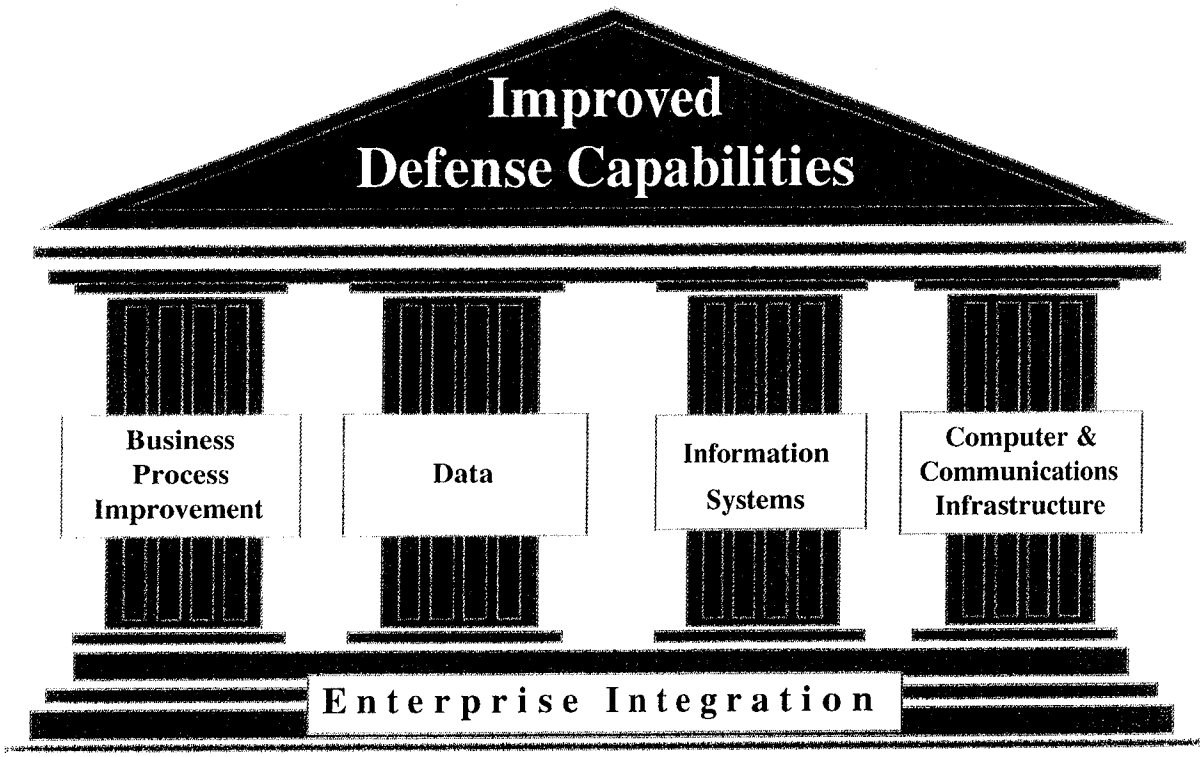
Corporate Information Management/ Enterprise Integration Strategic Plan

Cynthia Kendall
Deputy Assistant Secretary of Defense
(Information Management)

Background

- Deputy Secretary of Defense Direction
  - Approval of CIM Strategic Plan and EI Implementing Plan, June 13, 1994
  - Direction Given to:
    - Update and integrate the plan by Fall 1994
    - Expand planning to include functional plans
    - Identify issues to EI Executive Board and EI Corporate Management Council

Corporate Information Management/ Enterprise Integration



Overarching CIM/EI Goal

Enable the commanders of military forces
and the managers of support activities
to achieve the highest
effectiveness,
efficiency,
agility and
integration in their operations
through the effective use of information
applied in improved functional processes.

CIM/EI Goals

1. Re-engineer Processes
2. Shared Data
3. Minimize Duplication of Information Systems
4. Computer and Communications Infrastructure
5. Integrated Defense Enterprise
6. CIM/EI Policies and Structure

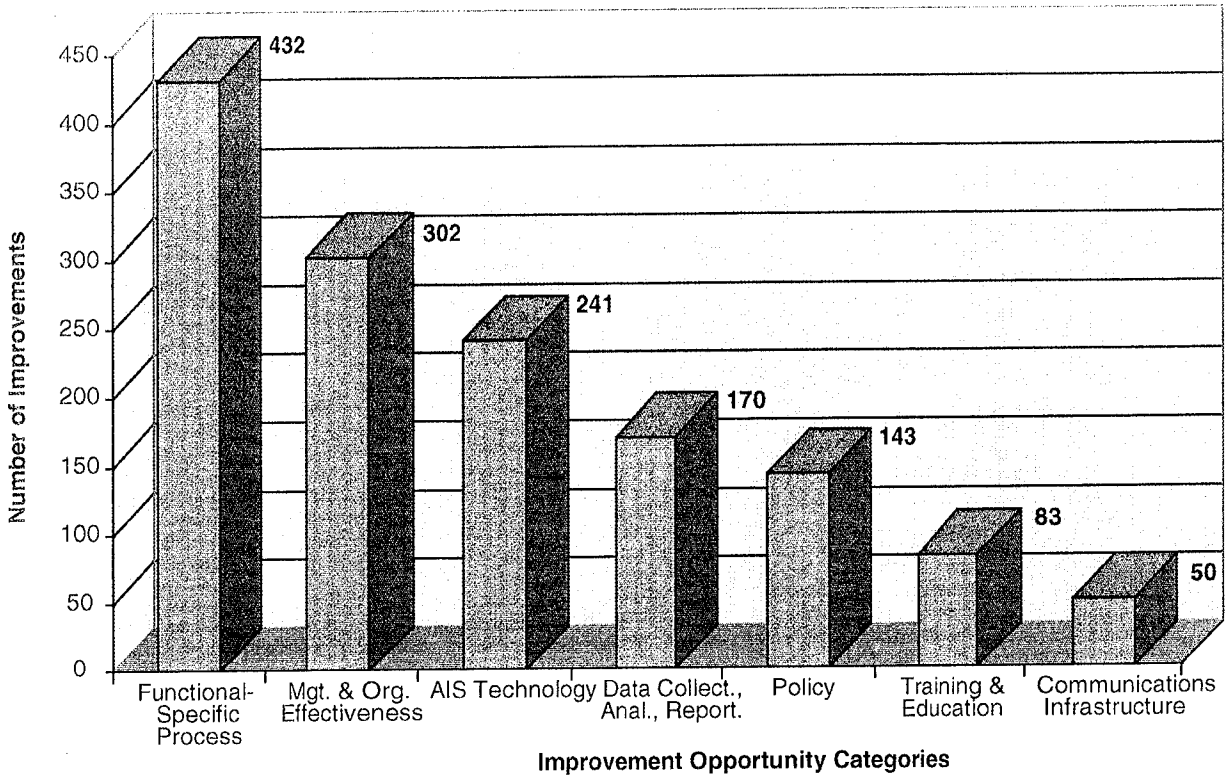
Goal 1: Re-engineer Processes

- Objectives
  - Aggressively pursue process changes
  - Implement re-engineering on a sustaining basis
- Strategy
  - Accelerate top-down re-engineering of critical processes in the next two years
  - Team approach with other initiatives

Goal 1: Re-engineer Processes

- Proposed Performance Measures
  - Process Improvements Made
    - Return on Investment
    - Performance Gains
  - Extent of usage of BPR
  - Effectiveness of BPR Tools and Support

Analysis of BPR Improvement Opportunities by Improvement Category



* 1,421 Improvement Opportunities Analyzed

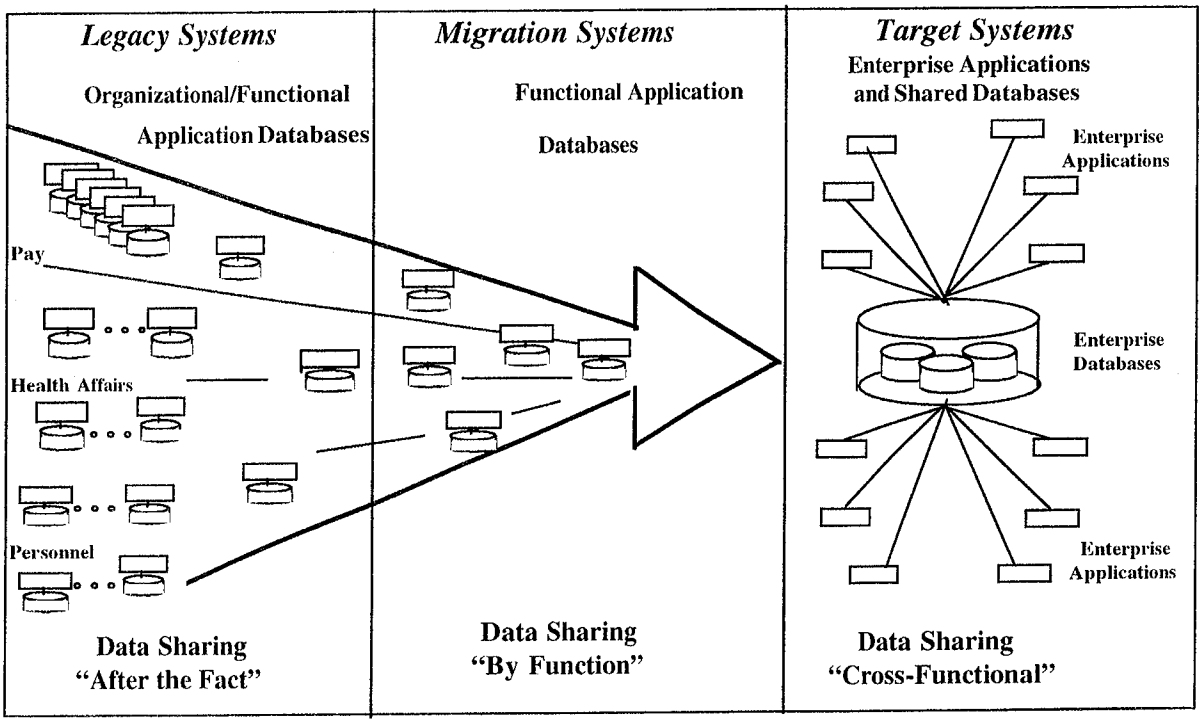
Goal 2: Shared Data

- Objectives
  - Derive standard definitions, use in shared databases and common information systems
  - Delivery of high quality data
- Strategy
  - Link data sharing improvements to migration systems implementation
  - Evolve to integrated, shared data bases

Goal 2: Shared Data

- Proposed Performance Measures
  - Number of standard data elements
  - Shared databases meet mission needs
  - Quality data in mission terms
  - Improved DoD operations
  - Effectiveness of DoD Data Administrator

Strategy for Shared Data



Goal 3: Minimize Duplication Of Information Systems

- Objectives
  - Migrate to common baseline of info systems
  - Incorporate re-engineering and standards
- Strategy
  - Rapidly complete migration selections
  - Implement most by FY96-97
  - Incorporate re-engineering improvements as early as possible

Goal 3: Minimize Duplication Of Information Systems

- Proposed Performance Measures
  - Number of migration systems selected and implemented
  - Legacy systems eliminated
  - Return on investment
  - Incorporation of
    - Re-engineered processes
    - Open systems standards

Goal 4: Computer and Communications Infrastructure

- Objectives
  - Info infrastructure is flexible, transparent
  - Standards based open system architecture
- Strategy
  - Evolve to meet mission information needs
  - Benchmark against best commercial practices
  - Improve software practices
  - Identify and integrate new technologies

Goal 4: Computer and Communications Infrastructure

- Proposed Performance Measures
  - Increase usage of infrastructure services
  - Competitiveness of cost and performance
  - Move to architectural standards
  - Cycle time for
    - User service requests
    - Acquire and Integrate new technologies
    - Provide added services for user needs

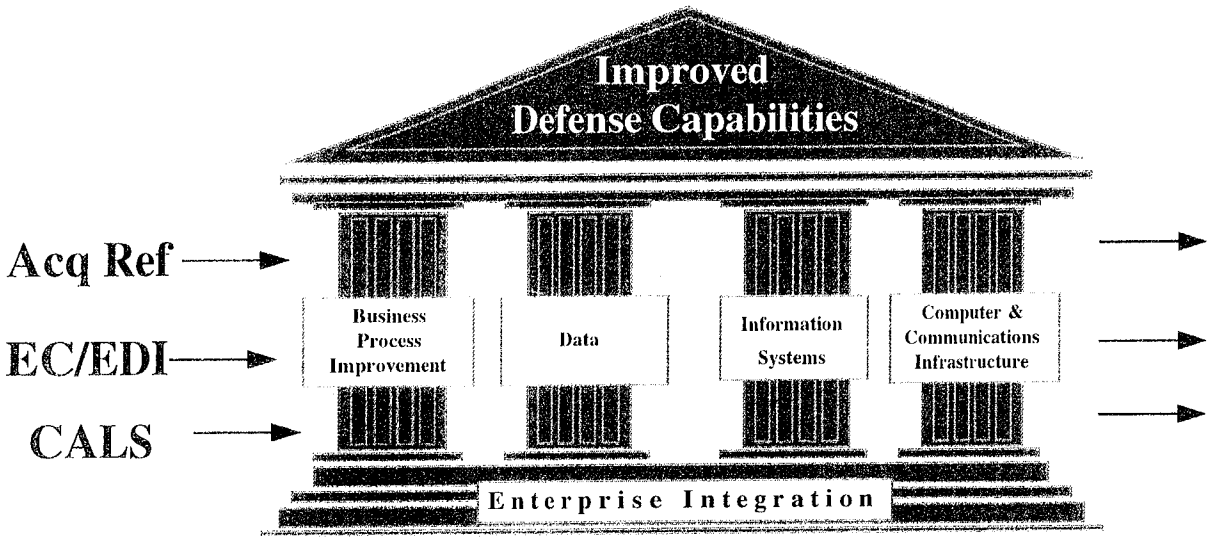
Goal 5: Integrated Defense Enterprise

- Objectives
  - Integrate cross-functional, technical programs
  - Integrate functional processes
- Strategy
  - EI Executive Board and EI Corporate Management Council
  - Functional and data linkages
  - Technical systems integration

Goal 5: Integrated Defense Enterprise

- Proposed Performance Measures
  - Cross-functional processes
  - End-to-end performance of functions
  - Integrated information systems, databases and information infrastructure
  - Reduced functional and technical costs
  - Linkage aross all missions

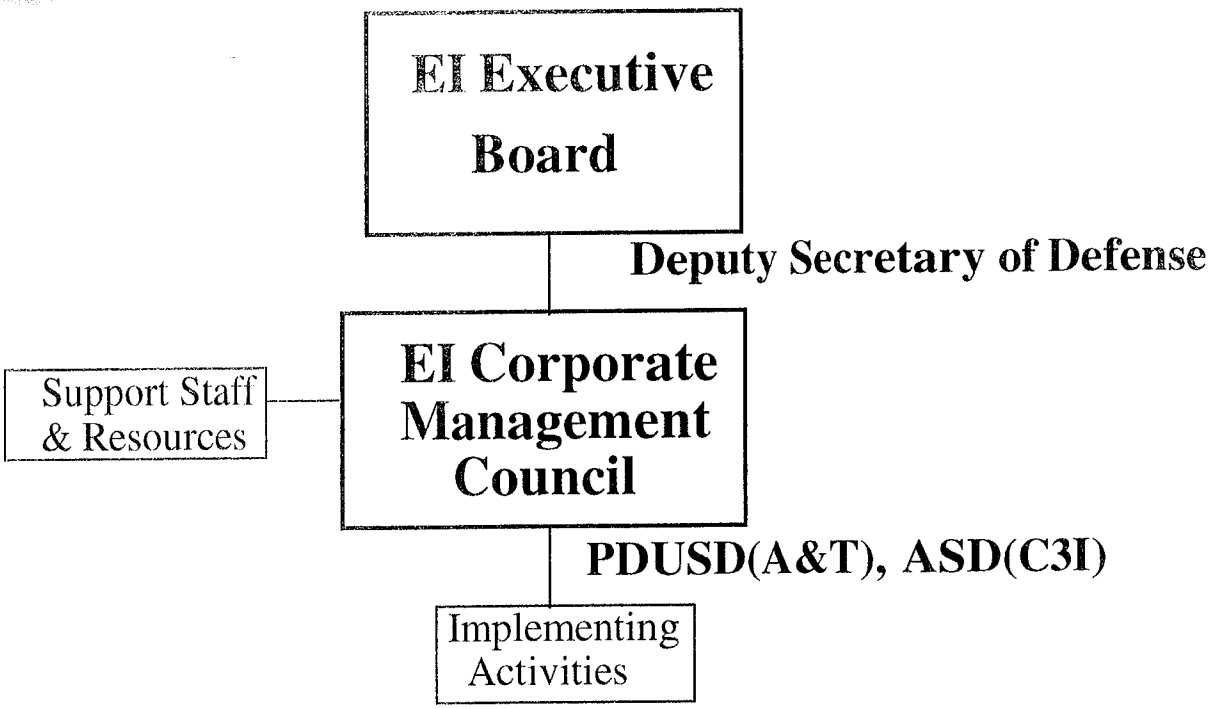
Corporate Information Management/ Enterprise Integration And Cross-Functional Applications



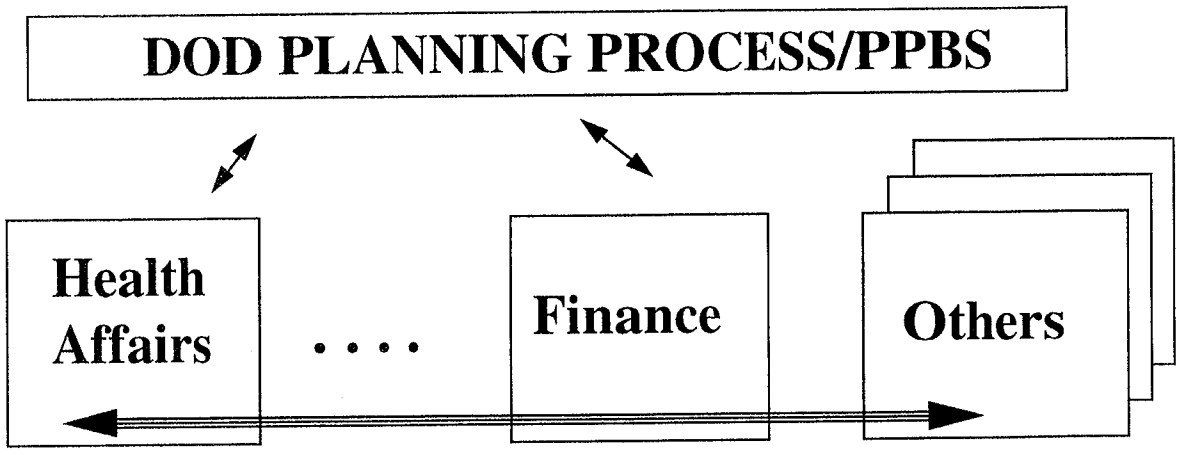
Goal 6: CIM/EI Policies And Structure

- Objectives
  - Establish management structure
  - Establish policies
- Strategy
  - Evolve policies and management structures as necessary
- Proposed Performance Measures
  - Implementation of policies is current
  - Management structures are current

Management Structure



Functional Strategic Plans



Key Factors for Success

- Expand Focus on the Warfighter
- Employ Key Management Principles
- Centralize Responsibility for EI Implementation in a Single Organization
- Combine Management Strategy for Process Re-engineering and Integrated Information
- Embed CIM/EI in Central Management Policies and Practices

Next Steps

- Approve CIM/EI Strategic Plan
- Develop Functional Strategic Plans
- Shift attention to Implementation



Comments?
Suggestions?

cynthia.kendall@osd.mil



CIM/EI Symposium

DISA Roles and Commitment

Lt Gen Albert Edmonds
Director, Defense Information Systems Agency

Purpose

The purpose of this briefing is provide a top down view of DISA's progress in supporting the achievement of the Department's CIM/EI goals.

CIM - EI GOALS

- "Reinvent" and reengineer DoD functional processes to achieve greater mission effectiveness at lower cost.
- Tie DoD together through the use of quality, shared data.
- Minimize duplication and enhance DoD's information systems to embody reengineered processes.
- Implement a flexible, world-wide computer and communications infrastructure.
- Implement CIM/EI to achieve an integrated Defense Enterprise.
- Establish CIM/EI policies and management structure.

CIM/EI Goals

As Ms. Kendall indicated earlier, these are the six goals for the Department. Our job at DISA is to develop and execute aggressive initiatives to support the achievement of these goals.

DISA Commitment



- **DISA's commitment: aggressively implement initiatives to meet the CIM/EI goals.**
- **DISA's objective: accelerate the process.**

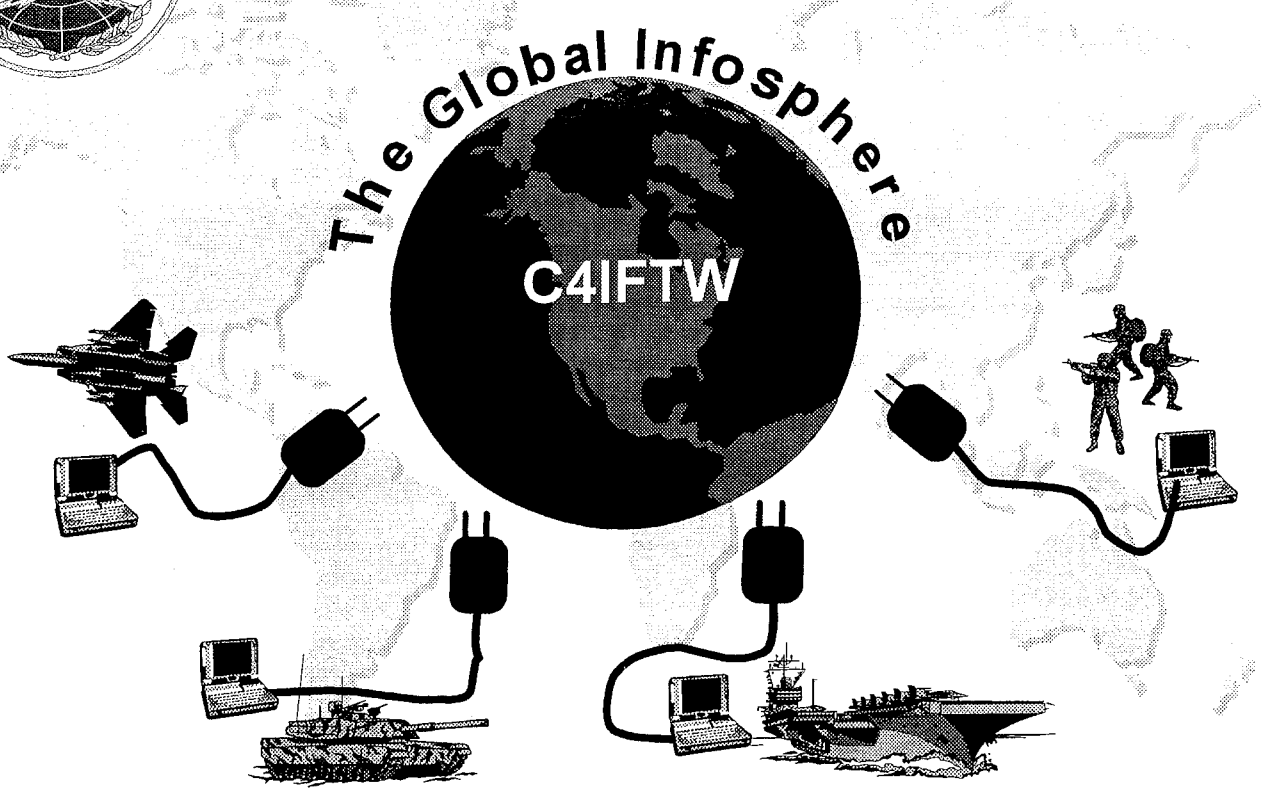
DISA Commitment

We are firmly committed to making the implementation phase happen. DISA's objective is to make things happen fast!

This morning, I am going to briefly talk about some of our major initiatives that help accelerate the process.

One major initiative supports the acceleration of implementing a world-wide computer and communications infrastructure.

Integrated Global Environment



Anywhere, Anytime, Any Mission

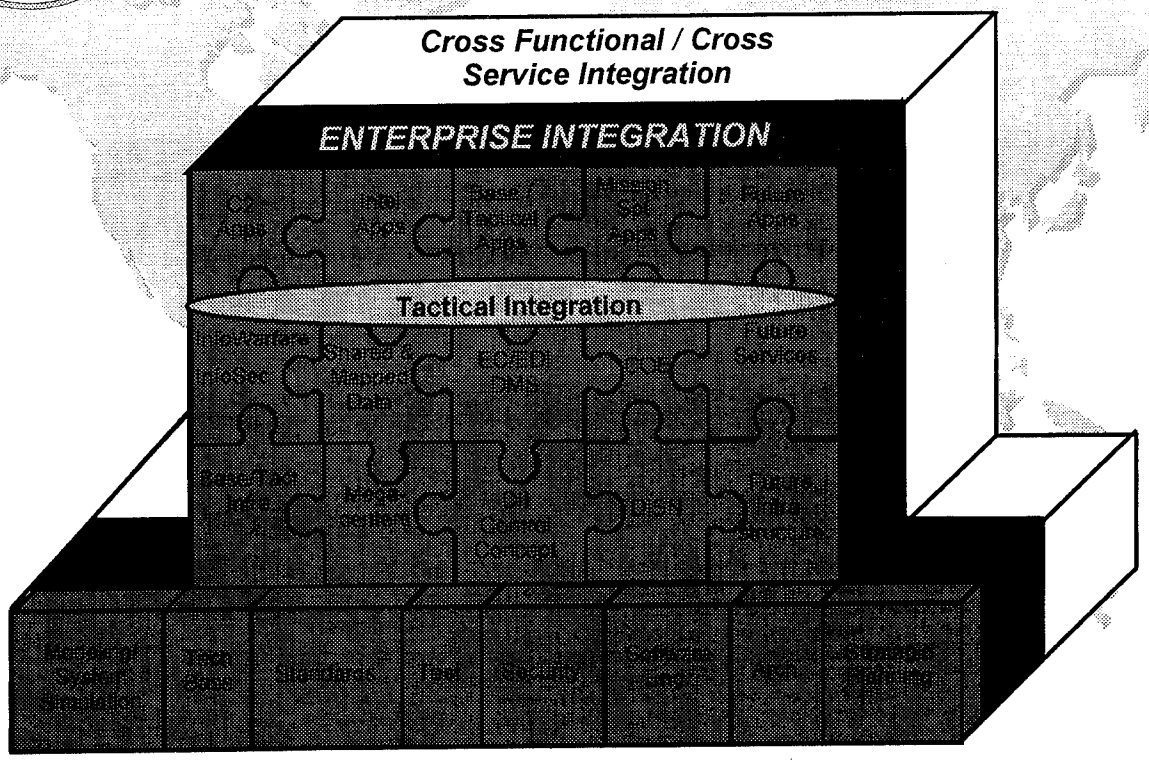
Integrated Global Environment

New national strategies envision power projection by highly flexible, rapid response, tailored force packages, under Joint Task Force (JTF) or Combined Joint Task Force (CJTF) command. These force packages will support a spectrum of military/political responses to promote national interests worldwide. The National Military Strategy dictates that the US Forces must be structured to project power from CONUS bases, sanctuary locations and the in-theater locations to an area of conflict anywhere in the world.

The combination of reduced funding and the new international political environment means the number of US Forces forward deployed outside the CONUS, as well as overall force size is steadily shrinking. The ability to project force is constrained by limited strategic lift necessitating a greater "tooth-to-tail" ratio in the structure of deployed forces. As a result, the military Services will become increasingly reliant on long-distance communications and logistics capabilities to fulfill their global mission.

The new warfighting context outlined in the National Military Strategy drove the development of a concept to guide all the Services toward a global C4I system. The common global vision of C4IFTW is to create a single view of joint military C4I. The three functional components of information critical to the warrior are Command and Control (C2), Intelligence, and Mission Support. This information to the warrior – whether on air, land, sea, or space – must be integrated in a secure seamless manner among the Services and Defense Agencies. This view is of a widely distributed user-driven infrastructure to which the warrior "plugs in".

Elements of the DII



Elements of the DII

The Defense Information Infrastructure (DII) provides information services for the Services and Defense Agencies. The DII is made up of numerous elements as shown by the puzzle pieces and blocks in the graphic. As the DII evolves, the number and types of elements may change. These elements are built on and include a foundation of integration and technology support elements. The base includes transport and processing standards; appropriate levels of information security; sound architecture; modern software engineering practices; thorough testing; modeling and simulation capabilities to assess need for changed services; and continual assessment of new technology as it could be applied to the DII.

The elements of the DII includes applications in all DoD mission areas, C2 (e.g., Global Command and Control System (GCCS)), including tactical applications ; Intelligence (e.g., the DoD Intelligence Information System or DoDIIS); and Mission Support (e.g., the Depot Maintenance Standard System).

In addition to information transport services like DISN, base level infrastructures (e.g., SBIS) and deployed communications services, the DII also includes value added services of electronic commerce, electronic data interchange (EC/EDI), and messaging (in the form of the Defense Message System (DMS)) are included in the DII. Information warfare (and associated information security to protect DII information assets) is also dependent on the DII for its success.

Much of the core of the DII is to be found in the Common Operating Environment (COE) and its support of cross-functional, cross-Service integration; the Defense Information System Network (DISN) communications base; the 16 Megacenters for handling major information system processing and maintenance; and the DII Control Concept to manage the DII network and systems. The COE will be evolutionary in its development and will start with the COE already established for GCCS. In particular, the COE incorporates the common processing services needed by information processing in the DII.

The key to effective use of the DII by Services and Agencies is the effective cross-functional and cross-Service integration and sharing of information, from the Enterprise level on down. A key to this integration and sharing is shared data that can support interoperability of applications between Services and functional areas as needed to conduct the Department's missions.

Proposed DII Definition

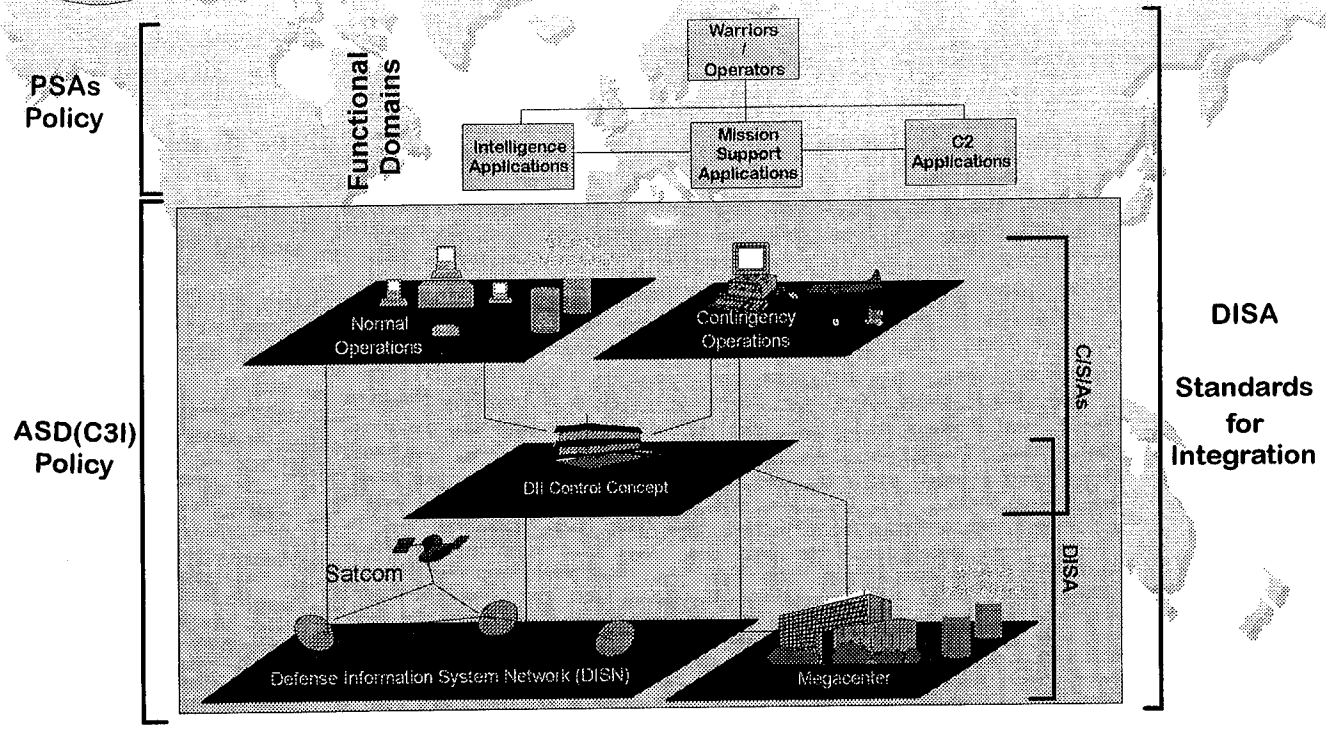
The DII is a seamless web of communications networks, computers, software, databases, applications, and other capabilities that meets the information processing and transport needs of DoD users in peace and in all crises, conflict, humanitarian support, and wartime roles. It includes:

- **The physical facilities used to transmit, store, process and display voice, data, and images.**
- **The applications, engineering, and data practices (tools, methods, and processes) to build and maintain the software that allow C2, Intelligence, and Mission Support users to access and manipulate, organize, and digest proliferating quantities of information.**
- **The network standards and protocols that facilitate interconnection and interoperation among networks and systems and provide security of the information carried.**
- **The people and assets which provide the integrating design, management and operation of the DII, develop the applications and services, construct the facilities, and train others in DII capabilities and use.**

Proposed DII Definition

The definition of the DII has been aligned with the definition of the NII. It (the definition) has been built to stress the support for the warfighter but to recognize the broad mission of the DoD and the need to commit to the NII and the Global Information Infrastructure (GII). The elements in the definition cover all the pieces that make up the DII; physical assets, applications, software, networks and the people and financial resources.

DII Roles & Responsibilities



DII Roles & Responsibilities

This graphic shows the elements of the DII, along with organizational responsibilities. These responsibilities, taken together, ensure that every aspect of the DII will be addressed. The responsibilities are as follows:

- The Principal Staff Assistants(PSAs), including the Joint Staff, plan and fund the mission applications, including data requirements, for C2, Intelligence, and Mission Support.

- The Commanders in Chief(CINCs), Services, and Agencies (C/S/As) install and operate the sustaining base and deployed infrastructure that support normal and contingency operations.

- DISA installs and operates the enterprise infrastructure(e.g., DISN and the Megacenters).

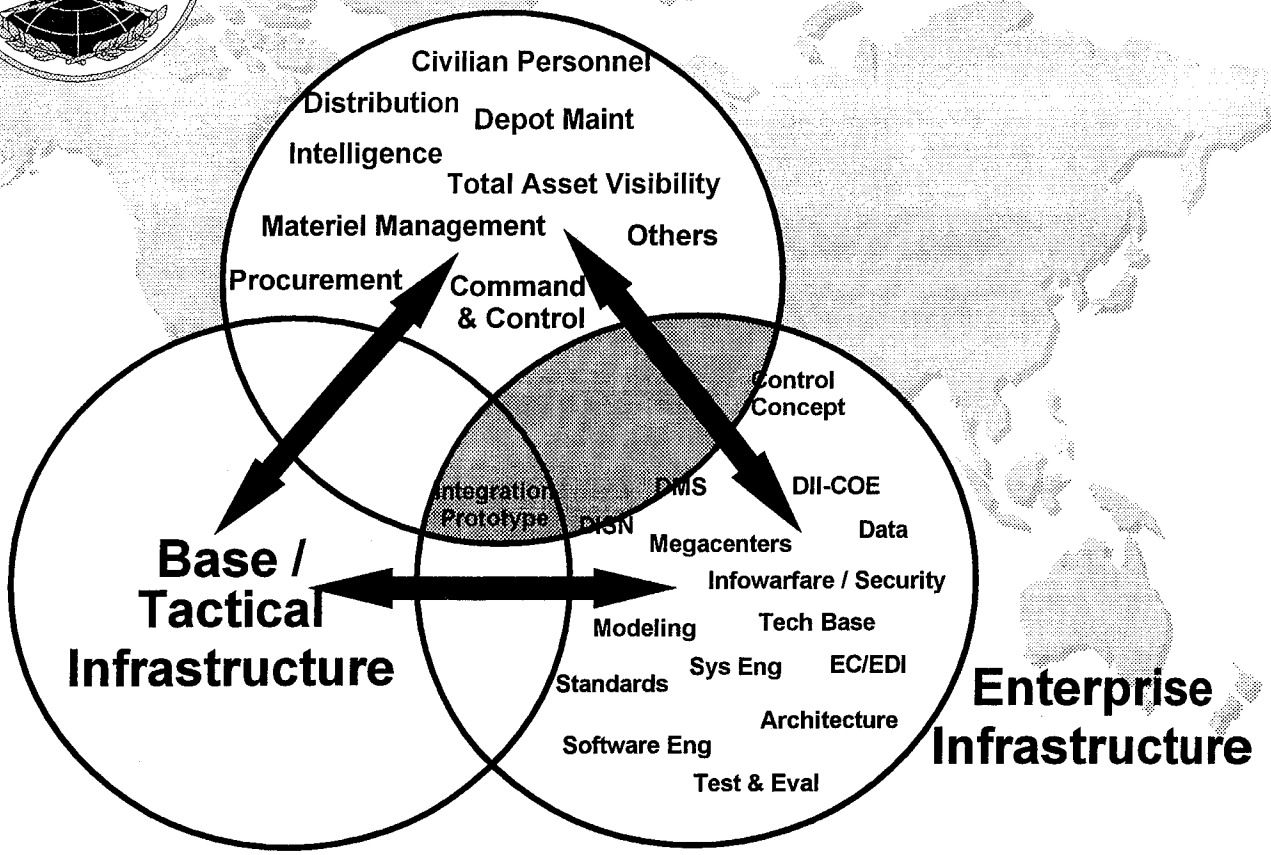
- DISA and the C/S/As share in the installation and operation of the DII control centers, which manage the DII.

- The PSAs set the policy for the mission applications and data.

- The Assistant Secretary for Command, Control, Communications and Intelligence(ASD(C3I)), sets the policy for the infrastructure, including the sustaining base, deployed, and enterprise components.

- DISA manages the integration of the DII Elements through collaboration with the PSAs and C/S/As.

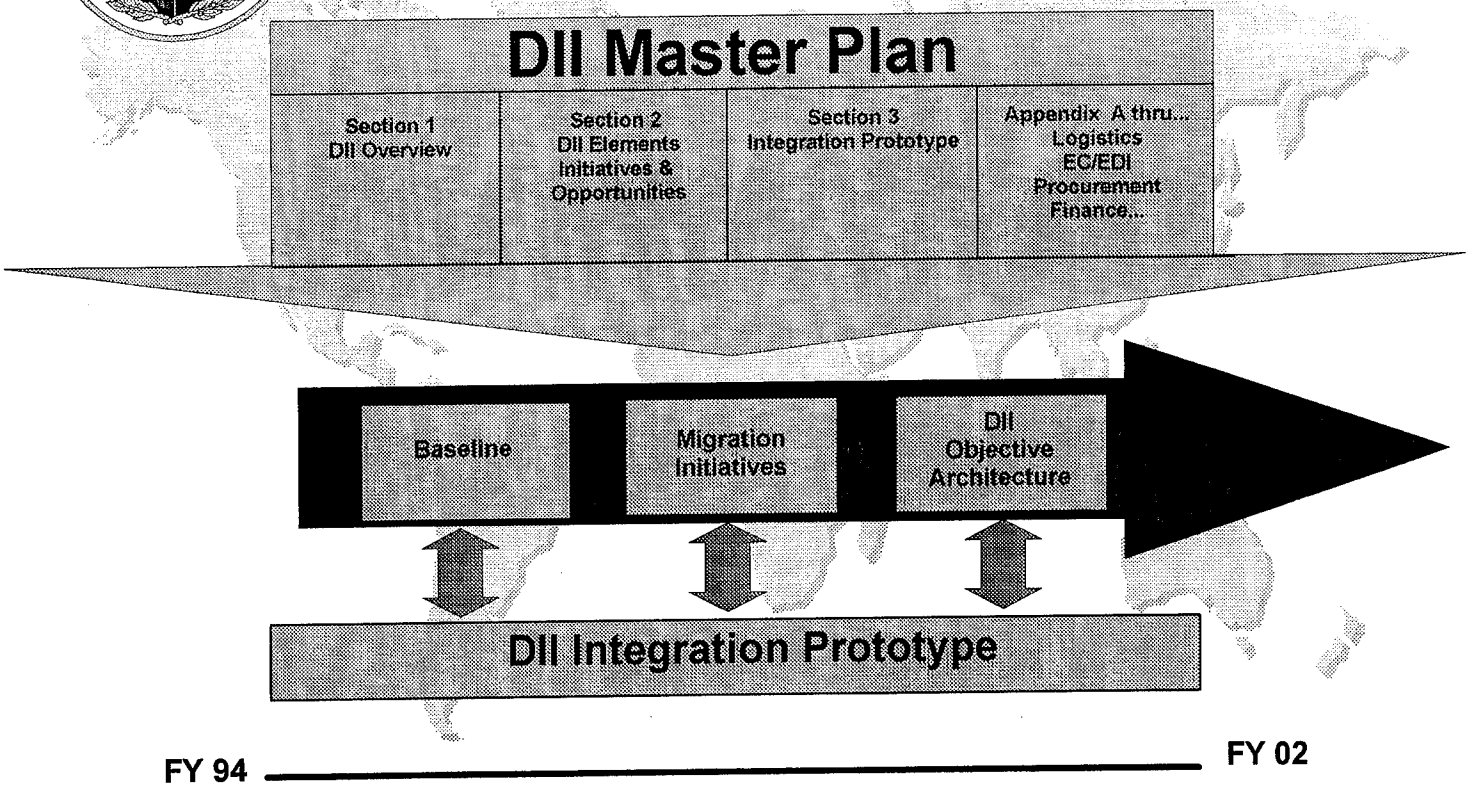
DII Interdependencies



DII Interdependencies

This slide illustrates a notional view of the interdependencies among the DII elements. Understanding these interdependencies is necessary for prioritizing DII activities. The successful deployment of the functional elements depend on the support of both the enterprise infrastructure and the base/tactical infrastructure. On the enterprise infrastructure for example, DISA is challenged to provide and field comprehensive and affordable security solutions to our customers for the security needs of their migration applications.

Master Plan



12/12/1994

Master Plan

This slide highlights how the Master Plan is used as a management tool to manage the evolution of the DII. The Master Plan 1) establishes the common vision of the DII for all of DoD to ensure unity of effort, 2) enables integrated planning of DII efforts across DoD to ensure that the right resources are programmed to do the right things, at the right time, by the right organizations, and 3) provides the overall strategy for evolving DoD information systems into the DII. It endorses the concept of DII Integration Prototype as a vehicle to integrate the DII elements in an operational environment to "build a little - test a little" in order to see "how the elements integrate".



A&T/DISA Team

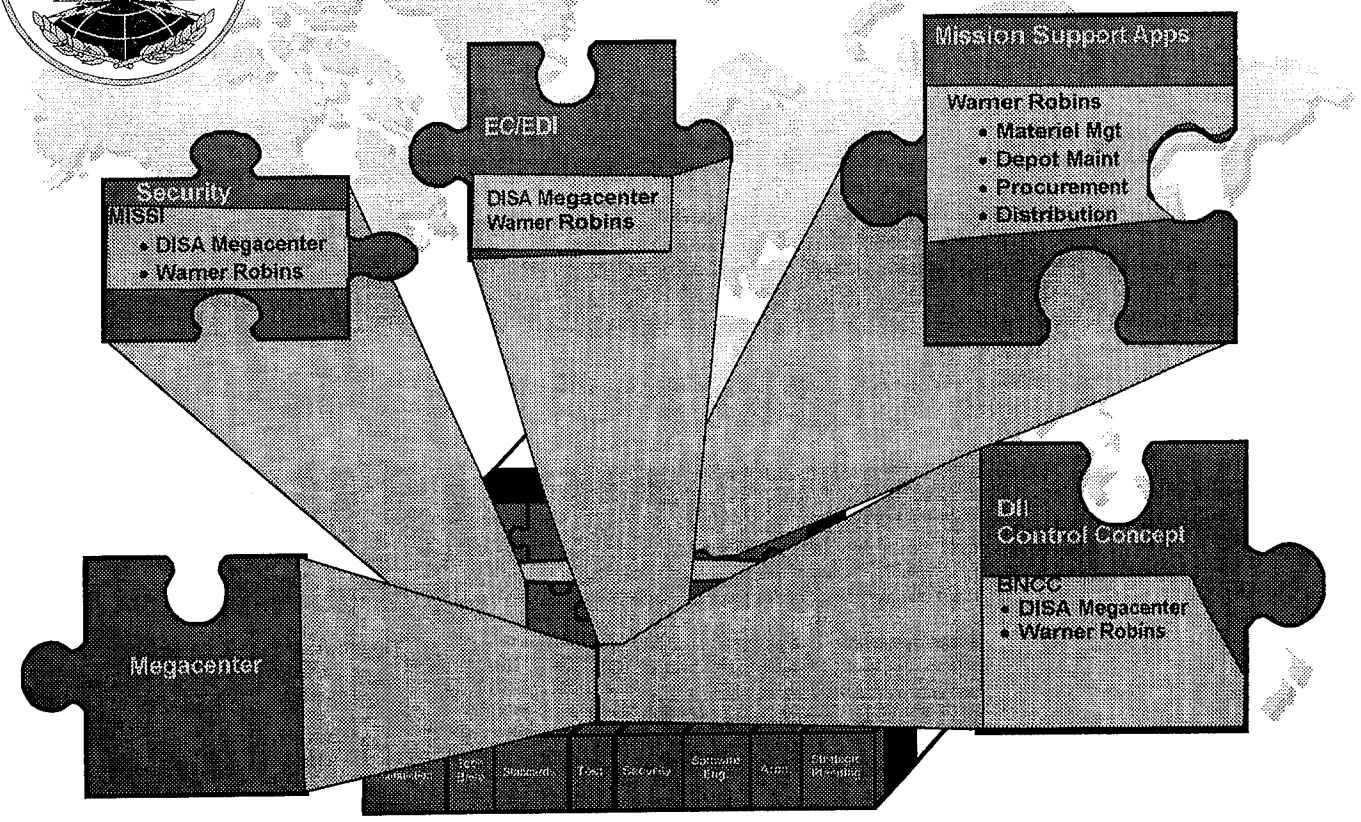
- Established a management structure
- Conducted Wall to Walls
- Established Teams
  - EC/EDI
  - Logistics
  - Procurement
  - Environmental Security
  - Resource Management (EI)
- Established programmatic baseline
- Working cross-functional initiatives

A&T/DISA Team

DISA is playing an active role in enterprise level integration. The Undersecretary for Acquisition and Technology has invited DISA to assist them in the A&T enterprise integration within their own functional domain.

DISA has developed a teaming approach to accomplish this.

Integration Prototype

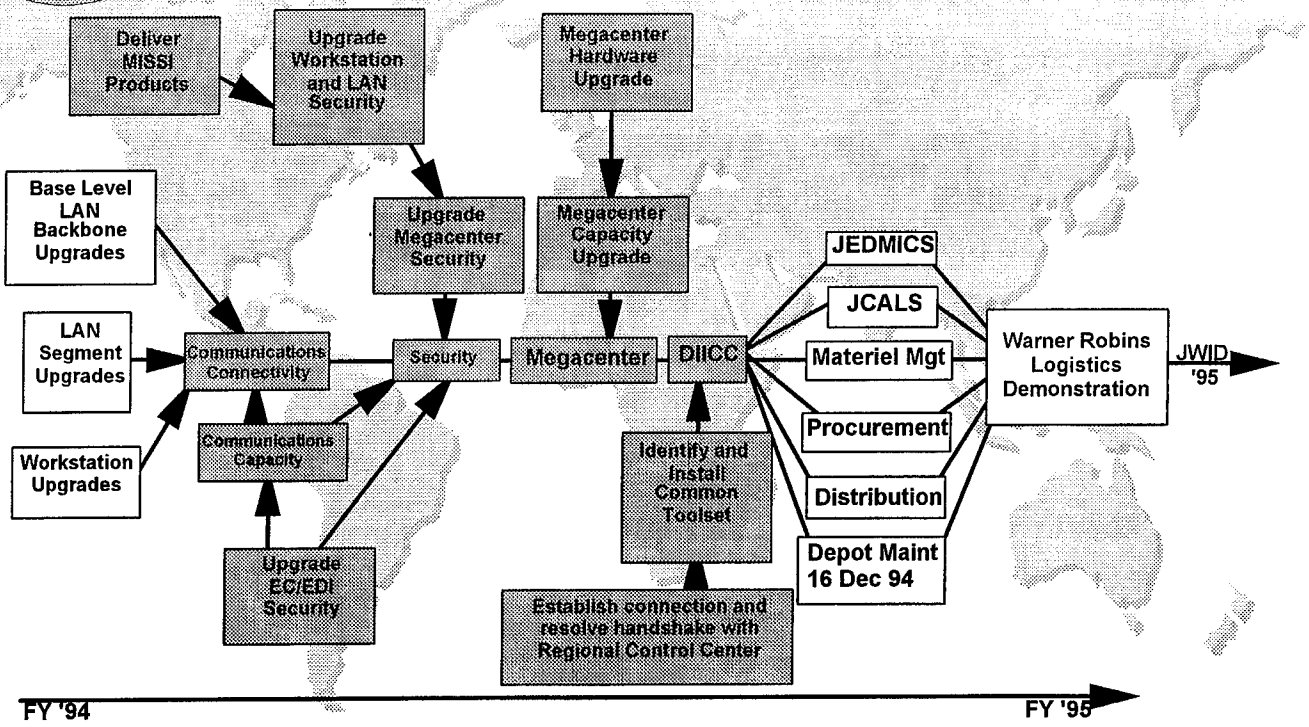


12/12/1994

Integration Prototype

This slide highlights how elements of the DII will be taken to DII Integration Prototype sites for integration testing and assessment. For example, security solutions can be integrated with logistics applications and the megacenter at a prototype site such as Warner Robins. It is important to show integration of the DII elements in an operational environment.

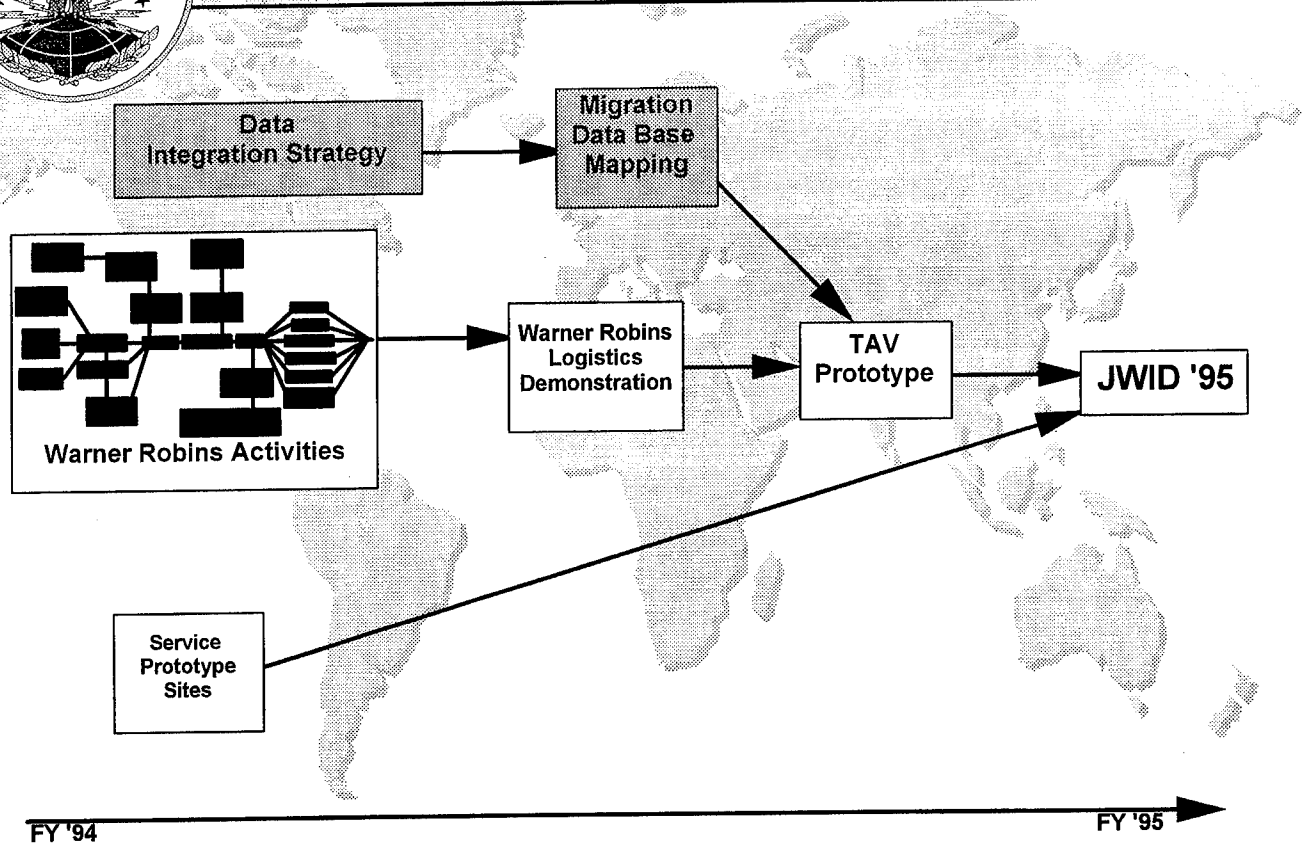
Warner Robins Activities



Notional Warner Robins Activities

This slide provides a high level view of the activities necessary to support migration application implementation at the Warner Robins Logistics Demonstration site. The shaded blocks indicate DISA activities and the non-shaded blocks show work to be performed by Service or Agency personnel.

Activities Leading to JWID '95

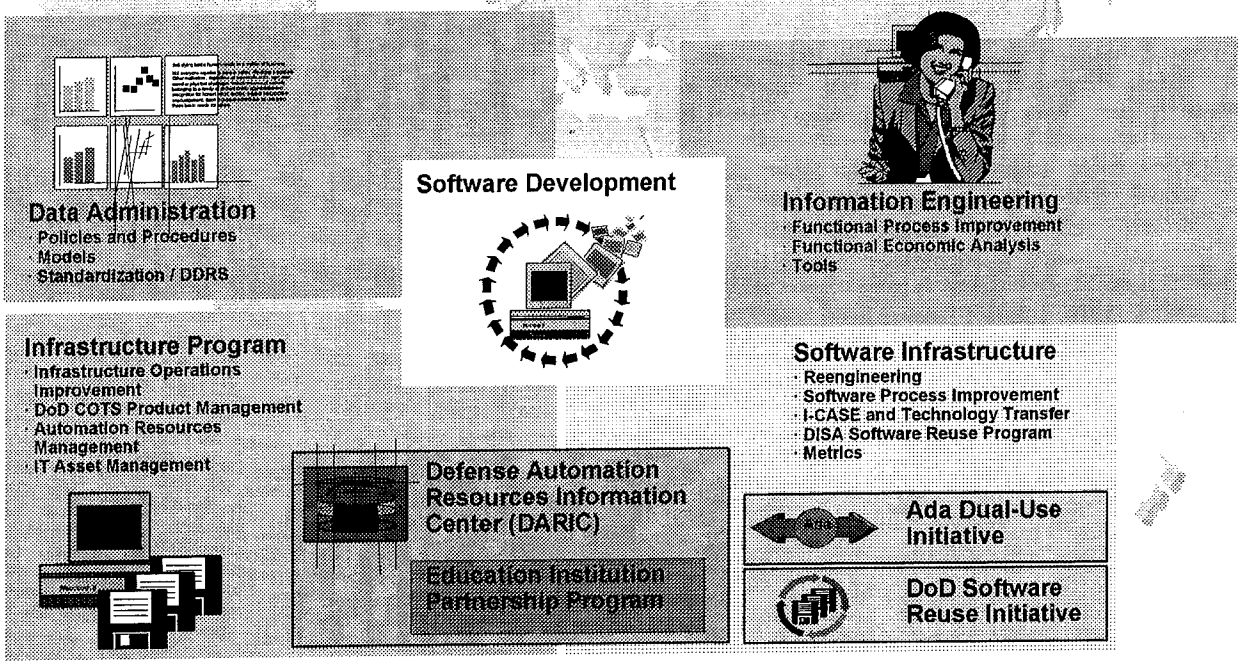


12/12/1994

Activities Leading to JWID '95

This slide provides a high level view of the activities necessary to support demonstration of the Total Asset Visibility concept as part of the JWID '95. The two shaded blocks indicate activities to be supported by DISA.

The Center for Software



Center for Software

DISA has consolidated all software development functions within DISA and combined them with those of the Center for Information Management and created the Center for Software.

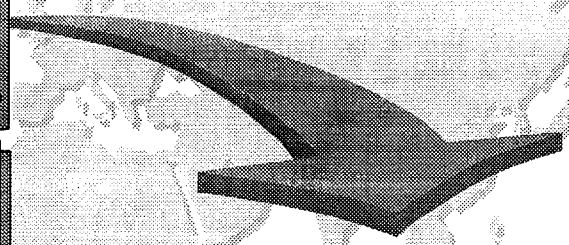
The Center for Software is a critical link in our efforts to achieve the CIM/EI goals. Shareable, useable data is the lifeblood for success.

Data Standardization Status

JULY 1, 1994

Approved Standard Data Elements (Attributes):	529
Approved Prime Words (Data Entities):	279
Approved Generic Elements	19
Total	827

PIPELINE	
Candidate Standard Data Elements (Attributes):	410
Candidate Prime Words (Entities):	77
Total	487



AS OF NOVEMBER 29, 1994

Approved Standard Data Elements (Attributes):	1,150
Approved Prime Words (Data Entities):	362
Approved Generic Elements	19
TOTAL	1,531

PIPELINE	
Candidate Standard Data Elements (Attributes):	716
Candidate Prime Words (Entities):	287
TOTAL	1003

12/12/1994

Data Standardization

This slide provides a look at our progress since 1 July 1994 and a look at whats in the pipeline.

Summary

- DISA is working to accelerate the institutionalization of business process engineering across the DoD. (Team Approach)
- DISA is working to accelerate the data standardization process. (Center for Software)
- DISA is working with the functionals to accelerate the elimination of unnecessary, duplicate systems. (Migration)
- DISA is working to accelerate the implementation of a world-wide computer and communications infrastructure. (DII)
- DISA is working to accelerate the integration of cross-functional processes. (DII Prototype, JWID)
- DISA is working to accelerate the establishment of CIM/EI policy. (Team Approach, DII Master Plan)

12/12/1994

Summary

DISA was given the task of providing technical support to Corporate Information Management. We have been very active in doing that. We have helped our DoD customers do business process reengineering, data administration, migration, architectures, and standards.

We've had numerous successes. We're excited about the DII Master plan and its implementation as a DoD strategy. We're excited about the DII Prototype and our efforts at Warner Robins. We're excited about our progress in the migration and data standardization processes.

In summary, DISA is moving forward aggressively to support the achievement of all the Department's goals. We are making things happen. I know you will enjoy watching and being a part of the success.

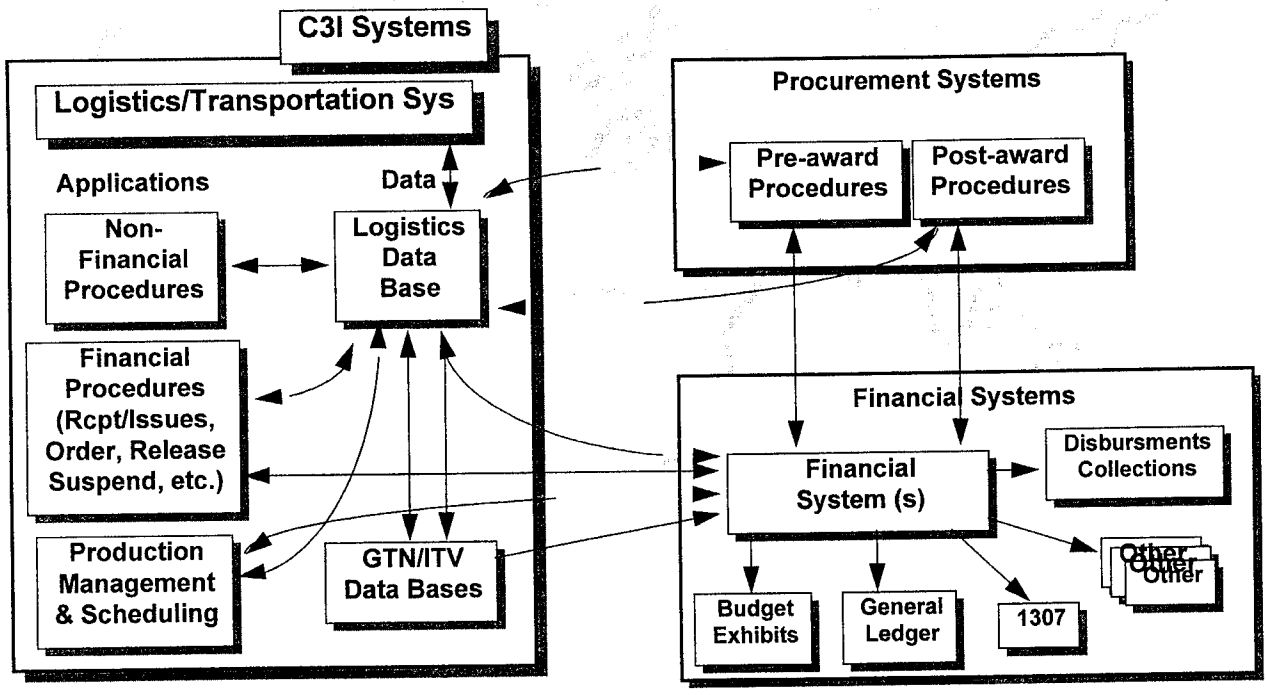
Thank you for this opportunity.

Enterprise Integration in Action

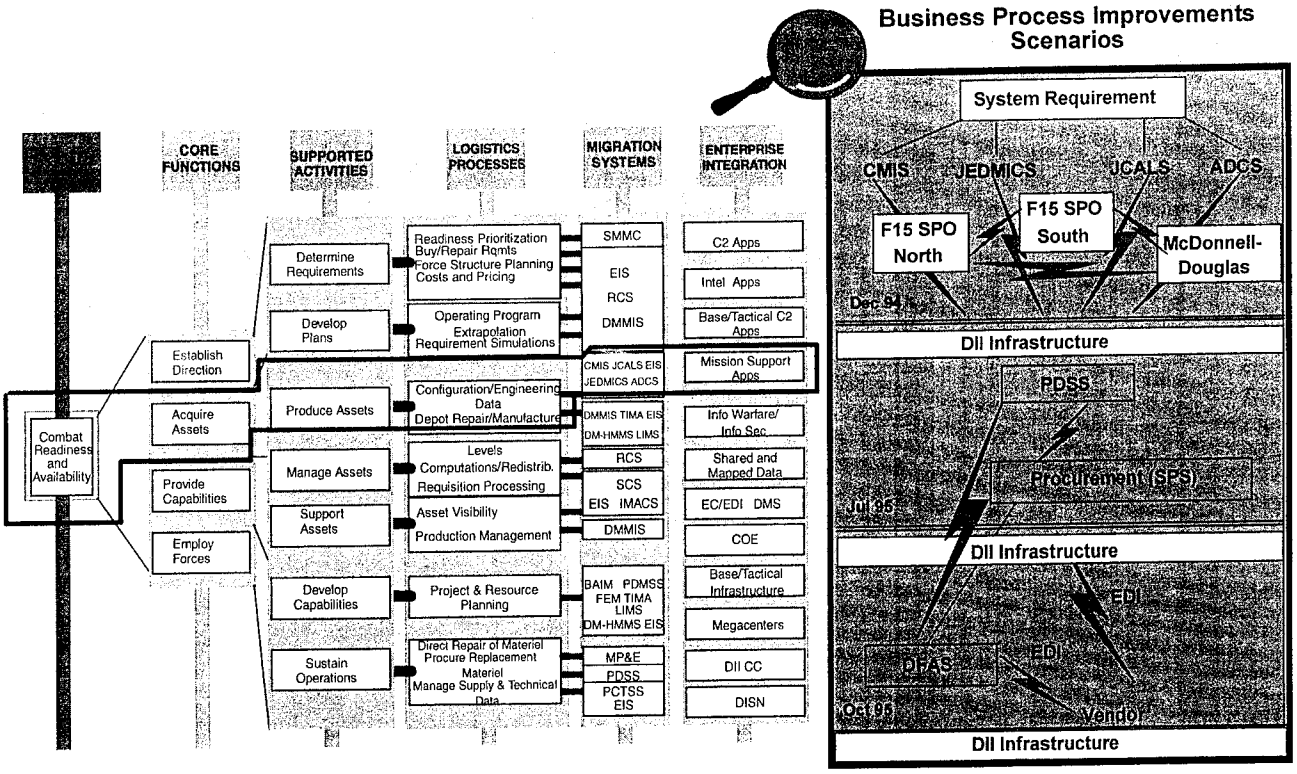
Prototyping

1 December 1994

Dependency on Logistics Systems Modernization



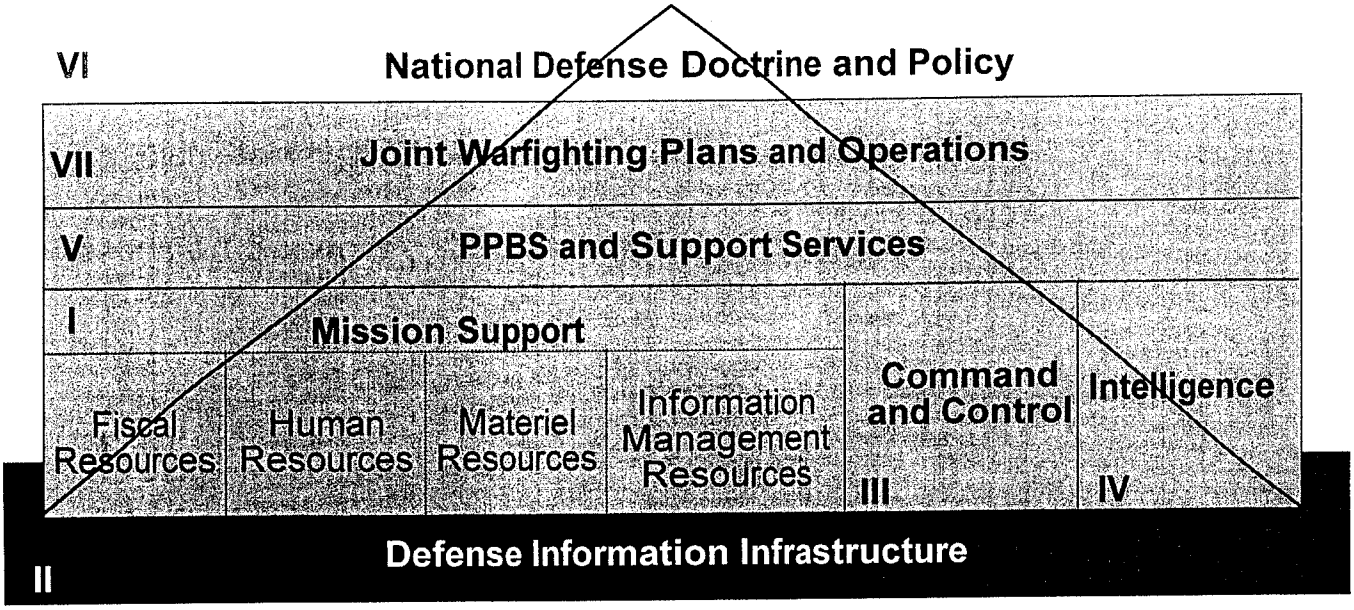
WR-ALC ASD
Scenario Driven Process



SUMMARY

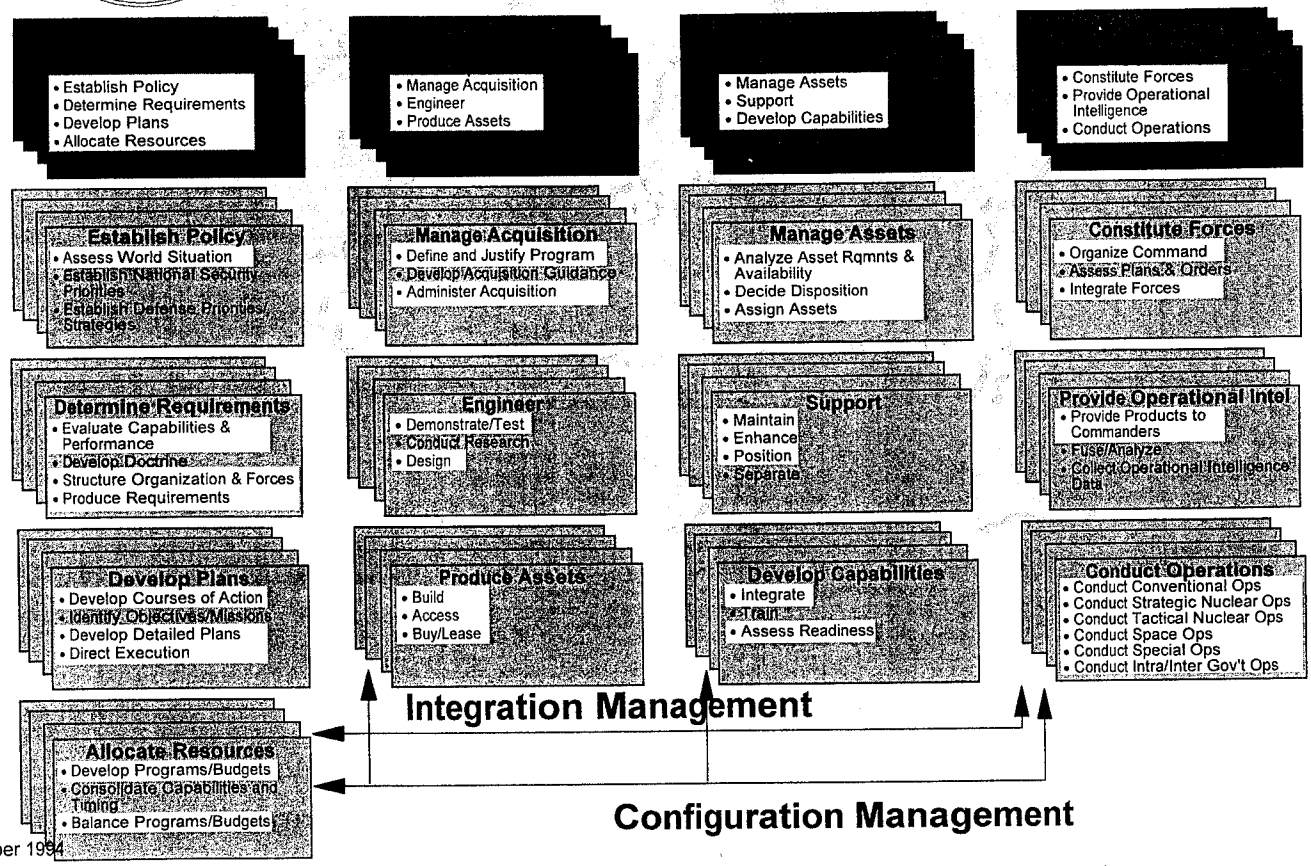
Where Does It All Lead?

DoD Enterprise Planning



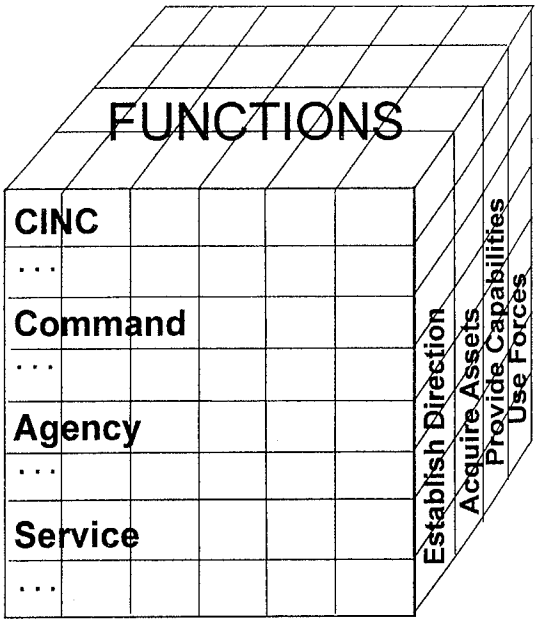
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The DoD Enterprise Model



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Enterprise Integration Management



An Enterprise Integration Management concept supports:

- Functional tailoring to support DoD missions
- Cross-functional management
- A cohesive and compliant view of the Defense Information Infrastructure

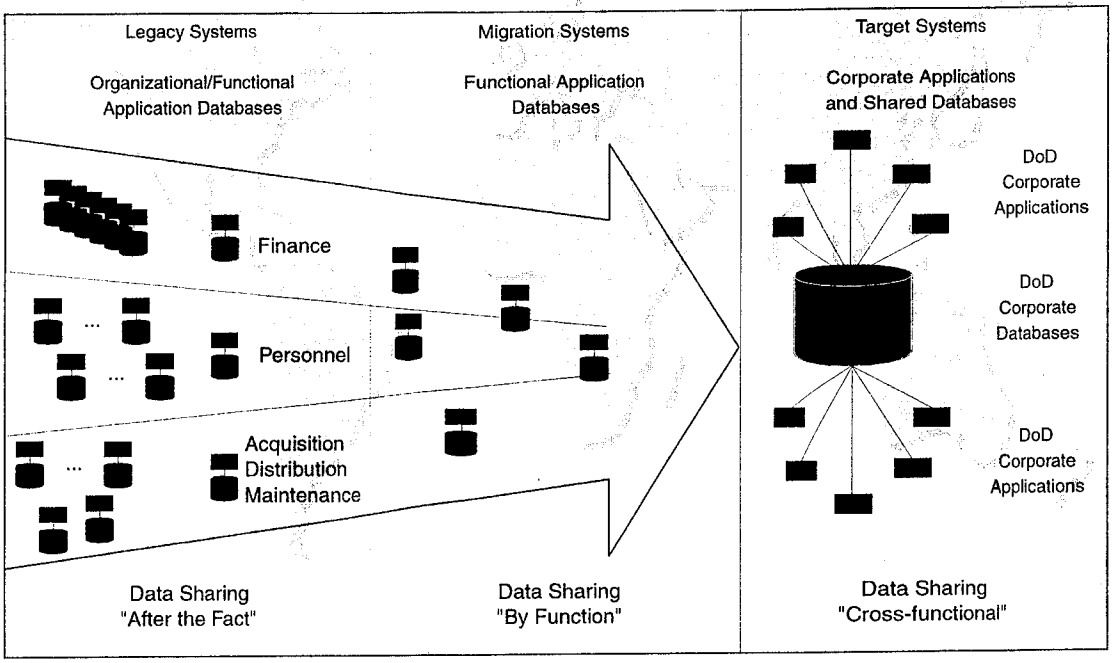
Establishing the concept now, allows:

- Comprehensive approach to infrastructure evolution
- Framework for reengineering/ improving the basic information processes for maximum savings

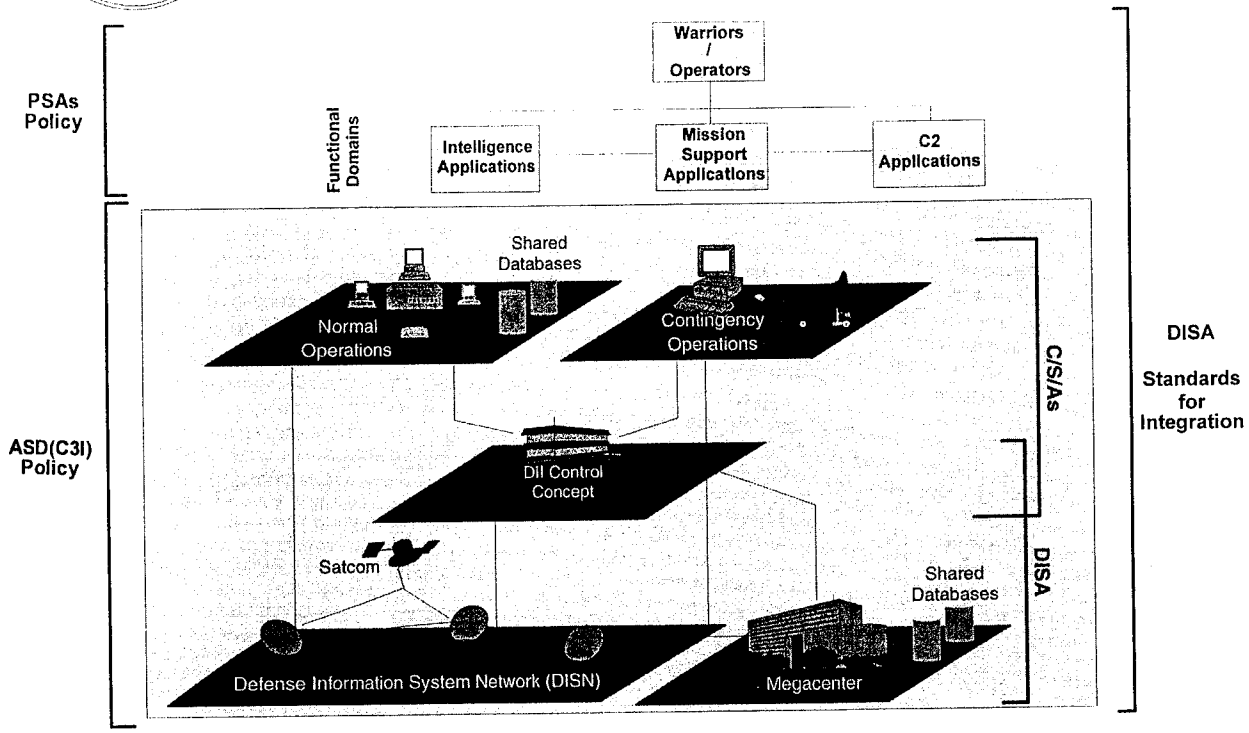
Provides business case for recommended Proofs of Concept/ Prototypes

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(Data Integration) Shared Data Initiatives

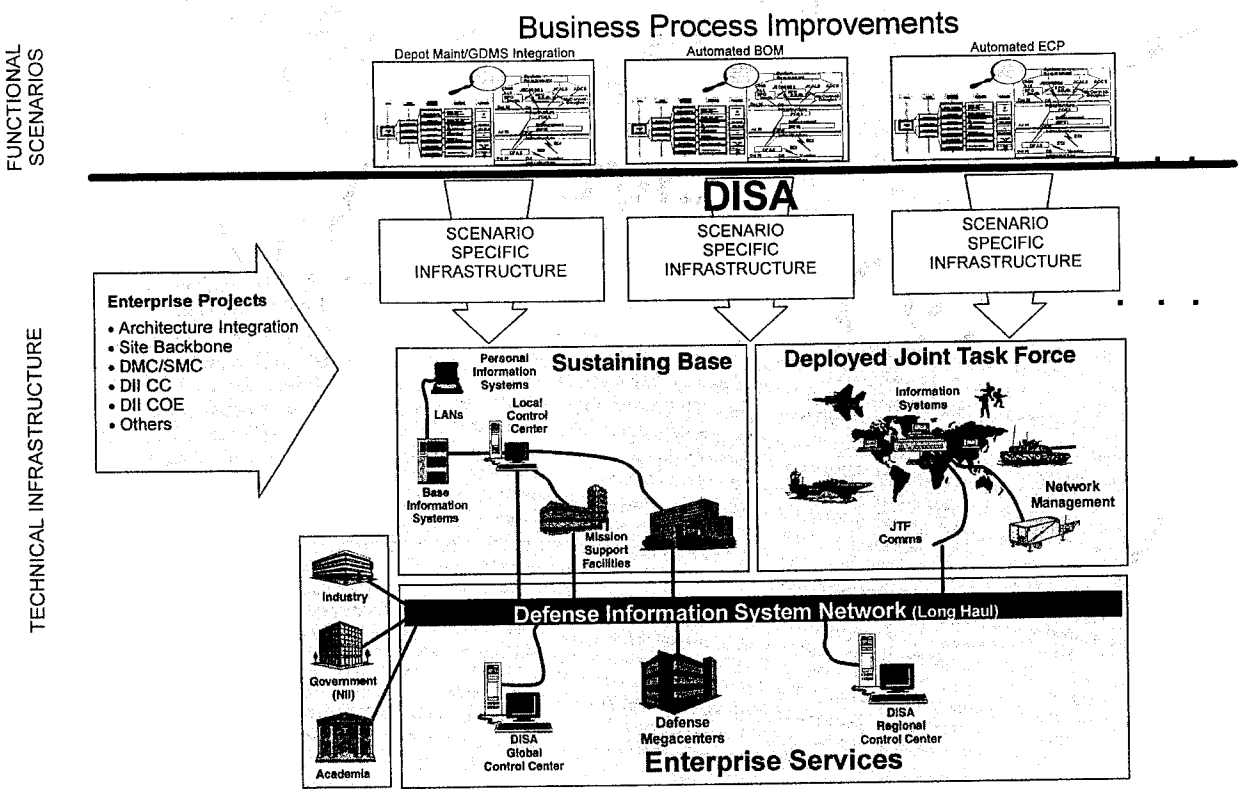


DII Roles & Responsibilities



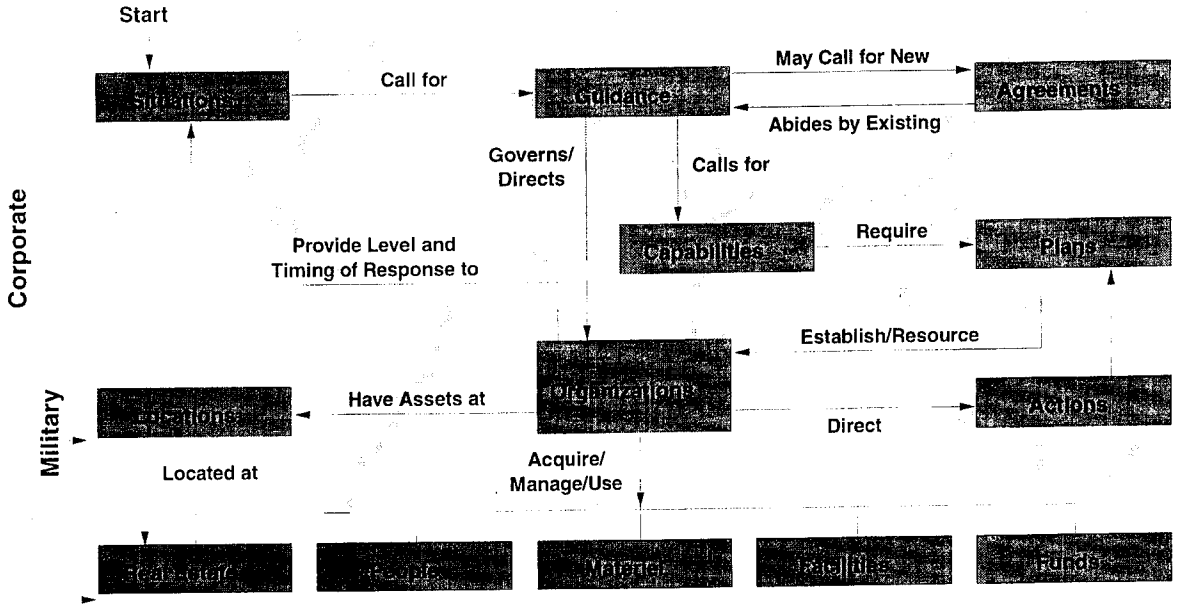
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Functional/Technical Infrastructure Relationship



The DoD Enterprise View
(Programmatic Integration)

Strategic Level Relationships



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Enterprise Integration: Steps in Implementing Our Goals

1 December 1994

Defining Enterprise Integration (EI)

1 December 1994

What is EI?

EI means making the transformation of the Enterprise happen by changing from "stovepipe" thinking to "**enterprise**" thinking and operations.

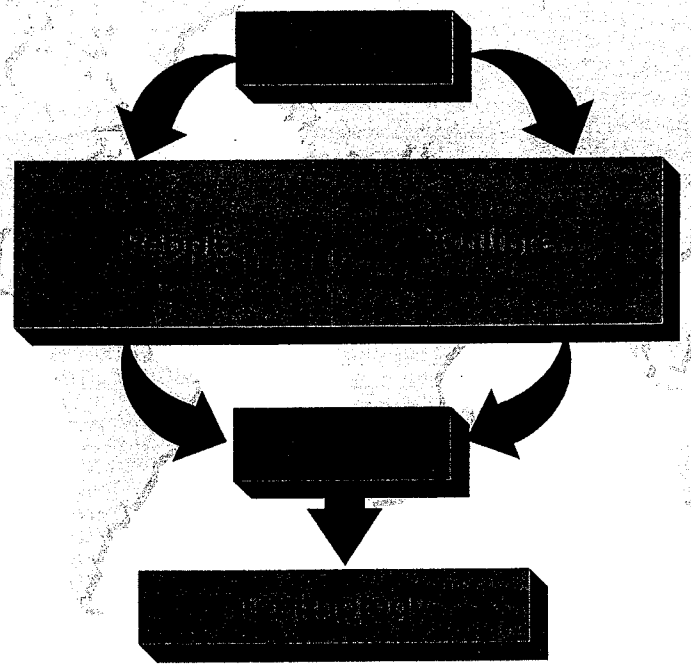
What Makes EI Happen?

Changing to "**Enterprise**" thinking and activities MEANS:

- Creating an organizational framework that integrates (coordinates) the dimensions of successful changes
- Those dimensions flow from an Enterprise strategy through people and culture to process and technology

Organizational Framework for Integration

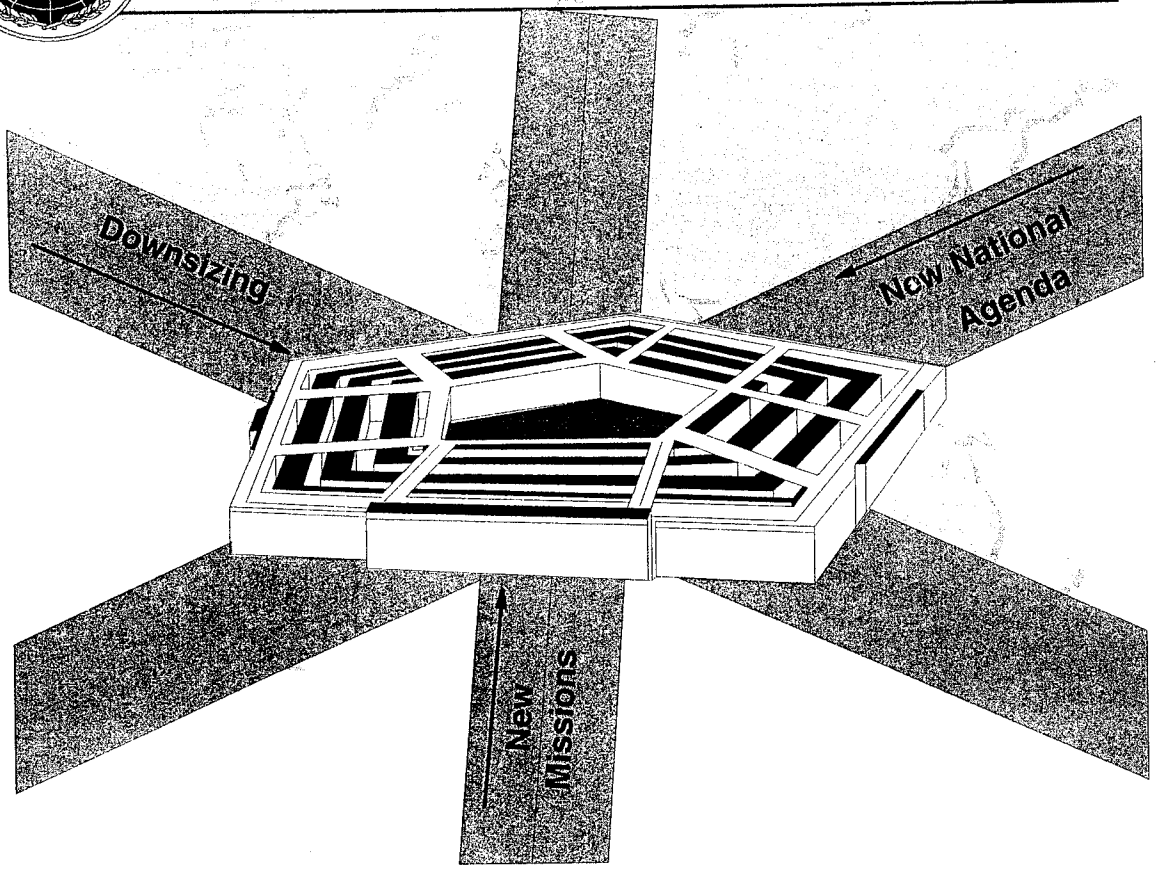
1 December 1994



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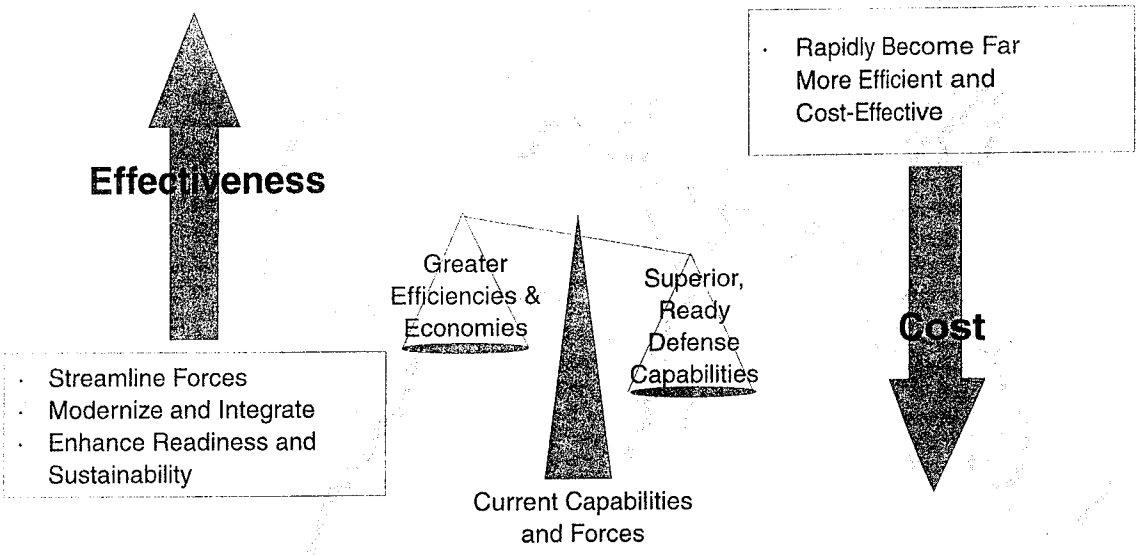
How Enterprise Integration Applies to the Department of Defense

DoD at Crossroads



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DoD Enterprise Transformation
Defense Alternatives



Efficiencies and economies enable DoD to invest its limited resources in mission-effective capabilities

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DoD Enterprise Transformation
Implementation Checklist

(Industry Lessons Learned)

- Build a culture that fosters innovation and initiative
- "Break the mold" to redesign the enterprise
- Ground change in understanding of the business operations and the needs of customers and consumers
  - Link strategies to detailed analysis and implementation
- Build a learning organization
- Let line managers and workers lead re-engineering
  - They are the functional experts (IT people can facilitate)
- Empower people - they make it happen

DoD Enterprise Transformation

Critical Success Factors

(Industry Lessons Learned)

- Must have a vision, sponsorship, and concrete guidance from top leadership
  - Eliminate, standardize, consolidate, leave along, continuously improve, start from scratch
  - Focus on removing constraints that limit speed, flexibility, and quality
- Must do a strategic analysis
  - Fundamentally linked to business and operational substance and realities
- Must have compelling business case
  - Grounded in customer expectations and strategic goals
- Must get leadership "buy-in" and enthusiastic support
  - Mobilize resources and remove barriers
- Must maintain focus and commitment until goals are achieved
  - Tactically flexible but unwavering in strategic direction

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ITAA Report July 1993

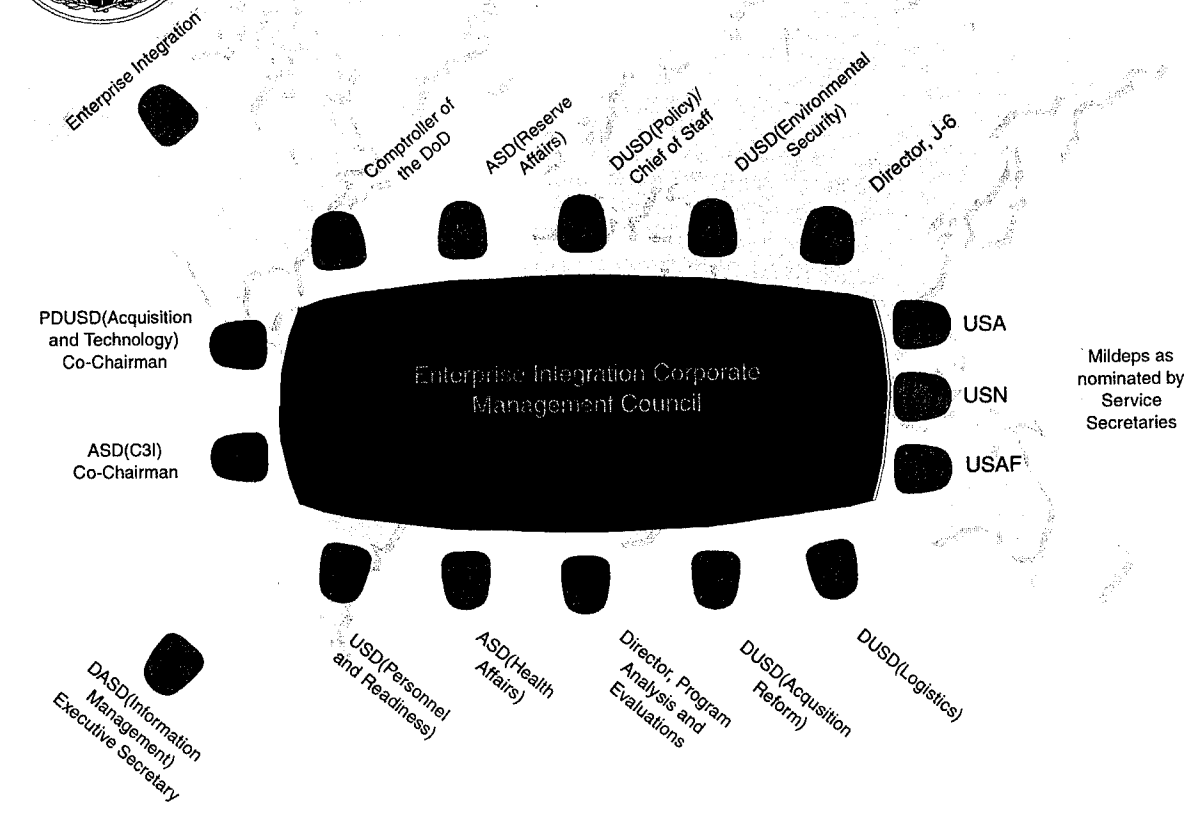
1. Establish ownership by SECDEF and DEPSECDEF.
2. Create a fully funded, full time EI staff within the office of the DEPSECDEF.
3. Create the strategic implementation plan.
4. Market the EI effort.
5. Implement the financial strategies.
6. Build upon DoD successes.
7. Bring the migration system planning to a close.
8. Establish benchmarks.

RECOMMENDATION: Establish Ownership by SECDEF and DEPSECDEF

Action: DEPSECDEF Memo 06 April 94 "Management Structure for Accelerated Implementation of Migration Systems, Data Standards, and Process Improvement"

Established the EI Executive Board and the EI Corporate Management Council "These management forums will be responsible for making decisions that allow the DoD to transition to cross-functional and integrated processes, data, and supporting information systems."

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RECOMMENDATION: Market the EI Effort

Action: Enterprise Integration office within DISA is charged with orchestrating the effort within DoD.

Functionals are in charge of formulating their plans and exacting their funds.

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RECOMMENDATION: Implement the Financial Strategies

Action: Establish a set of criteria for CIM's Central Fund.

Funds are allocated based on FEAs...

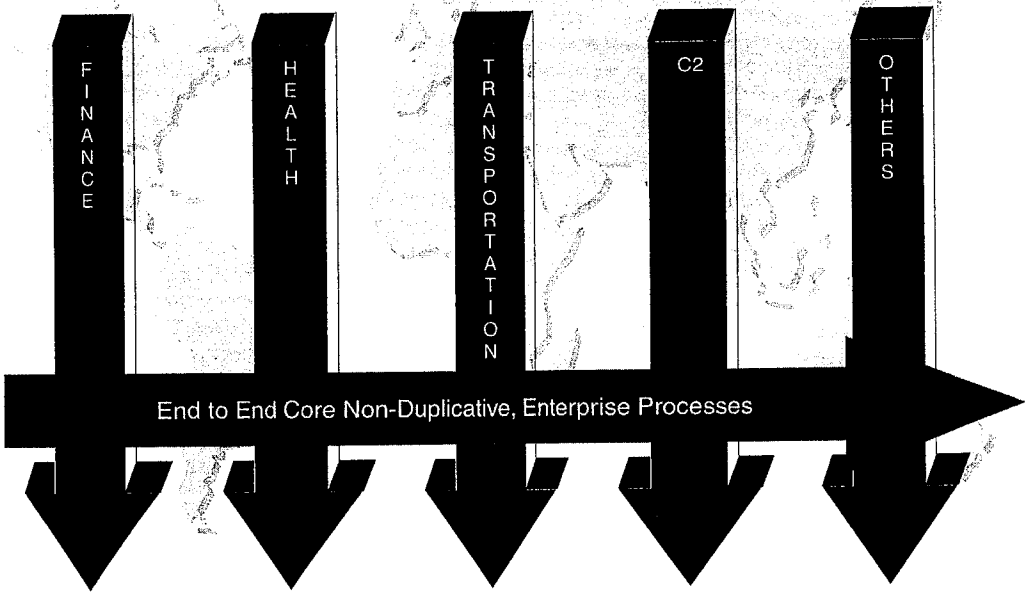
"Transforming the Enterprise"

DoD Enterprise Integration

- The DoD Enterprise view (programmatic integration)
  - Planning and programming strategically and across functions
  - Sharing/shifting resources among organizations/reusing assets in more productive activities
- Functional Process Reengineering initiatives (functional integration)
  - Taking a DoD Enterprise perspective on all activities
    - **Aligning the Enterprise around end-to-end core processes**
  - Eliminating duplication and bottlenecks aggressively
- Shared data initiatives (data integration)
  - Standardize data
  - Use data as a corporate resource to link functions and information systems
- Evolve to a Defense Information Infrastructure (technical integration)
  - Common migration systems to leverage existing information resources
  - Standards based, open operating environment
  - An "Information Utility" supporting all DoD

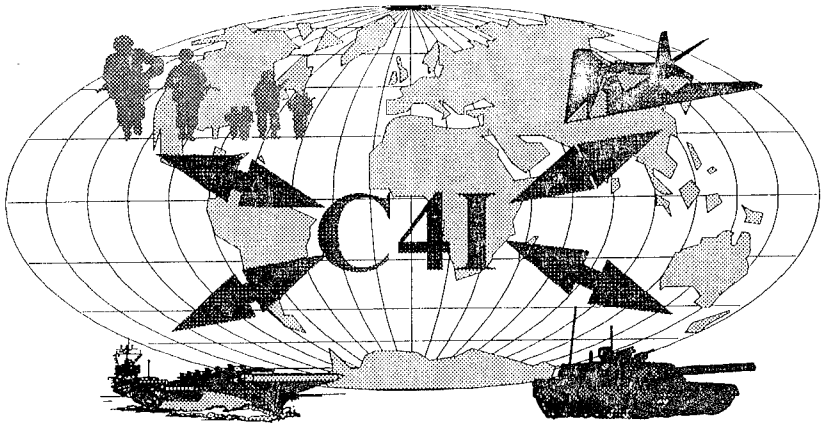
(Functional Integration)

Functional Process Improvement Initiatives



1 December 1994

CIM- SYSTEMS ENGINEERING FOR MIGRATION SYSTEMS



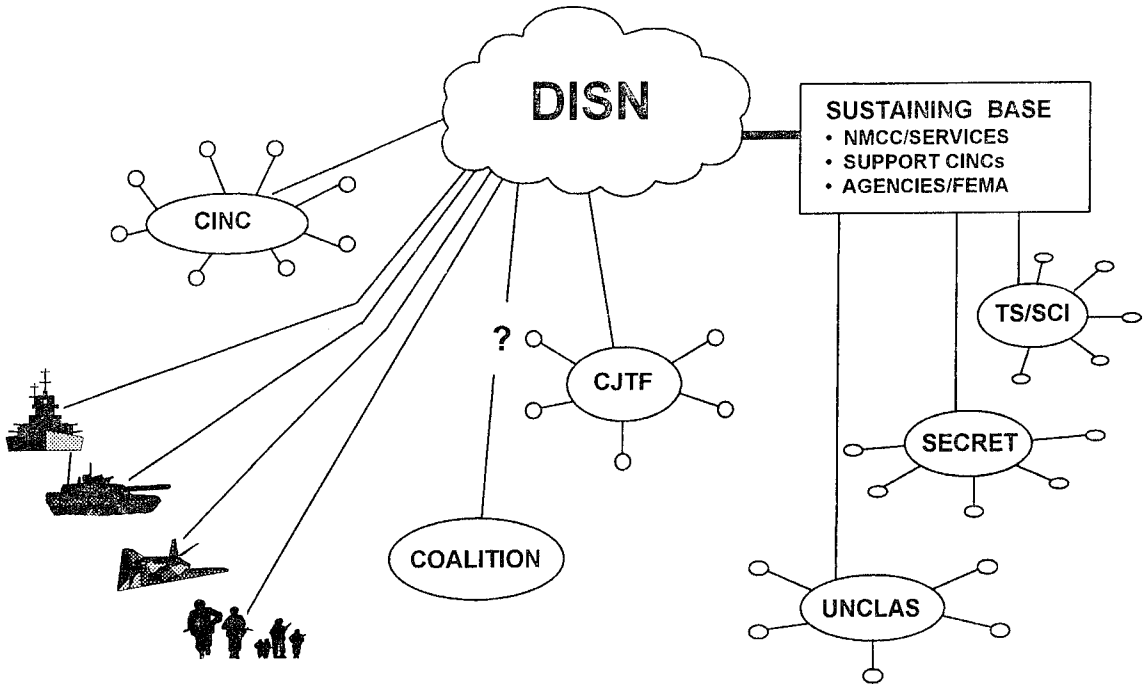
C4I--the tie that binds

Presented by:
RADM J. A. Gauss
Defense Information Systems Agency
Dep Dir for Engineering & Interoperability

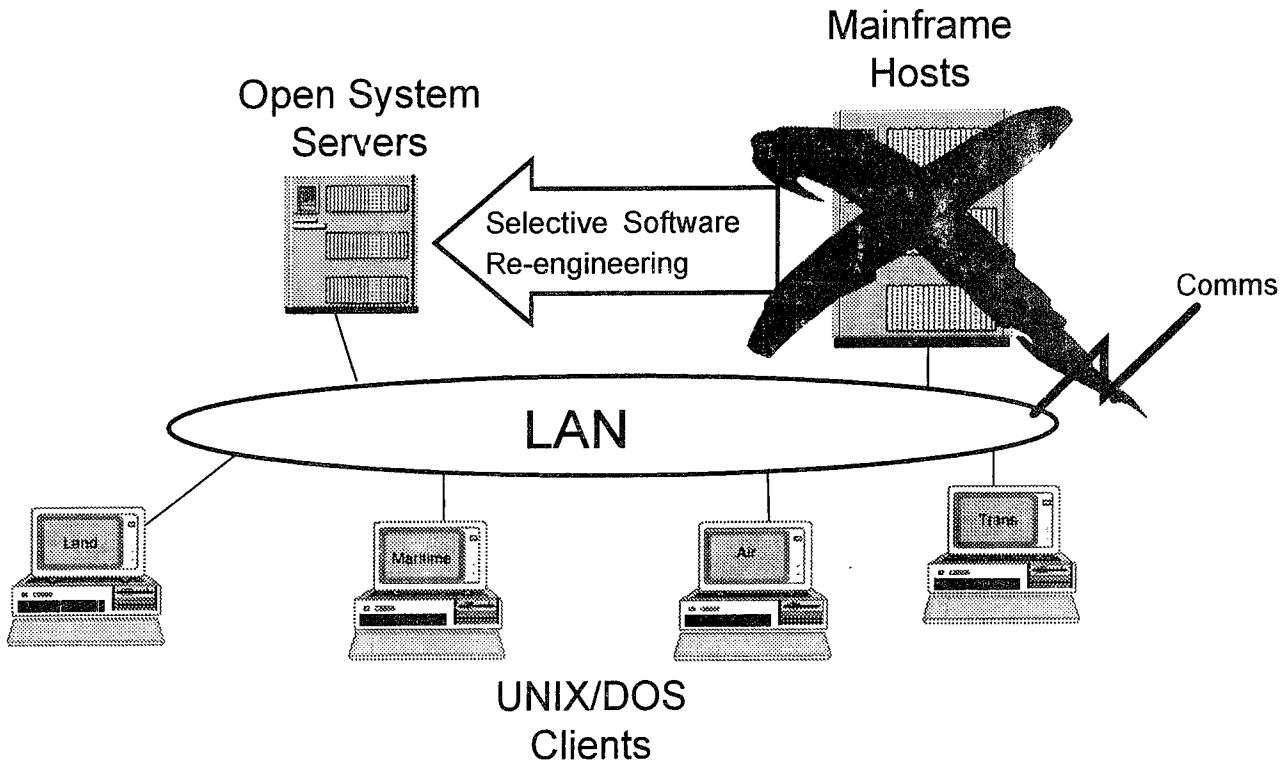
THE CHALLENGE

- Everything D6/JIEO/JITC does will directly support the Joint Service Warfighter
  - Global Command and Control System
  - Defense Information Infrastructure
- As the Defense Department downsizes and the Defense Budget evaporates, we must:
  - Change the way we do business
  - Organize for maximum efficiency
  - Eliminate all duplication of effort
  - Provide quality, yet affordable, systems to our Warfighting customers

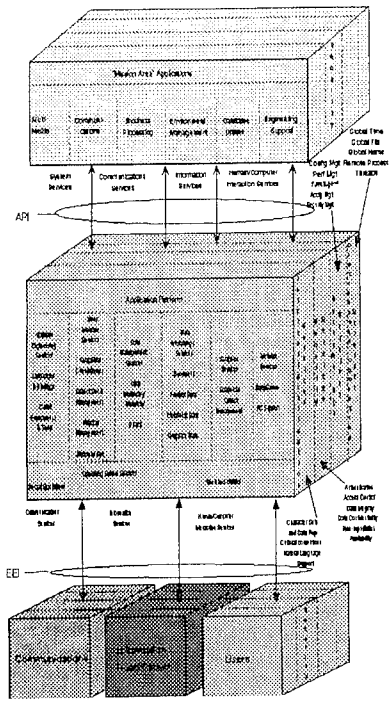
DII Architectural Framework



DII End-User Architecture

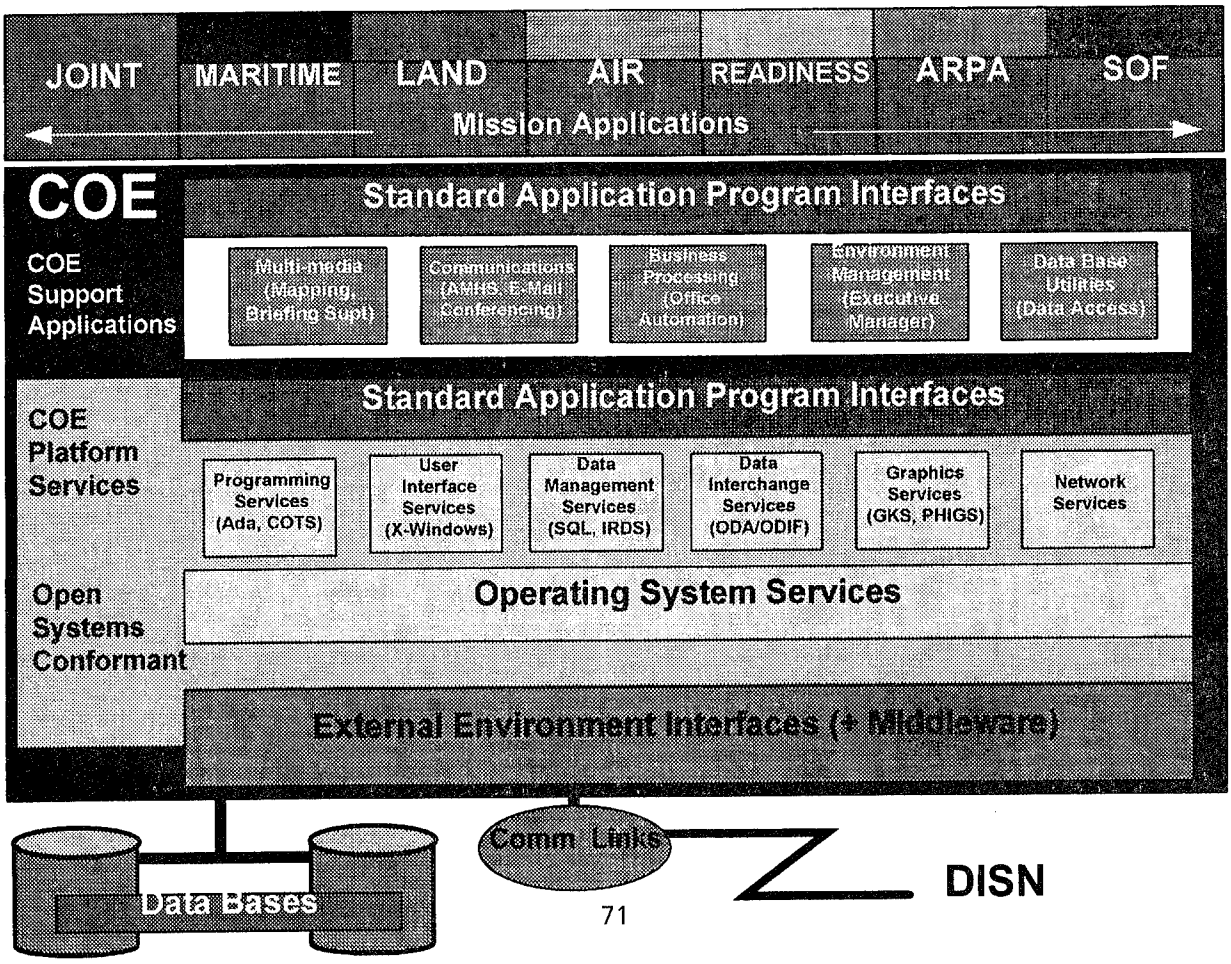


The TAFIM & GCCS Software Development Environment (The Keys To Success)



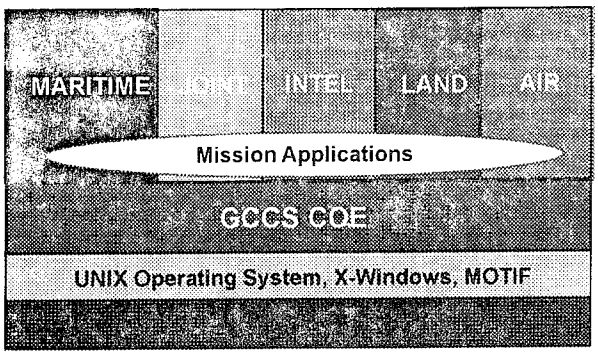
- **Integration Standard (4 Nov 94)**
- **GCCS Baseline COE (28 Nov 94)**
  - **Architectural Guidelines**
  - **Common Operating Environment (13 of 19 Modules)**
  - **Application Programmer Interfaces**
- **User Interface Specification (4 Nov 94)**
  - **Style Guide**
- **Software Tools (29 Nov 94)**
  - **GCCS Online Access Library (GOAL)**
  - **Development Integration Tools**
  - **Runtime Integration Tools**
- **Executables and Libraries (Solaris & HP)**

GCCS COE



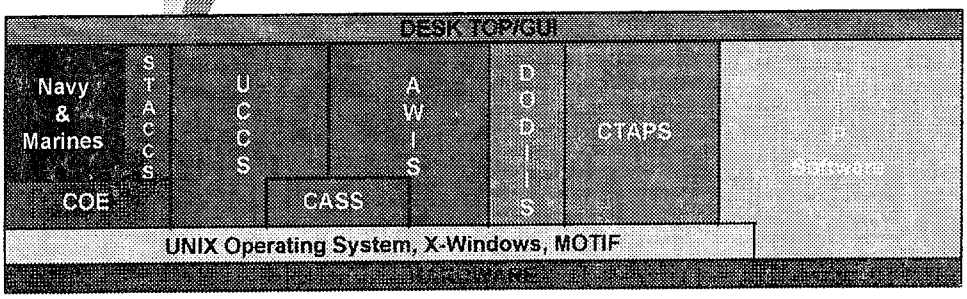
Development Environment

OBJECTIVE GCCS COE



EVOLUTIONARY PATH

Applications launched using COE desktop



Integration Standard Plus Runtime Environment

Functionality Migrates to DII

DII Vision

"DII Migration System"

Fewer systems - All sharing DII COE compliant applications

Migration Selection

Functions CINC Services Agency Allied Functional

A
B
C
D
E
F

DII COE

Today's Picture

Functions CINC Services Agency Allied Functional

A
B
C
D
E
F

Multiple Operating Environments

Mission Applications using one Common Operating Environment

Many Separate, Redundant Systems

JIEO ROLE

- Define Standards more quickly
  - "Plug the Loopholes"
- Engineer systems
  - Detailed system specifications
- Security
  - Engineer up front
- Quality Software Development
  - Policies, practices, and procedures
  - Products

JIEO ROLE (cont)

- Product Assurance
  - System integration testing
  - Configuration Management
  - Quality Assurance
- Installation and In Service Support
  - Training
  - Logistics
- Teeth in our role as the DOD overseer of interoperability
- Must cross the gap between planning to migrate systems to actually migrating systems
  - Next logical step for CIM
  - Get some real "System Kills"

THE ADVENTURE

- Not for the "Faint of Heart"
  - Will take high risk ventures when the gain exceeds the risk
- Not for the "Inflexible"
  - Will change course in the presence of new data
- "Get product out the door" & "I want it, now"
  - Insert current technology when necessary
- Leverage Uniformed Services' investment
  - Mobilization: ARMY
  - Large Air Campaigns: AIR FORCE
  - Expeditionary Warfare: NAVY/MARINE CORP TEAM
- Must be tough & demanding but not threatening
  - Capitalize on Uniformed Services' industrial capabilities
  - Do work when Services have no requirement to do so

FUNCTIONALS AND RESOURCES PANEL

PANEL MODERATOR:	CYNTHIA KENDALL DASD (IM) OASD (C3I)

FUNCTIONALS AND RESOURCES PANEL

LOGISTICS	MG JAMES KLUGH, USA (RET)	DEPUTY UNDERSECRETARY OF DEFENSE (LOGISTICS)
FINANCIAL	MR. RICHARD KEEVEY	DEPUTY UNDERSECRETARY OF DEFENSE (FINANCIAL SYSTEMS)
HEALTH AFFAIRS	MG GEORGE ANDERSON, USAF	DEPUTY ASSISTANT SECRETARY OF DEFENSE (HEALTH SERVICES OPERATIONS READINESS)
INTELLIGENCE	MR. JIM DAVIDSON	OFFICE OF INTELLIGENCE SYSTEMS SECRETARIAT

DATA STANDARDIZATION STATUS*

APPROVED STANDARD DATA ELEMENTS	1,150
APPROVED PRIME WORDS	362
APPROVED GENERIC ELEMENTS	19
TOTAL	1,531
CANDIDATE STANDARD DATA ELEMENTS	716
CANDIDATE PRIME WORDS	287
TOTAL	1,003

*AS OF NOVEMBER 29,1994

MIGRATION SYSTEMS SELECTIONS

- LIST OF MIGRATIONS SYSTEM SELECTIONS ISSUED - OCTOBER 28, 1994
- 188 MIGRATION APPLICATIONS AND SUB-APPLICATIONS SELECTED FROM 1856 LEGACY SYSTEMS
- MUCH WORK CONTINUES:
  - FURTHER MIGRATION SYSTEM SELECTIONS
  - FUNCTIONAL ECONOMIC ANALYSIS
  - IMPLEMENTATION PLANS

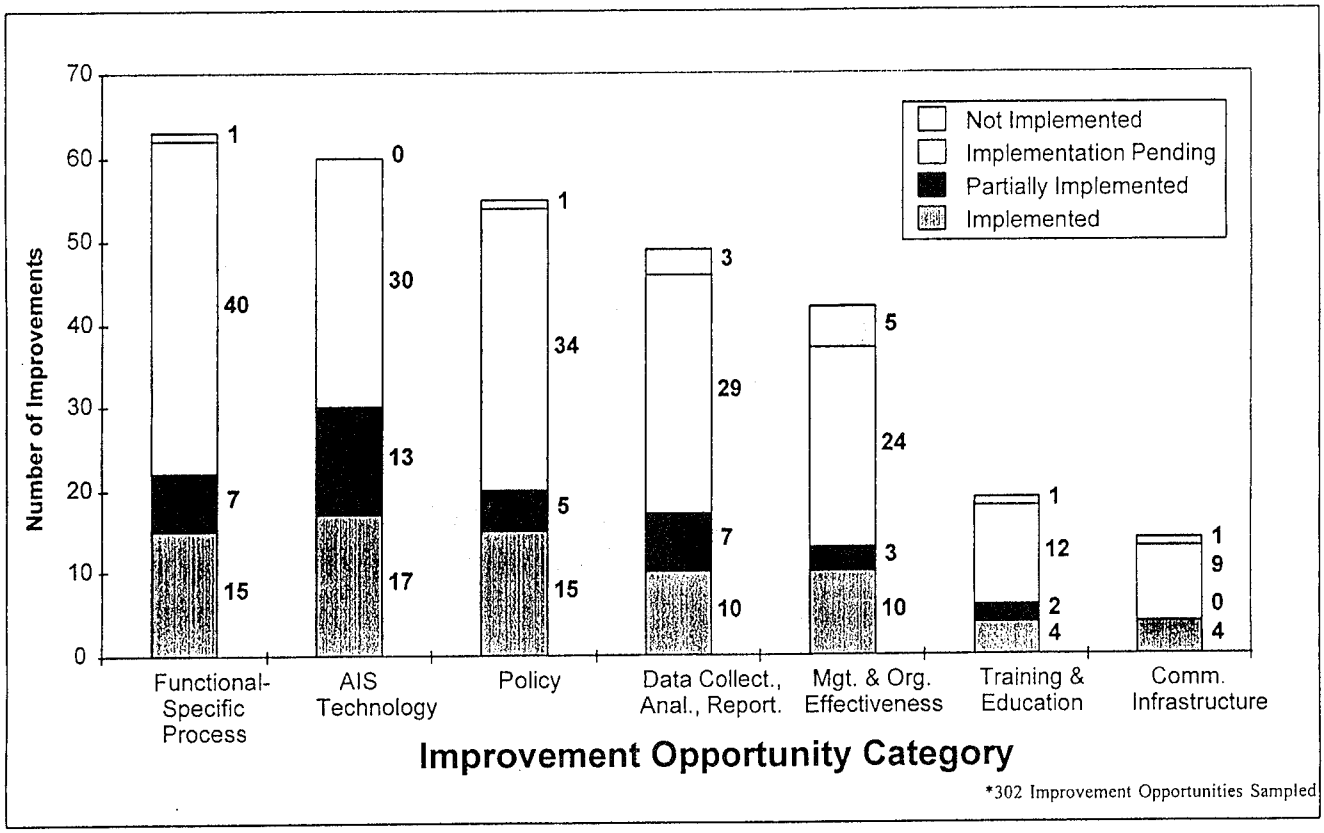
BUSINESS PROCESS REENGINEERING (BPR)

- APPROXIMATELY 130 BPR PROJECTS INITIATED
  - 1420 BUSINESS PROCESS IMPROVEMENTS IDENTIFIED
  - OVER 30 PROJECTS REACHED FUNCTIONAL ECONOMIC ANALYSIS STAGE

- BARRIERS TO IMPLEMENTATION
  - MANAGERIAL COMMITMENT
  - AVERSION TO CHANGE
  - IDENTIFYING PERFORMANCE MEASURES
  - FUNDING (INVESTMENT AND SAVINGS)

- NEXT CHART PROVIDES INSIGHT TO IMPLEMENTATION PROGRESS

Analysis of CIM Improvement Opportunities by Improvement Category and Implementation Status



Department of Defense Logistics Business Systems

Corporate Information Management and Enterprise Integration Symposium
December 13 - 14, 1994

James R. Klugh
DUSD (Logistics)

The Changing DoD Mission

DIFFERENT KIND OF WAR

DIFFERENT KIND OF LOGISTICS

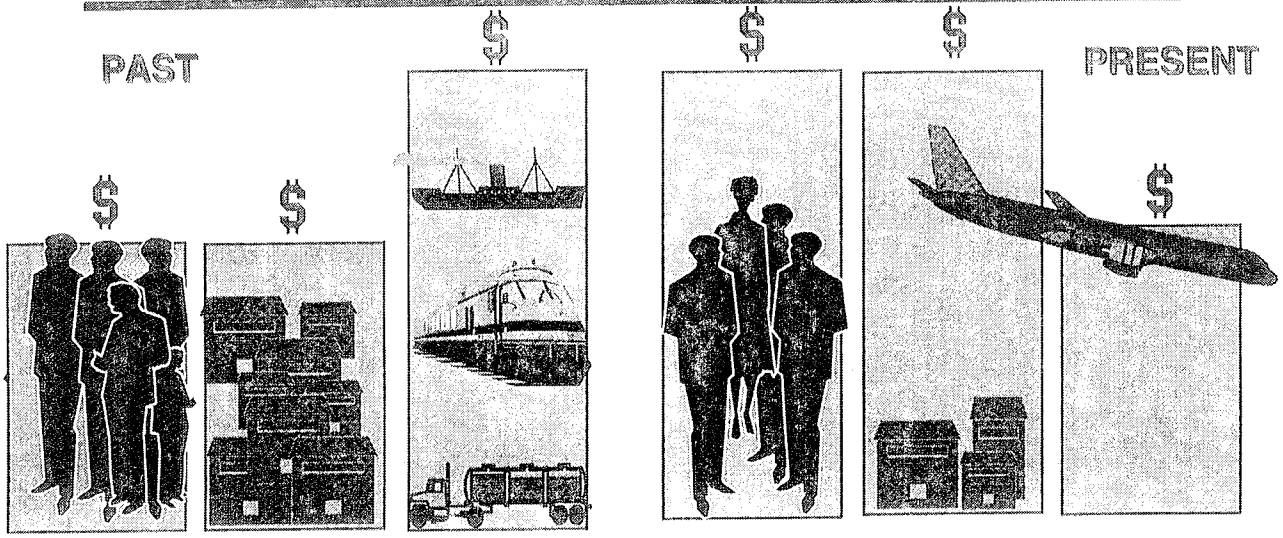
1986
- Cold War
- Large scale, sustained missions
- Force structure
  - 600 Ships
  - 40 AF Wings
  - 28 Divisions
  - •
  - •
  - •
- Coordination between Services

1998
- Third world conflict / humanitarian relief
- Concurrent, rapid deployment missions
- Force structure
  - 325 Ships
  - 20 AF FWE
  - 15 Divisions
  - •
  - •
  - •
- Joint operations

Challenges
1) Readiness
2) Responsiveness
3) Sustainability
4) Interoperability

2

Changes in Traditional Logistics Relationships

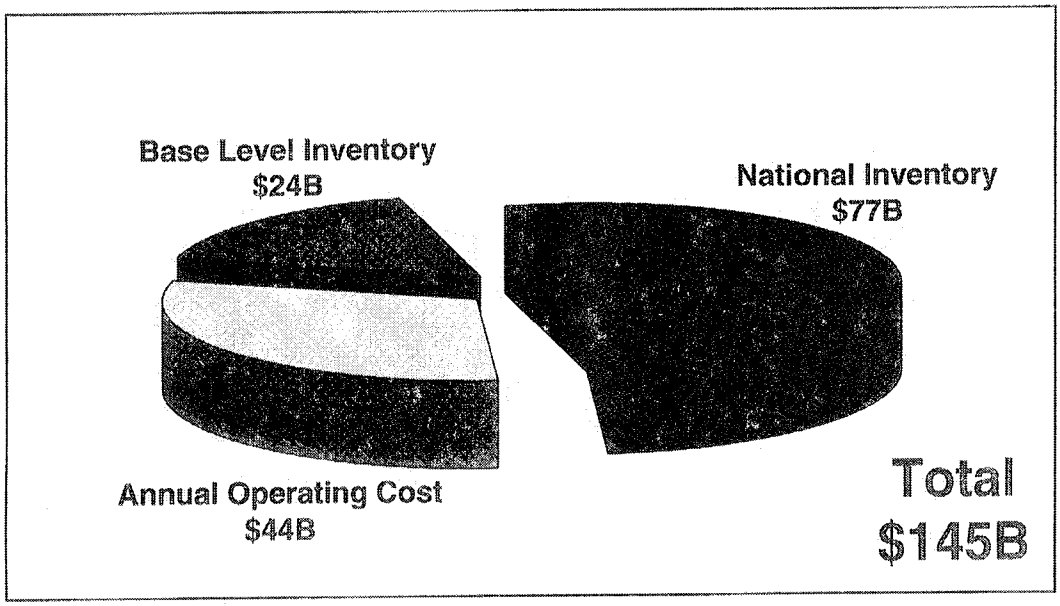


- Maintenance people were plentiful and inexpensive
- Supply spares were log-tech, plentiful and inexpensive
- Transportation/processing was slow, unreliable and expensive

- Maintenance people are less plentiful and expensive
- Supply spares are hi-tech, less plentiful, and expensive
- Transportation/processing is fast, reliable and less expensive

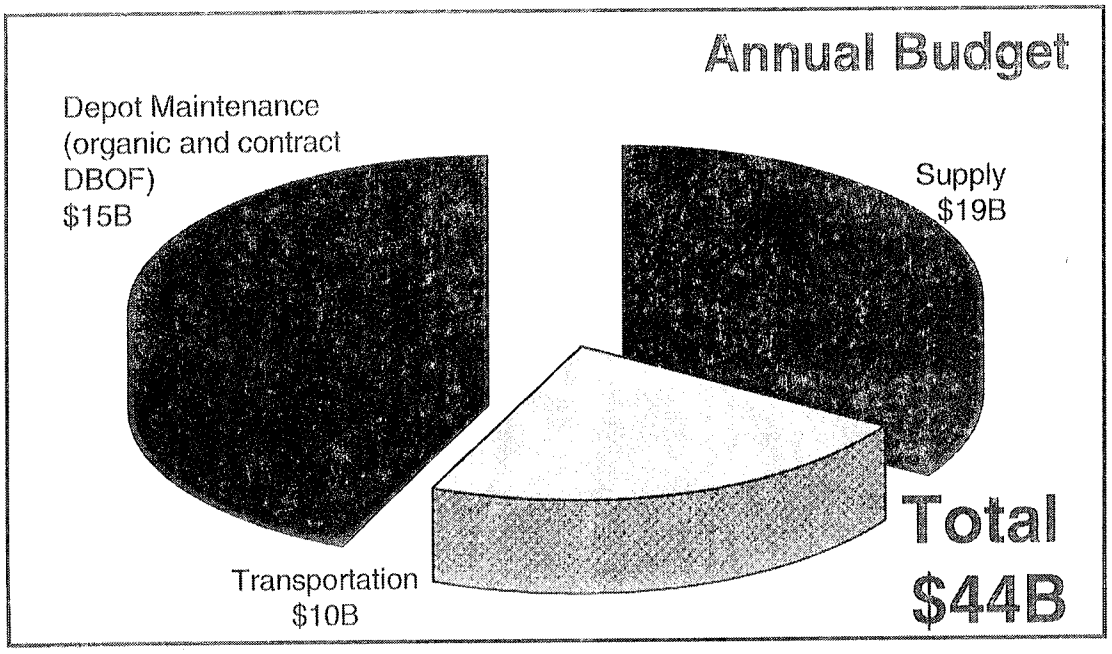
51

Annual Value of Logistics Business



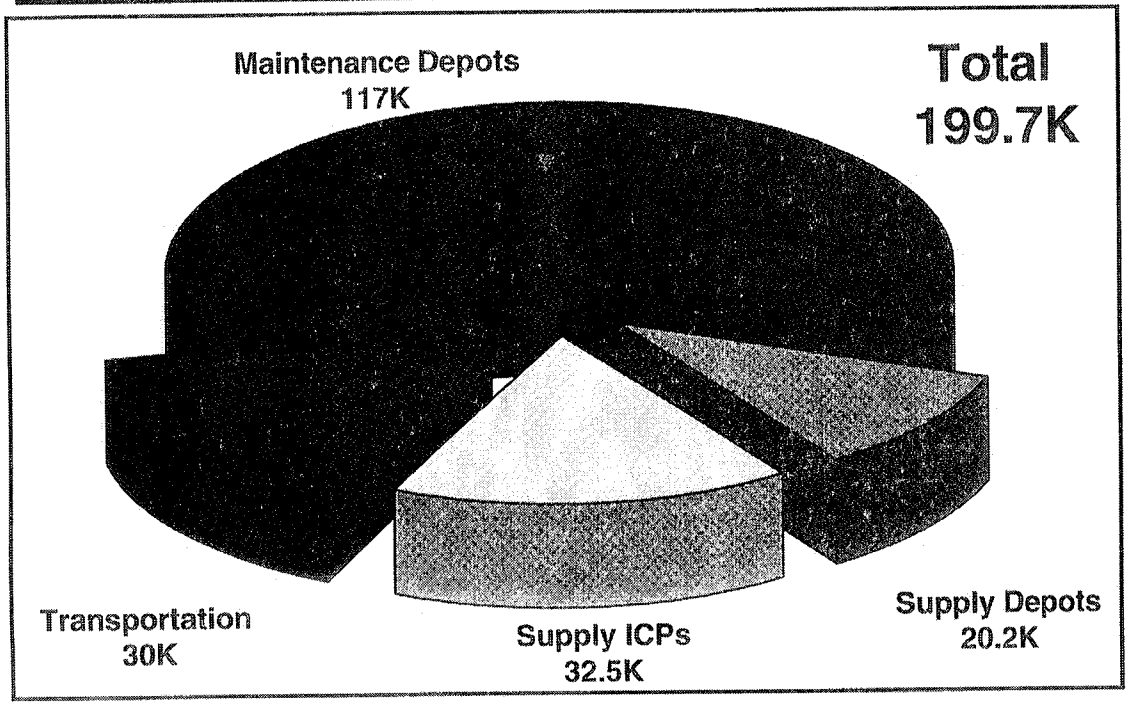
3

National Level Logistics



4

Central Logistics Personnel



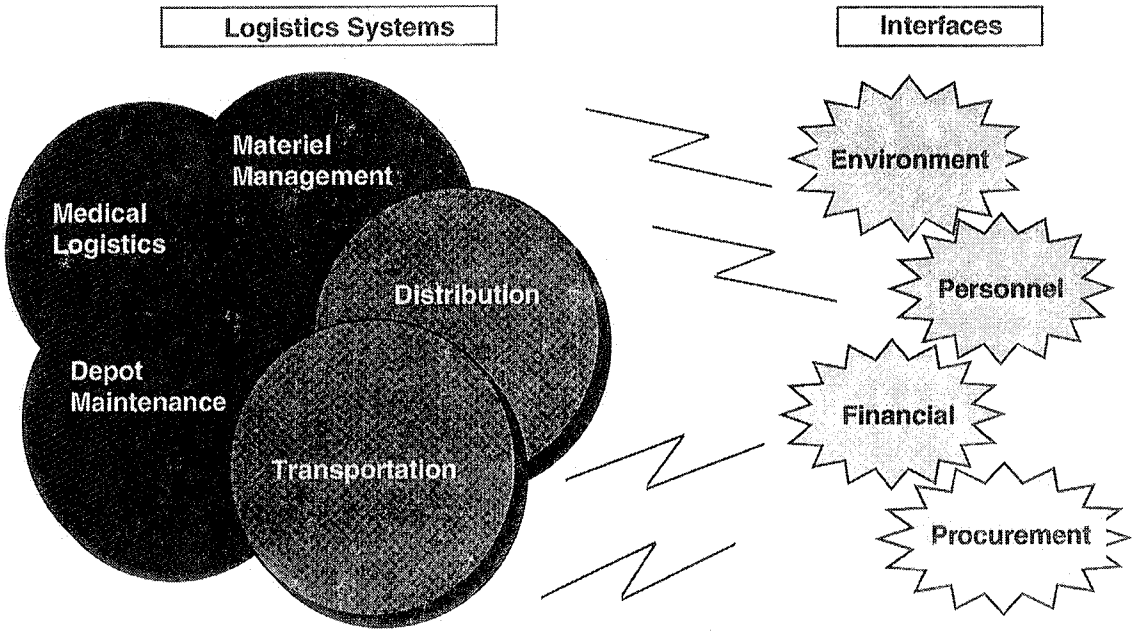
5

Significance of Leadtimes to Readiness

- Decisions affecting sparing and maintenance capability often occur 2 - 3 years before impact is seen
  - ➢ Force structure changes
  - ➢ Information Systems provide few lead indicators
  - ➢ Historically, mission changes mismatch advanced spares purchases & readiness results

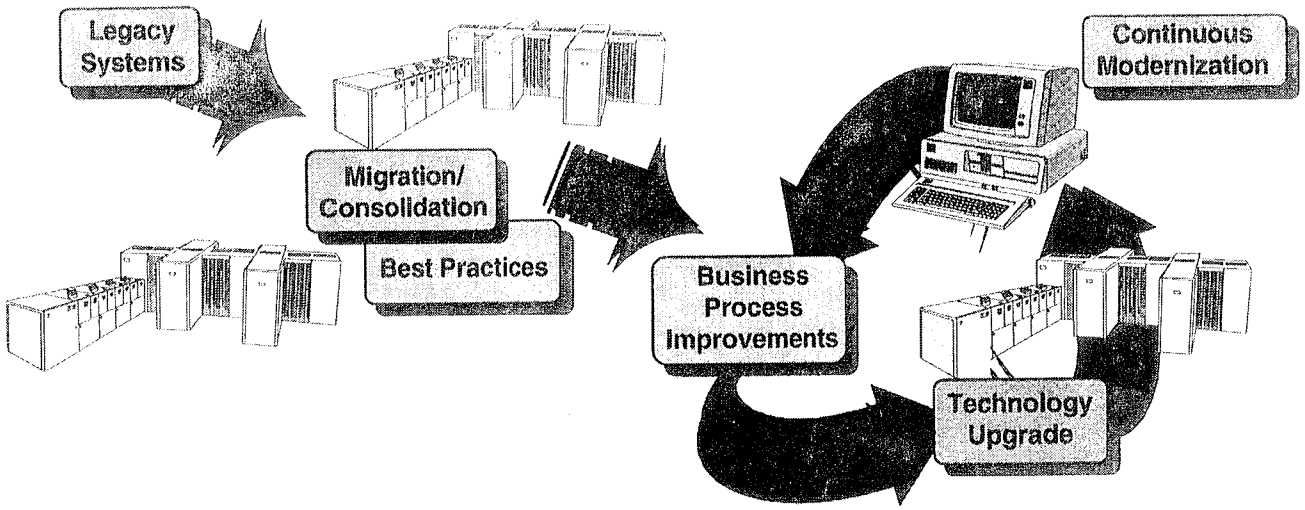
11

Logistics Corporate Information Management



1

The CIM Modernization Process



- Many Systems → Few
- Old Process → Re-engineered
- Old Architecture → Re-engineered
- Old Technology → Re-engineered

- Open System --
- Separation of Data & Applications

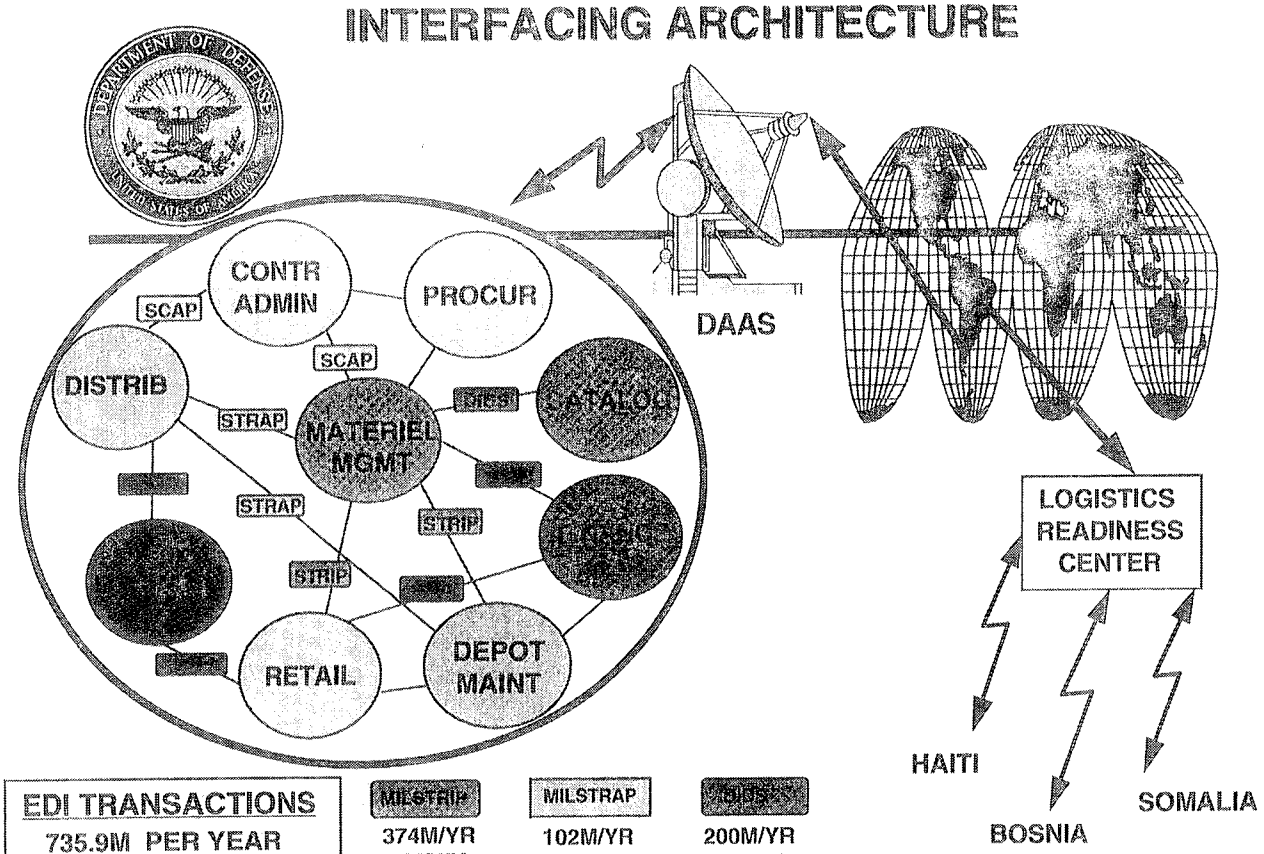
15

How It's Being Done

Involving the customer in the process	Joint teams and forums	• JLSC is catalyst and facilitator • Customer concurrence and buy-in
Leading with process change	Joint concurrence on approach and strategy	• Greatest benefits are in process changes • Systems are a critical sustaining mechanism
	Open systems DISA standards/protocols	• Platforms for future functional enhancements/upgrades • Architecture to support DOD migration • Exploitation of digital data
Focusing on implementation vs. development	Existing government and commercial applications	• Select deployable systems • Get them to the users now • Deliver payback now
Changing minds as well as systems	Focused change management strategy	• Services abandon paradigms • Adopt new ideas, practices

16

INTERFACING ARCHITECTURE



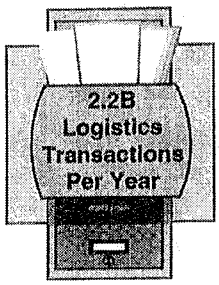
EDI TRANSACTIONS

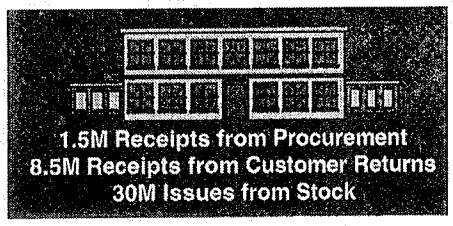
735.9M PER YEAR
61.3M PER MONTH
14.1M PER WEEK
2M PER DAY
163 PER SECOND

MILSTRIP	MILSTRAP	MILSCAP
374M/YR	102M/YR	193K/YR
7M/WK	2M/WK	4K/WK
34M/YR	25M/YR	200M/YR
653K/WK	480K/WK	4M/WK

35

Size of the Information Problem

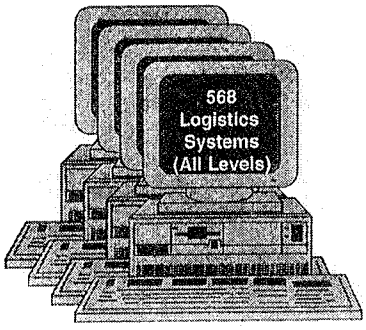




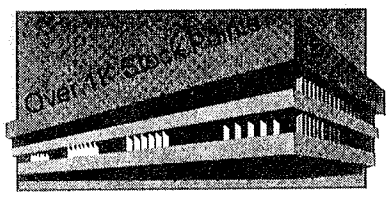
$44B
Annual Log
Business

6.3M
Catalogued Items



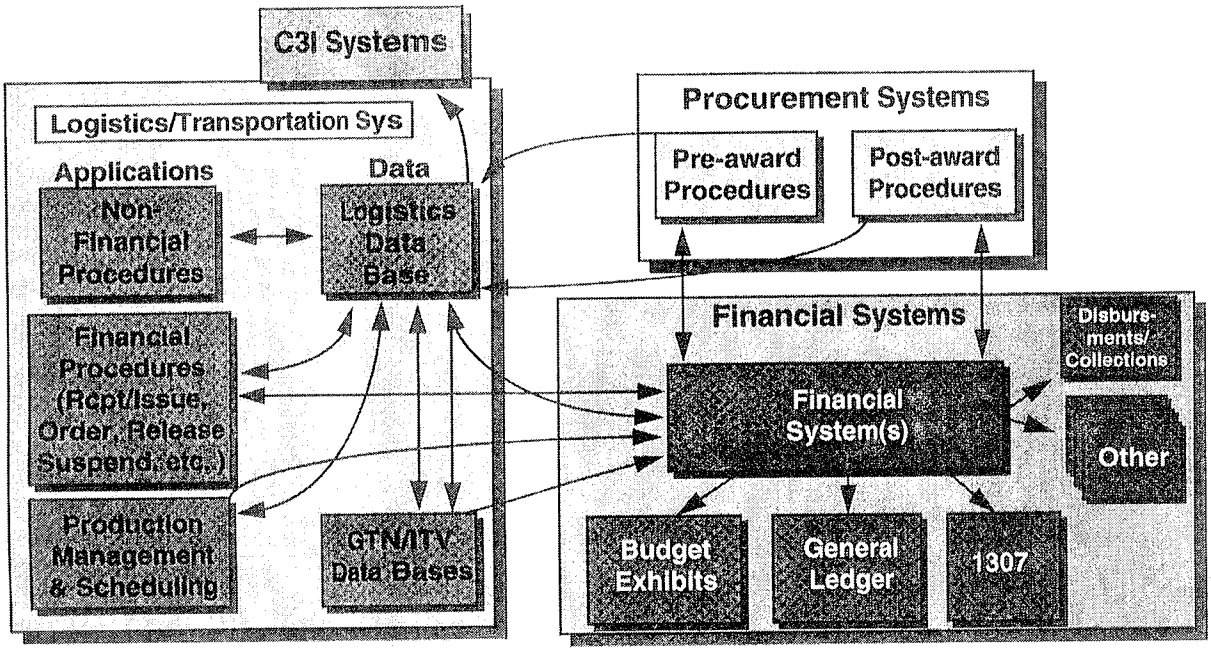


$77.5B
Consumable and
Reparable
Inventory



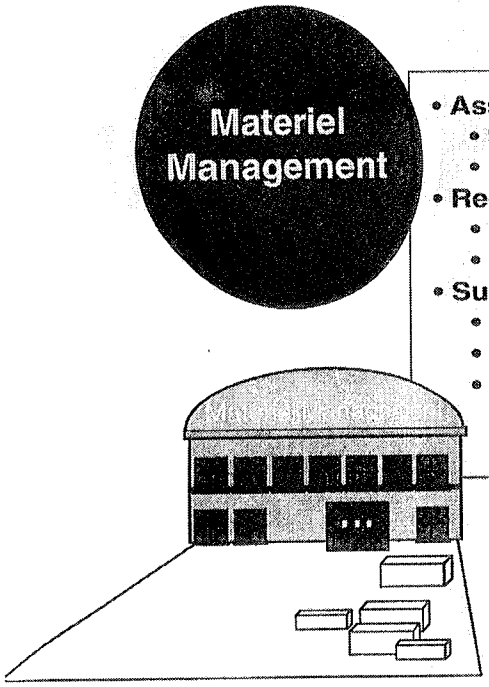
6

Dependency on Logistics Systems Modernization



17

Materiel Management



Select System

- Asset Management Area
  - Stock Control System (SCS)
  - Discrepancy Reporting System (DRS)
- Requirements Determination Area
  - Requirements Determination (RD)
  - Maintenance Planning & Execution (MP&E)
- Supply & Technical Data Support (S&TDS) Area
  - Configuration Management Information System (CMIS)
  - Product Definition Support System (PCTSS)
  - Provisioning & Cataloging Technical Support System (PCTSS)

Deployed Sites

- CAV, 14 Army, 6 Navy, 94 Contractors
- DESEX, 5 DLA, 3 Army, 2 Navy ICPs
- CMIS, 1 Army, 1 Marines, 1 Navy, 1 PMO

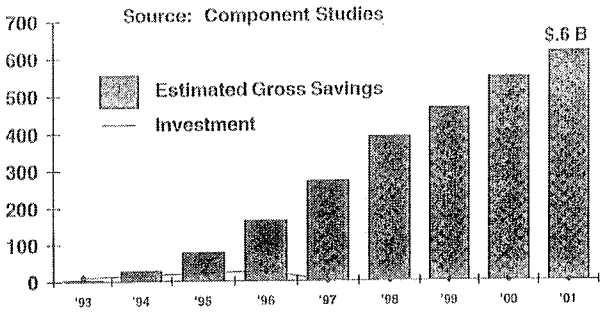
Based on FEA

ROI

$5.10:$1

18

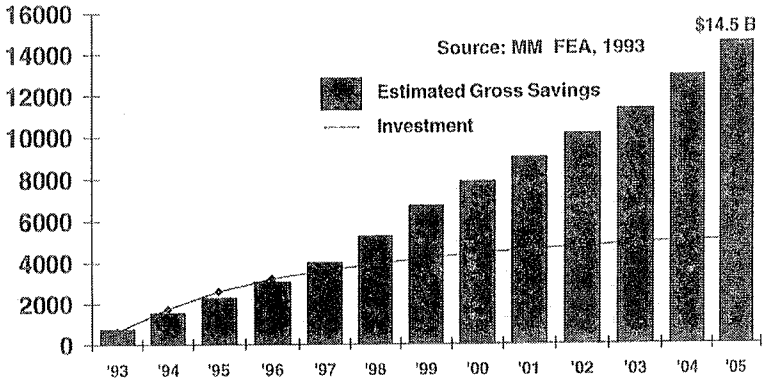
Materiel Management Economic Opportunity



(All figures in FY 93 M$s)

- Rapid roll out of small applications
  - CAV II
  - RPV
  - VMSIR
  - DESEX
  - SDF
- Low cost, quick return

The MMSS suite
Larger investment,
bigger return



(All figures in FY 93 M$s)

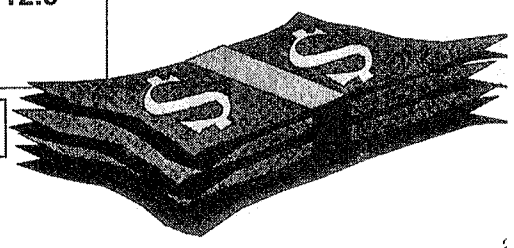
1

MM Legacy Cost Avoidance

	1993		1994	
	Requested	Approved	Requested	Approved
USN	62.8	3.1	7.9	2.9
USAF	66.8	8.3	52.9	2.6
DLA	95.2	4.1	22.4	2.2
USMC	18.7	0.0	2.3	0.3
USA	140.9	4.5	32.9	4.0
Total	384.4	20.0	118.4	12.0

NET 364.4 NET 106.4

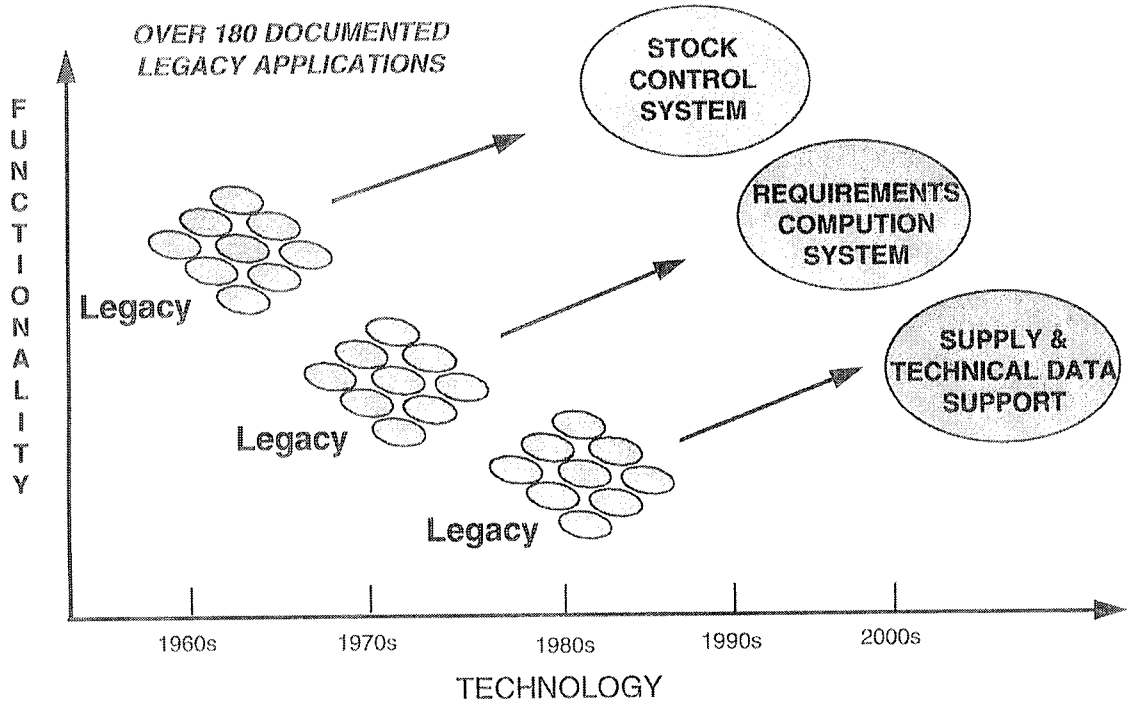
OVER $470M IN REALIZED SAVINGS



2

MATERIAL MANAGEMENT STANDARD SYSTEM

ELIMINATION OF LEGACY APPLICATIONS



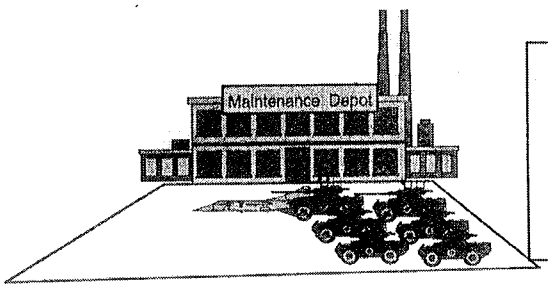
22

Depot Maintenance

Depot Maintenance Standard System (DMSS)

Selected System

- Baseline Advanced Industrial Management (BAIM)
- Programmed Depot Maintenance Scheduling System (PDMSS)
- Depot Maintenance Management Information System (DMMIS)
- Interservice Maintenance Agreement Control System (IMACS)
- Hazardous Material Management System (DM-HMMS)
- Tool Inventory Management Application (TIMA)
- Enterprise Information System (EIS)
- Facilities and Equipment Management (FEM)
- Laboratory Information Management System (LIMS)



Deployed Sites

- DMMIS - Ogden ALC QOTE&E
- IMACS - 2 Army, 3 Navy, 1 USMC, 5 AF
- PDMSS - 4 Army, 6 Navy, 5 AF
- HMMS - 4 Army, 2 USMC, 3 AF
- TIMA - 4 Navy
- EIS - 1 Army

Based on FEA

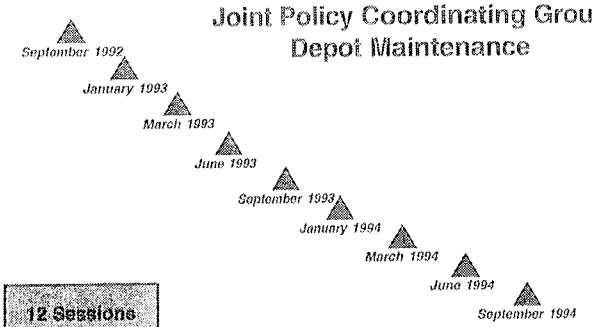
ROI

$4.70:$1

23

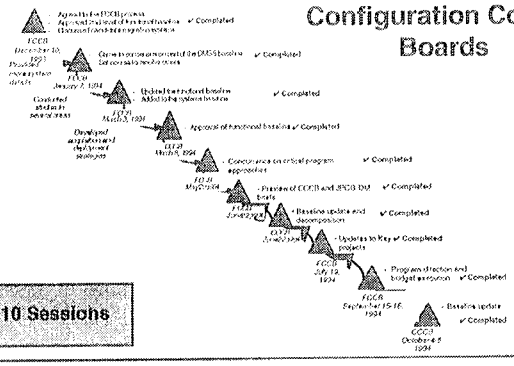
Customer Investment

Joint Policy Coordinating Group Depot Maintenance



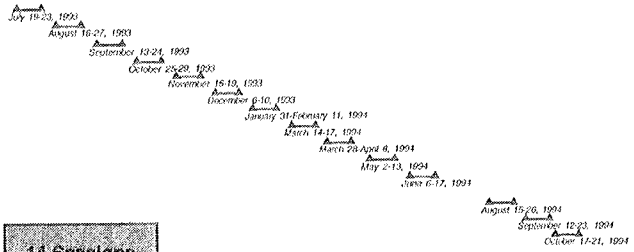
12 Sessions

Configuration Control Boards



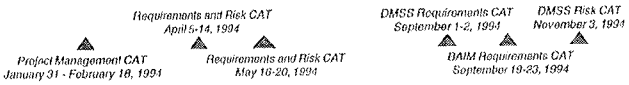
10 Sessions

Building the "To Be" Model



14 Sessions

Requirements and Risk

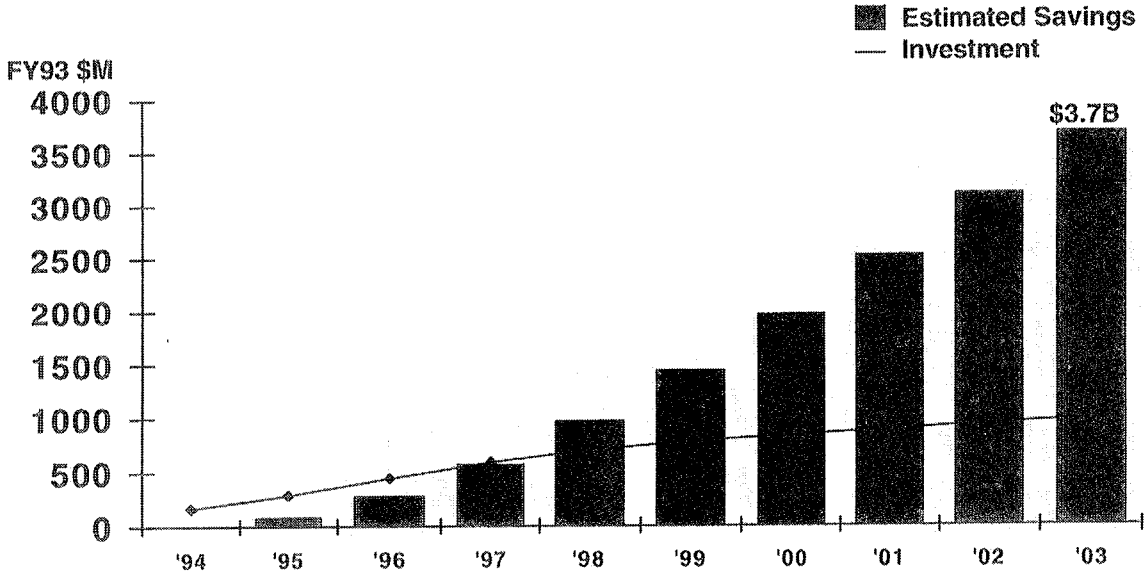


6 Sessions

119410v1

15

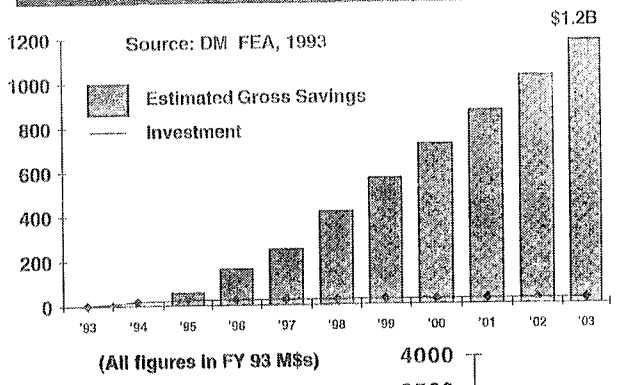
Depot Maintenance Economic Opportunity



Source: Depot Maintenance FEA Version 2.0, October 1993
(Numbers include DMMIS, HAZMAT, PDMSS and TIMA)

2

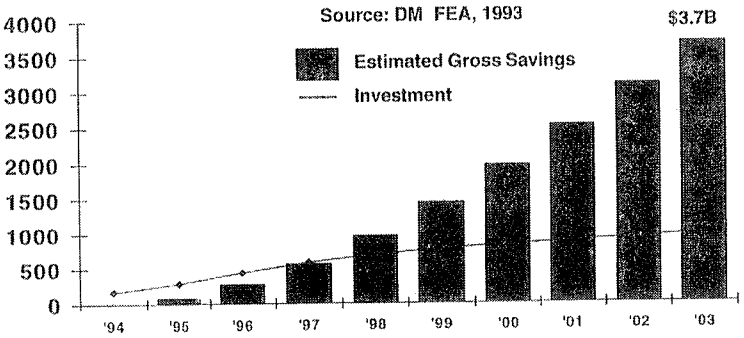
Depot Maintenance Economic Opportunity



(All figures in FY 93 M$s)

- Rapid roll out of small applications
  - PDMSS
  - DM-HMMS
  - TIMA
- Low cost, quick return

- DMSS (DMMIS, HAZMAT, PDMSS and TIMA)
- Larger investment, bigger return



(All figures in FY 93 M$s)

2

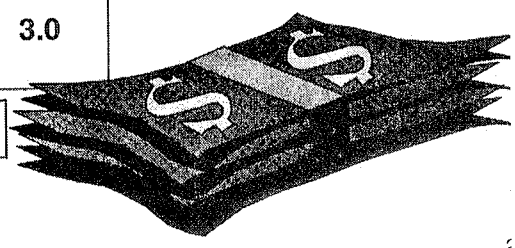
DM Legacy Cost Avoidance

	1993		1994	
	Requested	Approved	Requested	Approved
USN	32.1	9.3	26.7	0.7
USAF	64.6	0.0	17.7	1.4
DLA	0.0	0.0	0.0	0.0
USMC	0.0	0.0	0.0	0.0
USA	18.4	0.7	5.1	0.9
Total	115.1	10.0	49.5	3.0

NET 105.1

NET 46.5

OVER $150M IN REALIZED SAVINGS



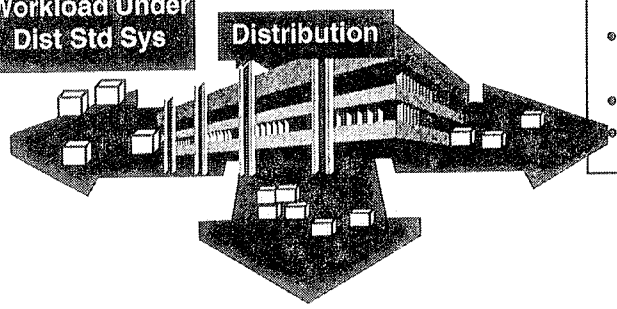
Distribution

Distribution

System

- Area Oriented Dept/Modernization (AOD/MOD)

80% of DOD Dist Workload Under Dist Std Sys



Deployed Sites

- In Production, Defense Depot New Cumberland
- Def Dist Region East and West 6 Site Implementation - CY94
- 12 Former AF and USA Sites in CY95
- 9 Former USN and USMC in CY96

Based on FEA

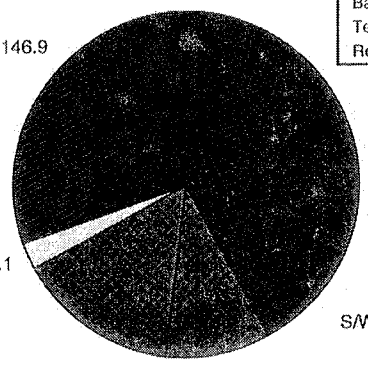
ROI

$3.05:$1

Benefits FY93 Constant $M

System Benefits

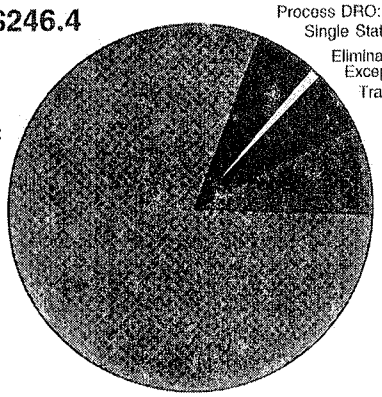
$343.7



Other:
COTS S/H: 18.1
Lower Tier H/W: 4.6
Base Support: 10.4
Telecommunications: -12.6
Replace Purchases: - 11.4

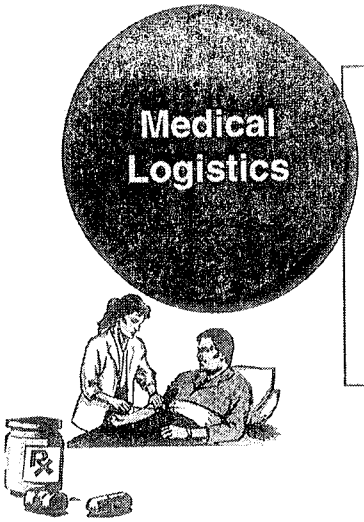
Mission Benefits

$246.4



DSS is a viable program that can return $3.05 for ever $1.00 invested

Medical Logistics



Selected System

- Defense Medical Logistics Standard Support Automated Information System (DMLSS AIS)
- Medical Logistics Functional Process Improvement Program (MLFPIP)

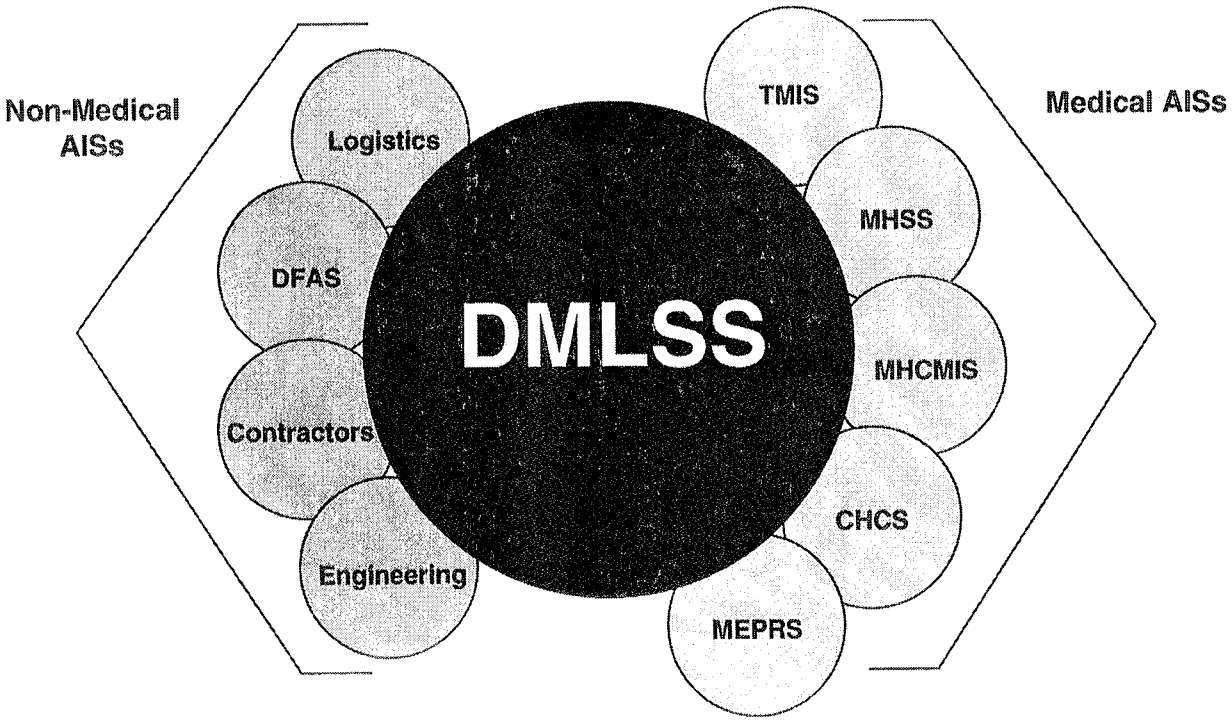
Deployed Sites

- Prime Vendor 14 Test Sites

Based on FEA

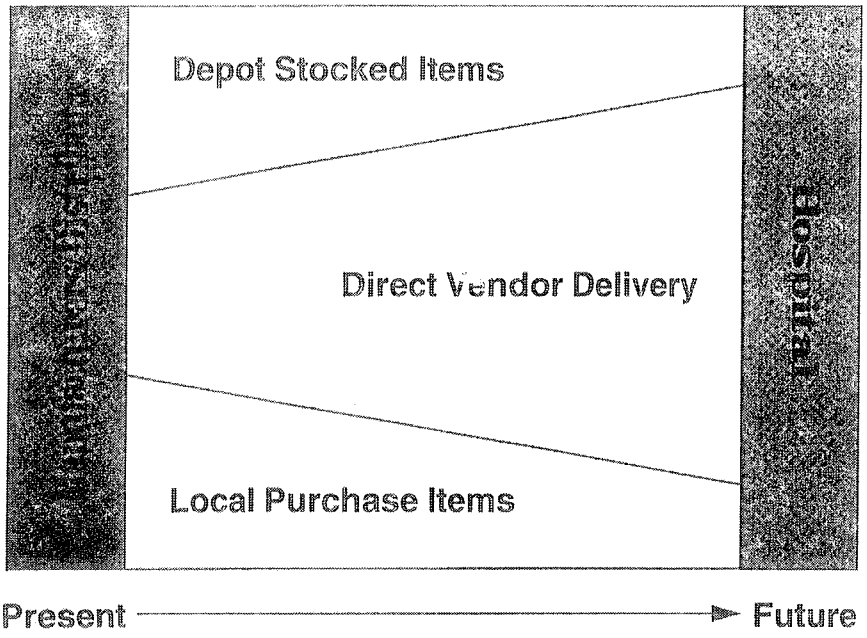
ROI $17:$1

DMLSS Integration

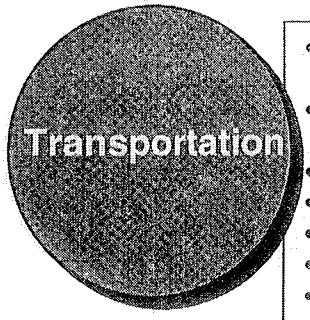


CIM Medical Logistics Subgroup

Hospital Logistics Support Changes

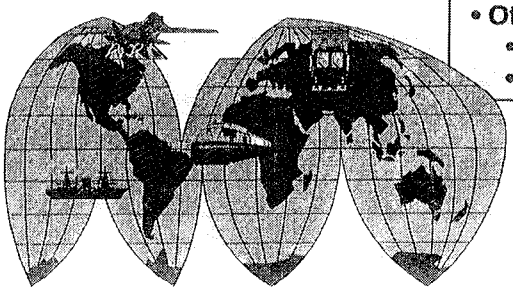


Transportation CIM Status



Functional/Selected System

- Port Management
  - Worldwide Port System (WPS)
- Traffic Management Officer Functions
  - Trans Officer Personal Property System (TOPS)
- Load Planning (Vehicle, Ship, Rail, Aircraft)
- Theater Trans Operations
- Unit Move
- Mode Clearance
- Transportation Planning/Execution (CINC Level)
  - Global Trans Network (GTN)
- Transportation Financial Management
- Other
  - Defense Transportation Tracking System (DTTS)
  - Relational Naval Air Logistics Info System (RNALIS)



Deployed Sites

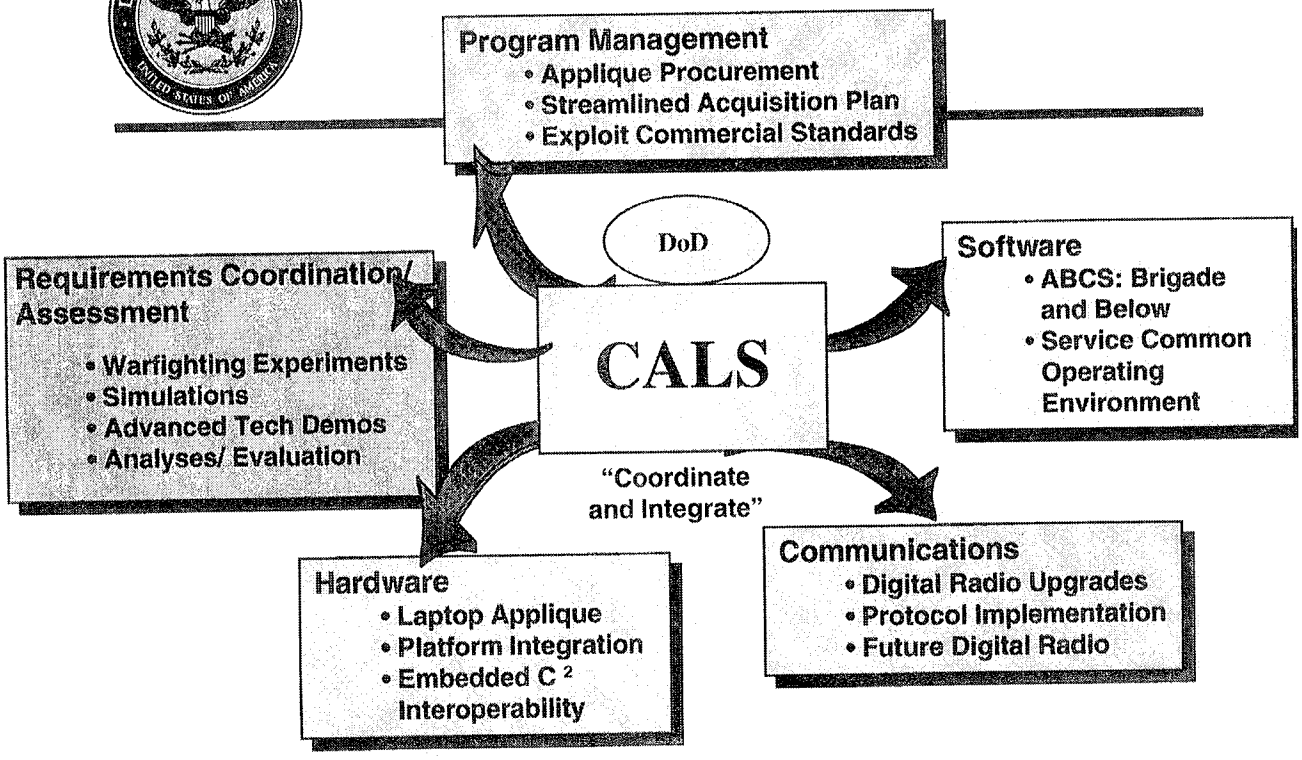
- WPS, 6 Seaports (EUCOM, PACOM)
- TOPS, 260 CONUS sites
- DTTS, Operational - CONUS surface moves
- GTN, 1000 users
- RNALIS, 7 Navy/USMC sites

Application of CALS Philosophy in the Logistics Process

CALS is a CORE strategy to use integrated data through a set of standards to achieve efficiencies in business and operational mission areas of the Department of Defense

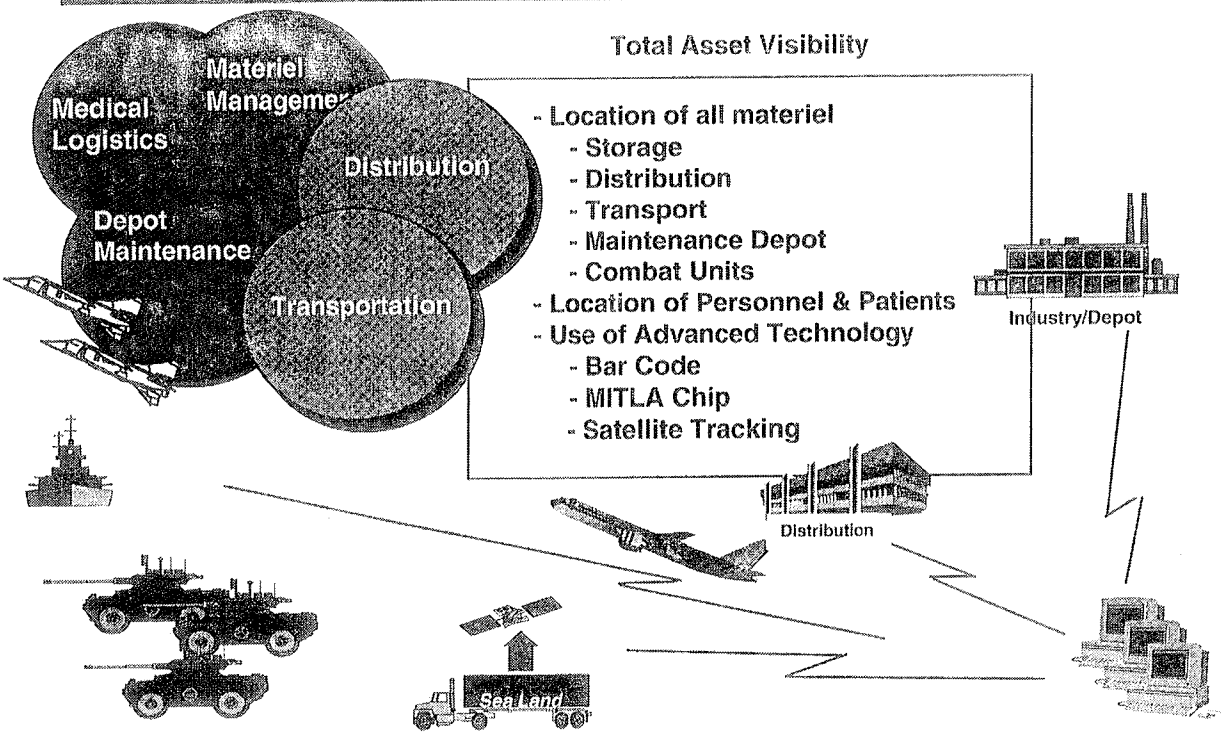
4

Putting It Together

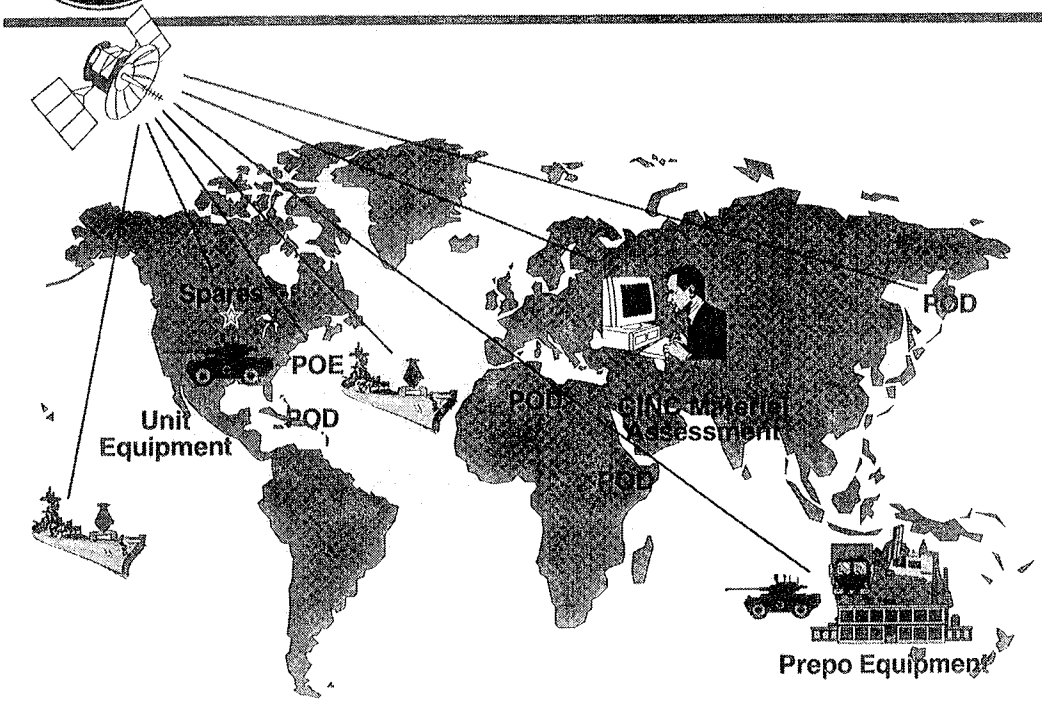


4

Total Asset Visibility

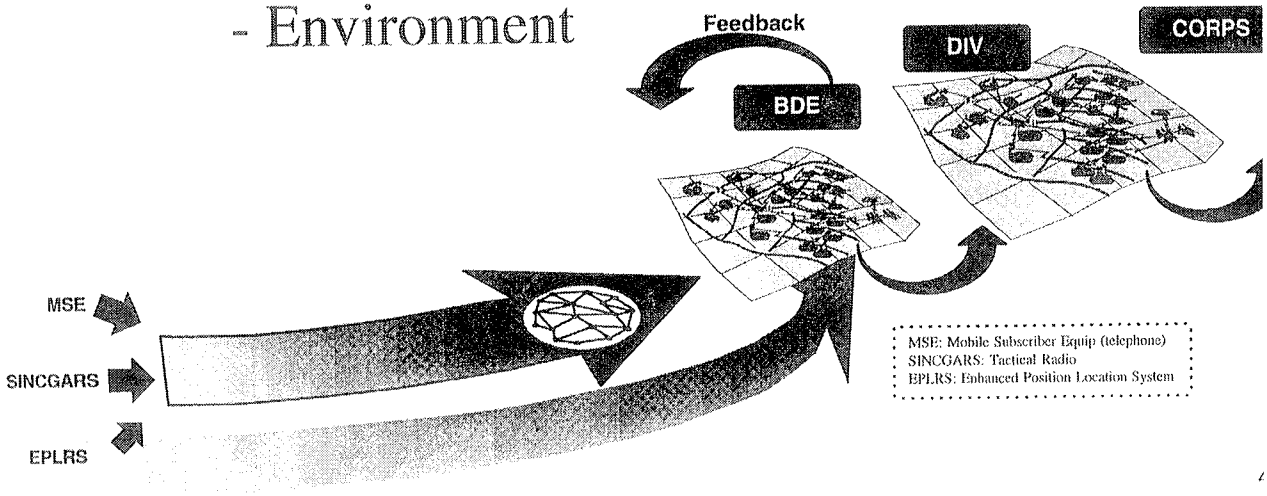


TAV Challenge

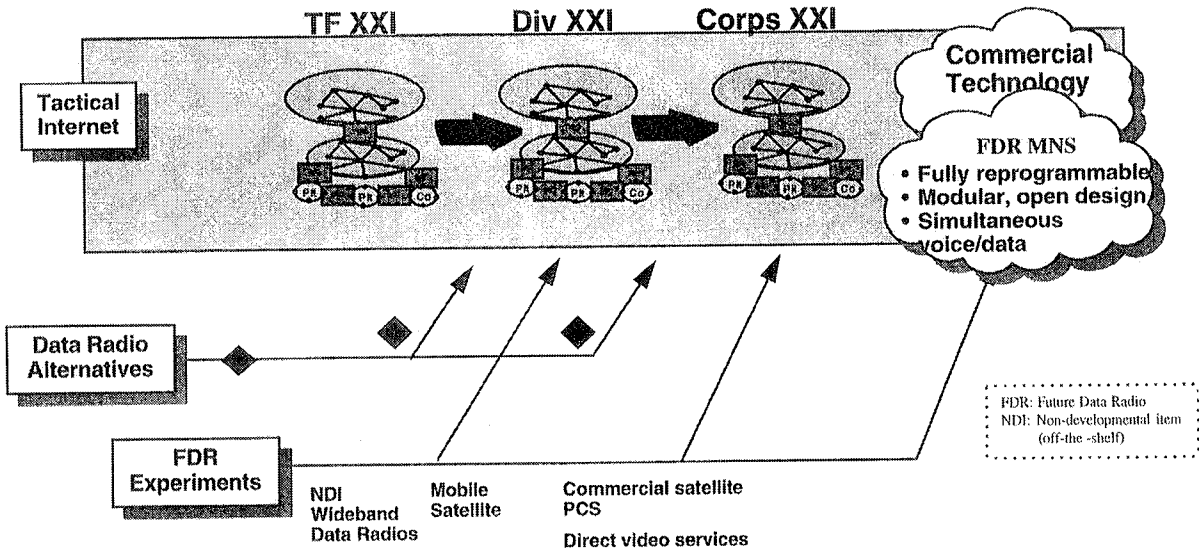


Objective of Logistict Business Systems in the Modern Battle Field

- Control:
  - Battle Space
  - Operations Tempo
  - Environment

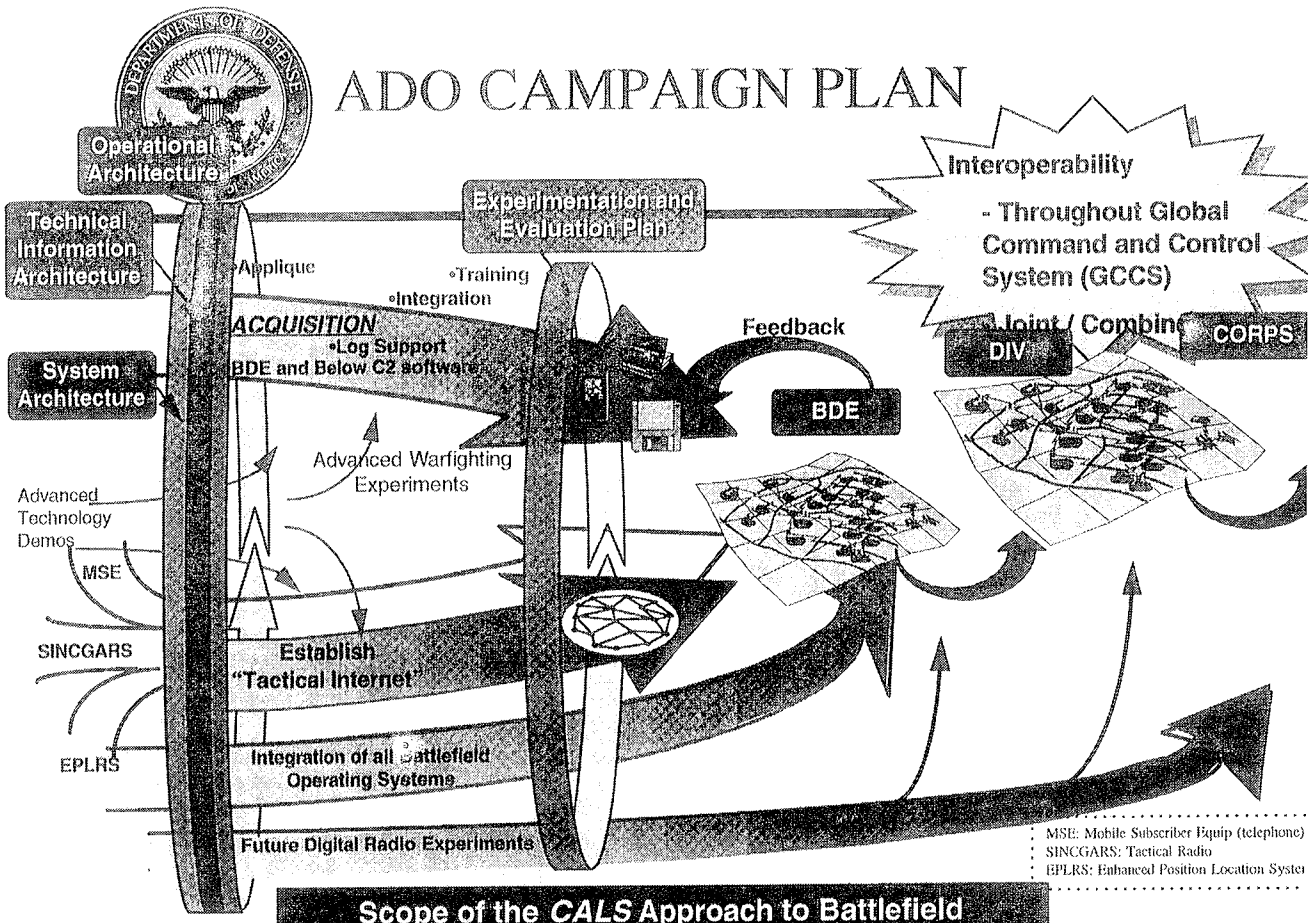


FUTURE DIGITAL COMMUNICATION SYSTEM STRAWMAN STRATEGY



KEY IS ASSESSING HOW CANDIDATES FIT INTO OVERALL COMM ARCHITECTURE

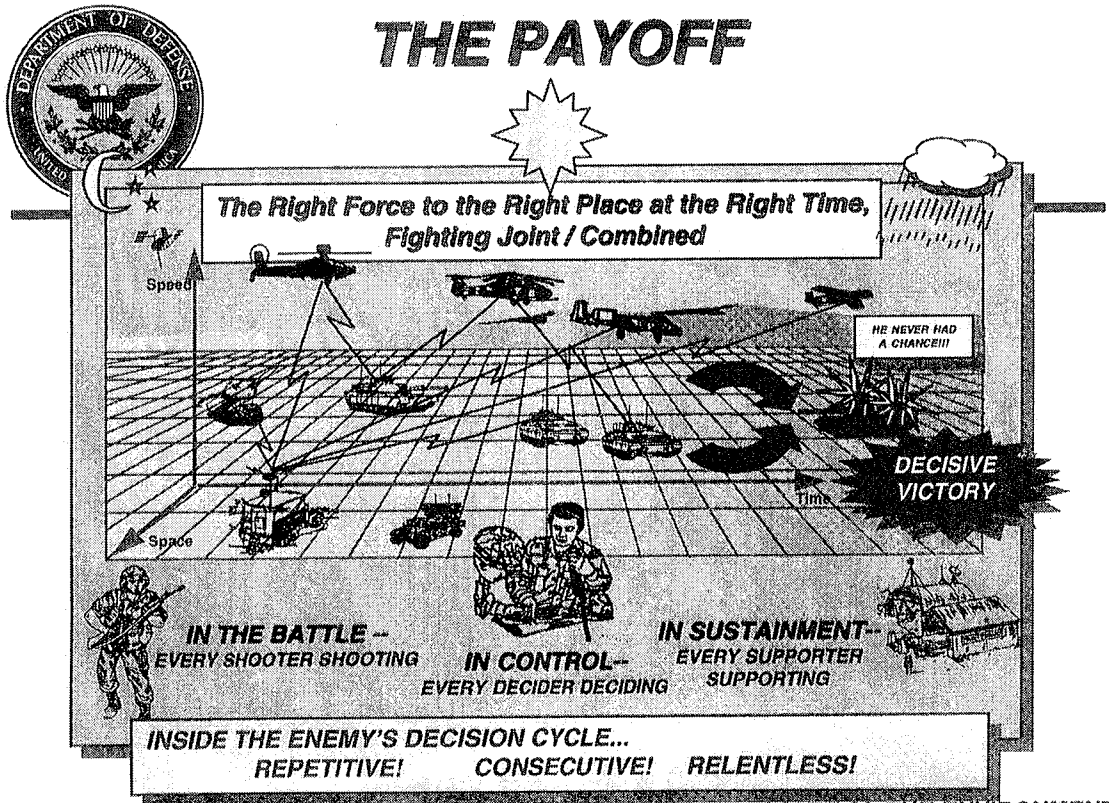
ADO CAMPAIGN PLAN



Scope of the *CALS* Approach to Battlefield Logistics

5

THE PAYOFF



•CONTROL THE BATTLESPACE •CONTROL THE TEMPO •CONTROL THE ENVIRONMENT

TOTAL SYNCHRONIZATION THRU DIGITIZATION

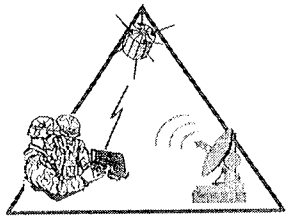
51

Centers of Gravity and Training

- Quality soldiers, sailors, marines, airmen, professional leadership
- Enduring military values

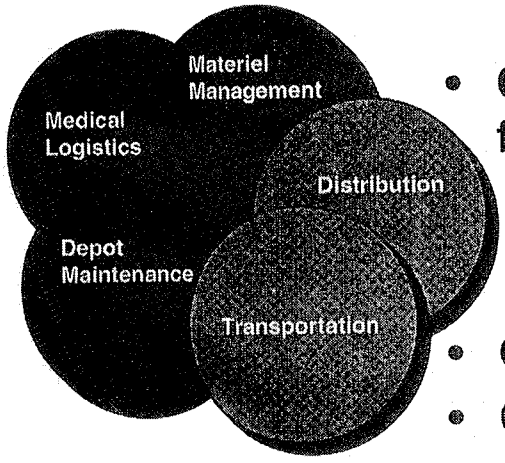


- Ability to harness technology requiring:
  - Intellectual agility
  - Defense resourcing
  - Supportive acquisition



47

Summary



- **Over $2.3B in life cycle savings for deployed systems to date**
  - ➢ **Over $760M legacy cost avoidance**
  - ➢ **Substantial savings expected in transportation**
- **Gross recoveries of $18.2B**
- **Complete integrated test scheduled**
- **Program average ROI**
  - ➢ **$1 investment = $10.64 return**

HEALTH AFFAIRS

DoD Health Affairs and Enterprise Integration

George K. Anderson, Maj Gen, USAF, MC
DASD(HA)
Health Services Operations and Readiness

S15194/37

HEALTH AFFAIRS

Health Affairs Mission

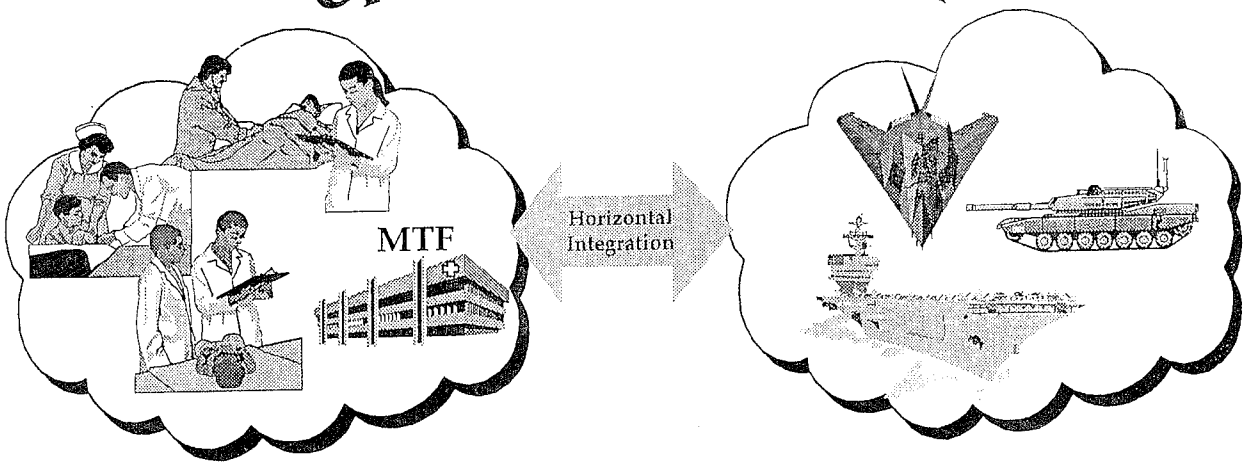
- Military medicine has two interwoven missions
  - To provide, and maintain readiness to provide, medical services during military operations
  - To promote and protect the health, well-being, and productivity of members of the armed forces, their family members, and other entitled DoD beneficiaries through the provision of comprehensive health services

S15194/37

HEALTH AFFAIRS

Medical Readiness

Operational Continuum



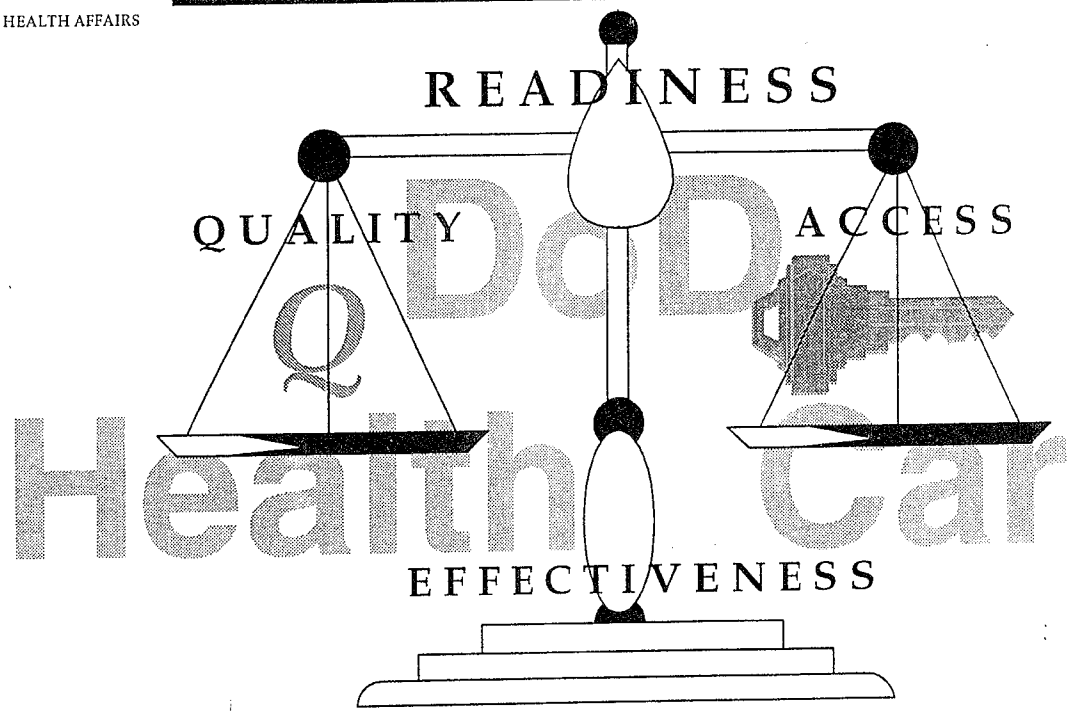
Focused on integrated information flow and dual use of technology

Page 3

S15194/37

HEALTH AFFAIRS

MHSS Goals



DoD Health Care

Page 4

S15194/37

Medical Readiness Strategies

HEALTH AFFAIRS

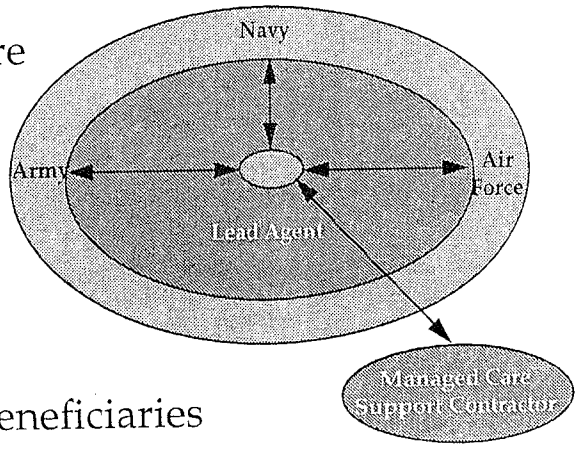
- Medical Readiness
  - Implement the Medical Readiness Strategic Plan (MRSP) 2001
  - Minimize the need for training at transition to national security emergencies
  - Integrate medical information systems
    - Facilitate decision making
    - Ensure that medical capabilities are compatible with Theater requirements
    - Provide in-transit patient visibility
    - Rapidly project medical supply consumption

S15194/37

TRICARE Strategies

HEALTH AFFAIRS

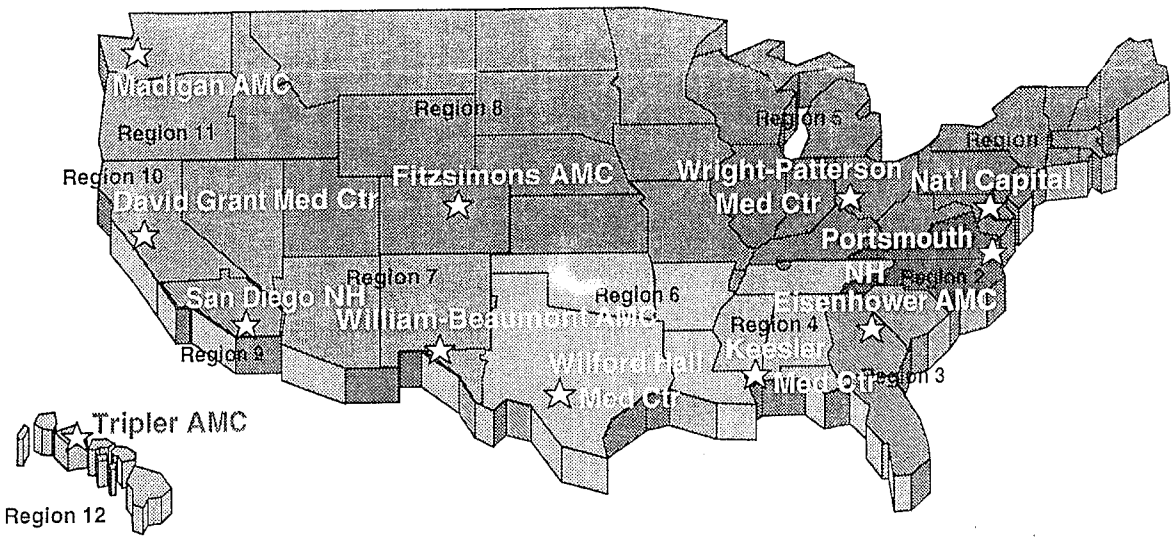
- TRICARE (Tri-Service Health Care)—a regionalized Managed Health Care program designed to
  - Improve access to care
  - Improve resources efficiency
  - Assure high-quality health care
  - Preserve choice for beneficiaries
  - Contain overall cost



S15194/37

HEALTH AFFAIRS

TRICARE Lead Agents and Health Care Service Regions

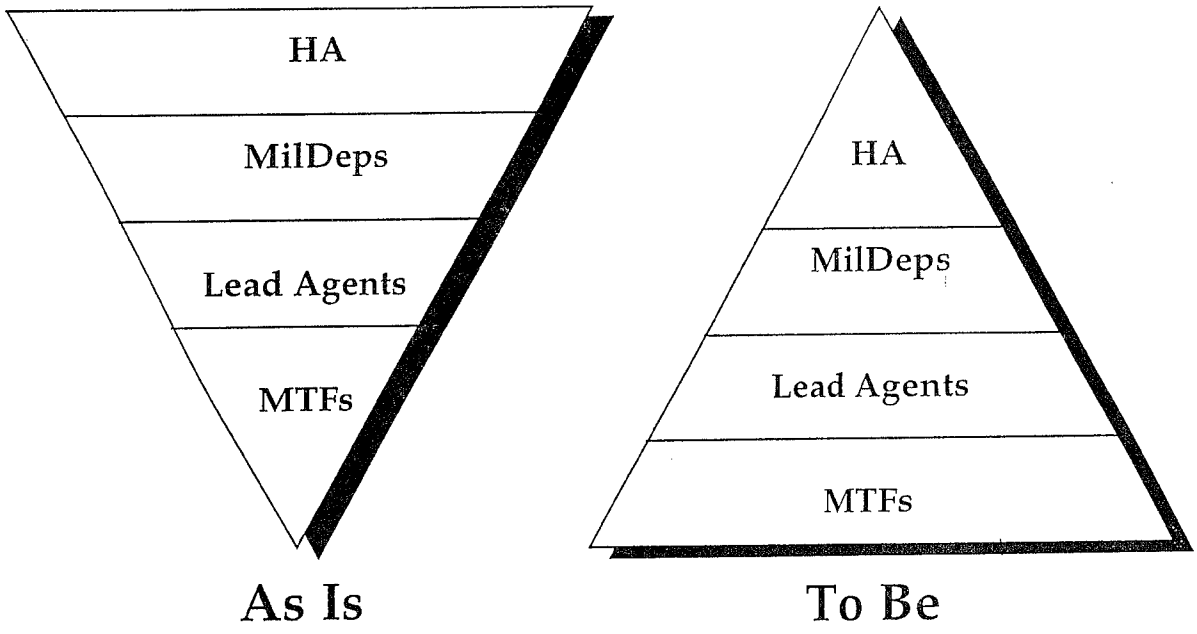


Access, Quality, Choice, Cost

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HEALTH AFFAIRS

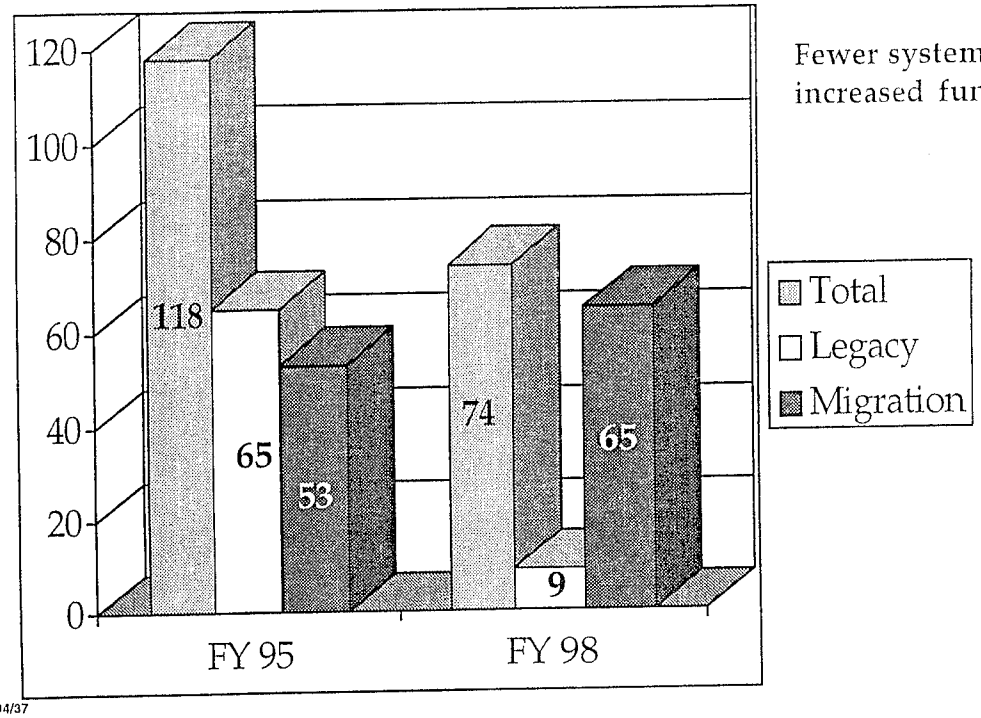
MHSS Data Flow



S15194/37

HEALTH AFFAIRS

MHSS AIS Migration

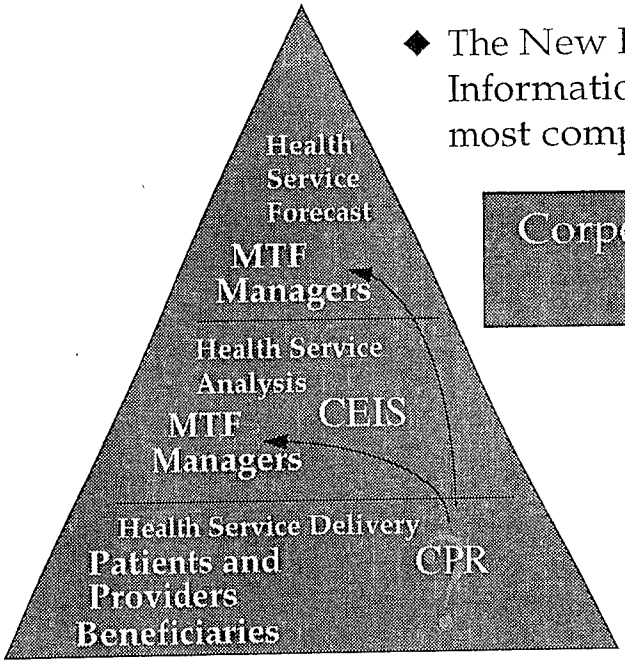


Fewer systems, increased functionality

S15194/37

HEALTH AFFAIRS

Defining Information Management Requirements



- The New Information Architecture: Information for the MTF—first and most complete

Corporate Executive Information Systems

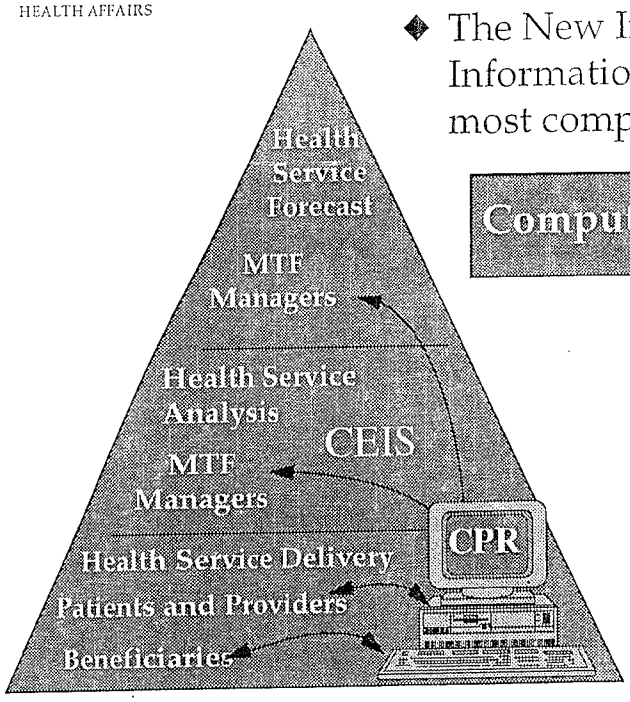
- Key to identification and analysis of variations in practice patterns for utilization management
- Need machine-readable data
- Needed by MTF and Lead Agent

S15194/37

HEALTH AFFAIRS

Defining Information Management Requirements

- The New Information Architecture: Information for the MTF—first and most complete



Computer-Based Patient Record (CPR)

A key strategy for competitive advantage

- Patient outreach/education
- Access and health service delivery
- Combat and evacuation care
- Regionalized peacetime care
- Use of practice guidelines
- Utilization management
- Performance measures

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HEALTH AFFAIRS

Summary

Health Affairs Leads the Way!

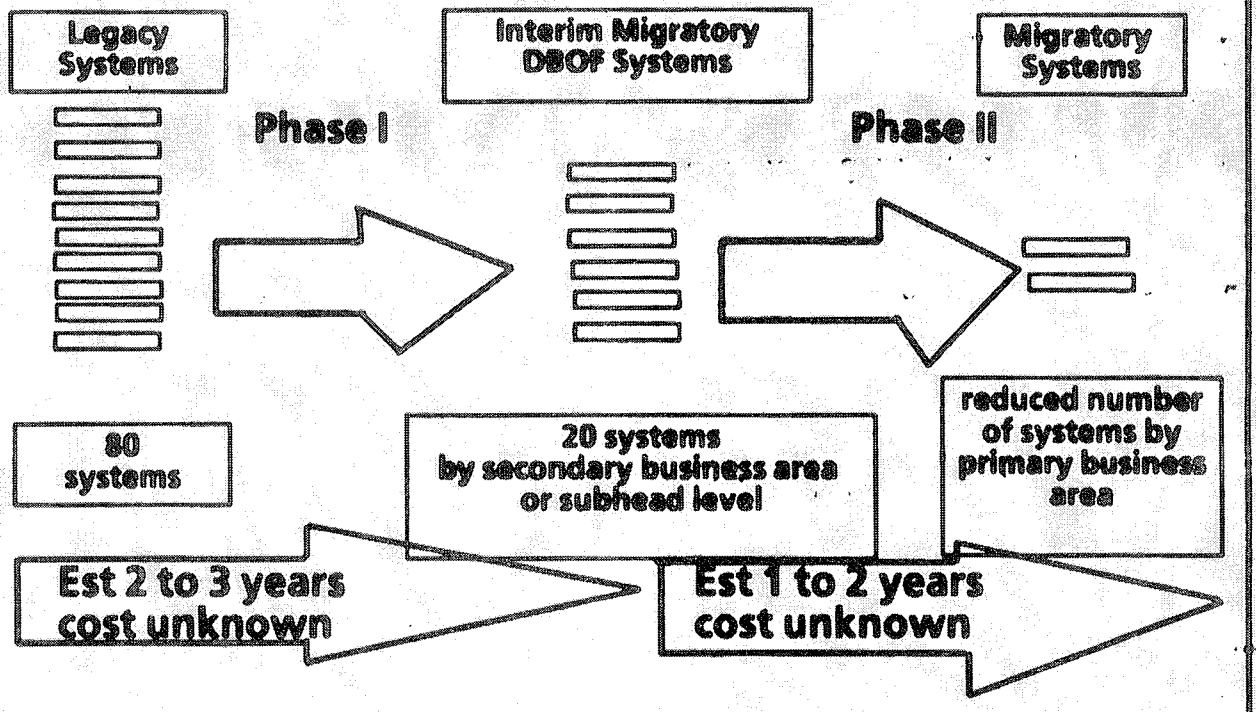
S15194/37

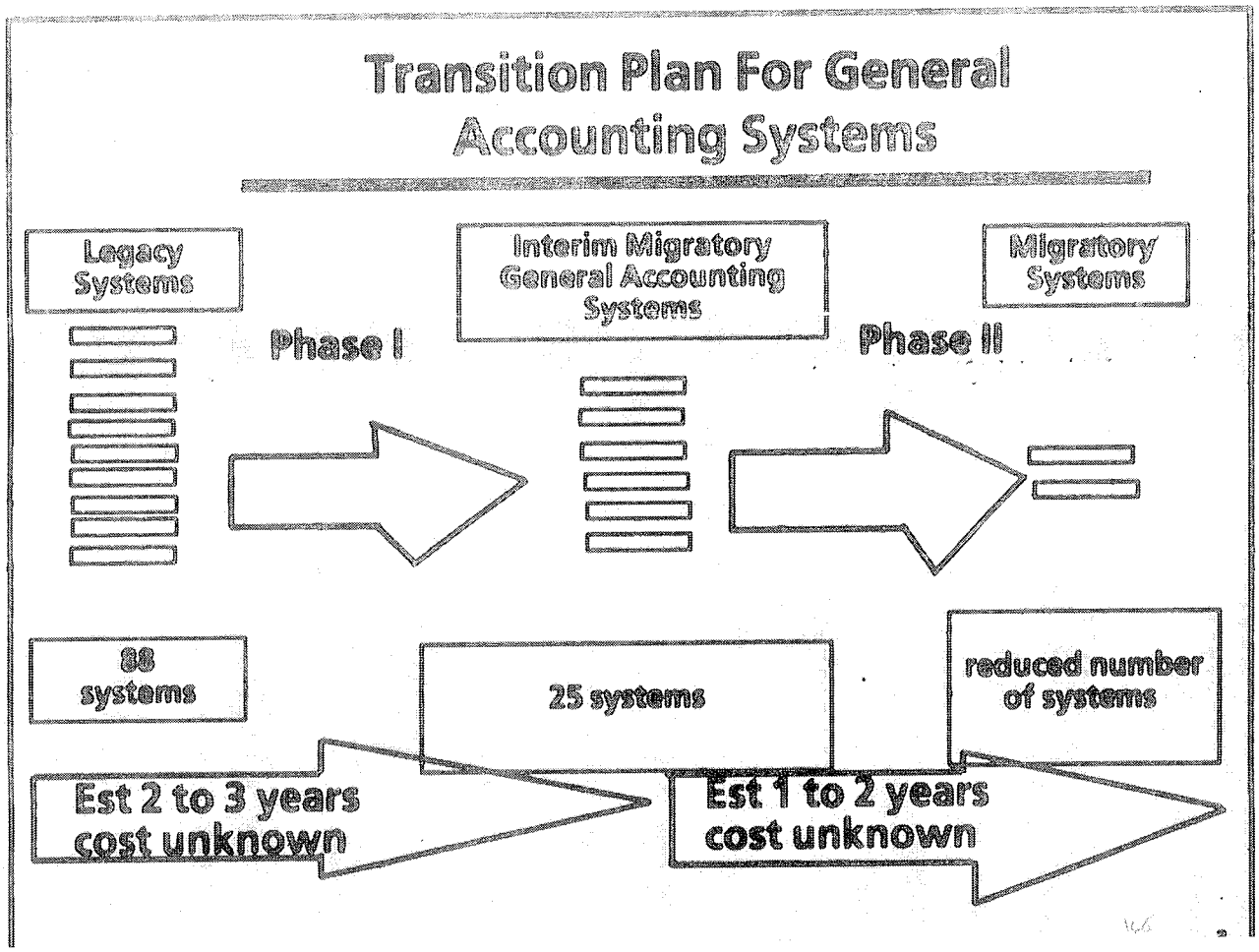
Page 12

TRANSITION PLAN FOR FINANCE SYSTEMS

	Number of Applications			
	1991	1994	1995	1996
• Civilian Pay	18	10	8	2
• Military Active and Reserve	18	12	6	2
• Military Retired/Annuitant	8	4	1	1
• Debt Management	5	1	1	1
• Contract Pay	2	2	1	1
• Transportation Payment	3	3	3	1
TOTAL	54	32	20	8

Transition Plan For DBOF Accounting Systems



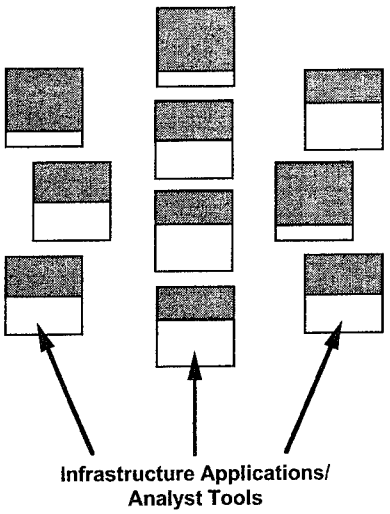

Transition Plan For General Accounting Systems
Legacy Systems
Phase I
Interim Migratory General Accounting Systems
Phase II
Migratory Systems
88 systems
25 systems
reduced number of systems
Est 2 to 3 years cost unknown
Est 1 to 2 years cost unknown

Intelligence Systems Assessment

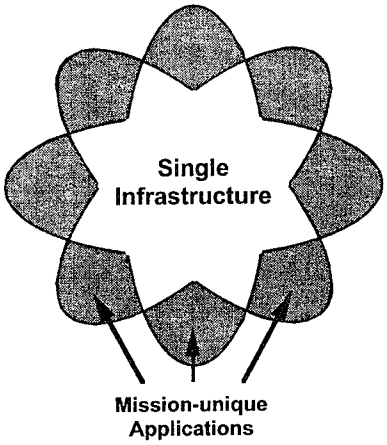
ISB Migration Panel

Context	The Target

Nature of Current Migration System Plans



April 1997 Target Environment



3

Context

The Process

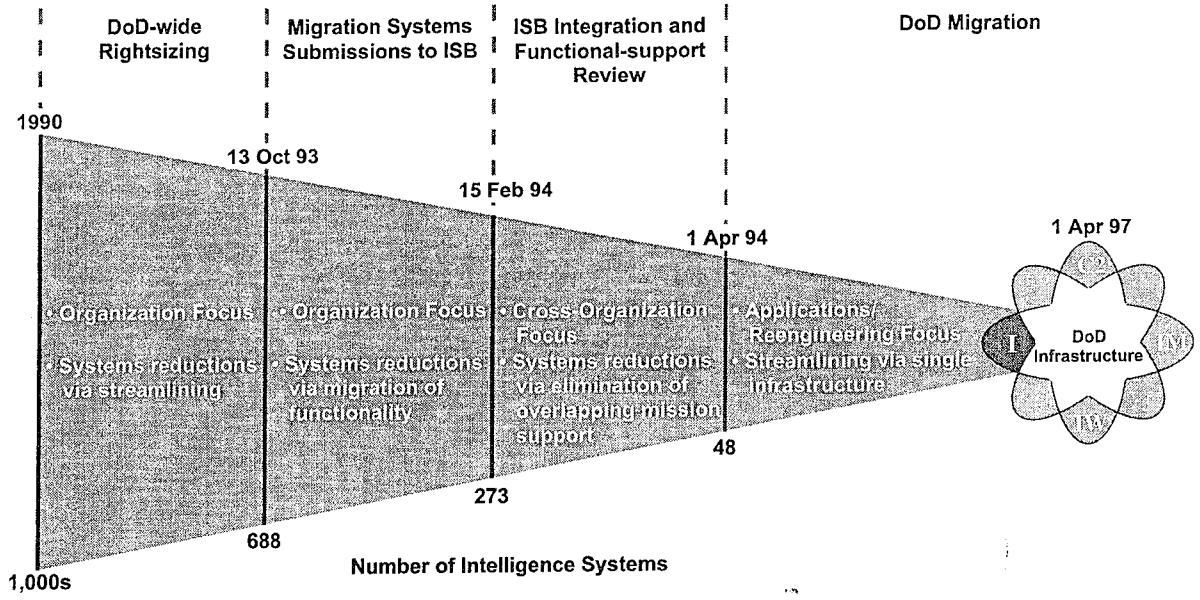
	Phase I Initial Program Selections	Phase II Implementation Strategy and Budget Review	Phase III Systems Migration
Primary Scope	• Functional Duplication • Program "line-item" focus (today's framework)	• Infrastructure and Applications streamlining • Acquisition structure re-vamping	• Single Infrastructure and User Applications • Separation of Infrastruct. and User Appl. Programs
Budget Penetration	• Estimates of costs and sources	• Detailed cost profiles and decisions (including re-engineering costs)	• Revised budget structure and allocation (roll-over) discipline
Technical Focus	• Functional Support • Infrastructure Implications	• Applications • Target Operating Environment definition (including COE/CSE integration) • Data Migration	• Re-engineering (to include applications, infrastruct., data administration impacts)
DoD Impact	• Integration of recent DoD-wide "rightsizing" initiatives • Further reductions through cross-examination • Stage-setting for coord. achievement of tgt. objs	• Common def. of Tgt. Oper. Environ. across C4I • Acquisition structure and budget profiles • Unified program and technical guidance/vehicles	• Single DoD Infrastructure • Applications orientation • Flexibility for re-engr. • Increased capab./access • Cost Aviodance via non-duplication

Oct 93 — Apr 94 — Sep 94 — Sep 97

4

Context

The Numbers



Terms of Reference

Automated Information System (AIS)

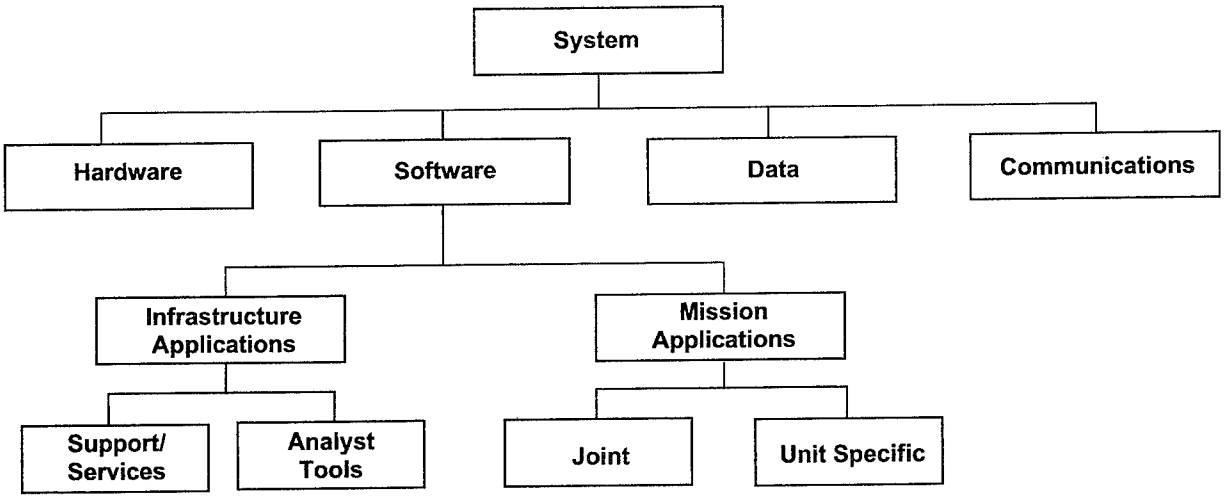
Computer hardware, computer software, telecommunications, information technology, personnel, and other resources which collect, record, process, store, communicate, retrieve, and display information. An AIS may include computer software only, computer hardware only, or a combination of the above. ("Department of Defense Technical Architecture Framework for Information Management," Version 2.0, (Draft), Defense Information Systems Agency. June 22, 1993).

Working Group AIS Categories

- **System of Systems:** An interconnected group of AISs and/or AIS components.
- **System:** A single AIS as defined above.
- **Application:** A specific set of computer software designed to support missions/functions.
- **Infrastructure Component:** A system or application that supports/performs either common operating environment or analyst tool functions.
- **Site Architecture:** A site-specific umbrella ADP concept/environment that includes AISs and/or AIS components. Site Architectures were excluded by the Working Group from further consideration in the systems migration process.

5

System Taxonomy



6

Intelligence Submissions Assessment

Scope of Systems Examination

- Migration focus is on AIS, therefore, submissions within the following categories were excluded from further consideration:
  - communications systems (e.g., MUXes, comm. lines, switches)
  - mission-specific collection systems
  - collection-specific processors (except those with significant production focus)
  - special access programs
  - training/simulation systems
  - site-specific tools (minimal funding, in-house developed, COTS)
  - site-specific architectures (e.g., KISS, SOCRATES) are not considered as single entities, however, individual systems within site architectures are considered
- Working Group functional assessment was performed at system level
- Detailed analysis of selected systems at the application/process level is required in order to achieve the following migration goals:
  - development of the target operating environment (infrastructure)
  - identification of joint vs unit-specific mission applications
  - data element standardization within all DoD AISs
  - development of a cost-effective migration strategy

7

Intelligence Submissions Assessment

Migration Systems Summary

(By Organization: Based on Submission Data Only)

Organization	Number of Systems		
	Candidate	Legacy	Migration
DODIIS (GDIP)	199	170	28
Site-Specific GDIP	****	****	****
DIA (non-GDIP)	7	6	1
Army	9	8	1
Air Force	7	5	2
Navy	3	2	1
USMC	3	1	2
NSA	7	4	3
NRP	6	3	3
CI	***	***	1
CIO	6	5	1
DMA	10	9	1
SOCOM	9	7	2
EUCOM	2	1	1
USACOM	---	---	---
PACOM	---	---	---
CENTCOM	1	1	---
SPACECOM	2	2	---
STRATCOM	1	1	---
SOUTHCOM	---	---	---
TRANSCOM	---	---	---
INCA	1	---	1
Total	273	225	48

*** Legacy attribution for DITDS is accounted for in the DODIIS GDIP submission

**** Command/Site-unique submissions were late in arriving and will be covered in the next phase.

8

Intelligence Submissions Assessment

Migration Systems Summary
(by Functional Area)

Functional Area	Number of Principal Migration Systems
Planning and Direction	2
Collection	5
Processing	1
Production: GMI	5
Production: Scientific and Technical Intel.	11
Production: Targeting	2
Production: MC & G	1
Production: Imagery	6
Production: Relational Display and Analysis	2
Dissemination	1
Support: Message Processing	3
Support: Security	1
All Source Intel./Ops. Interface (I/O)	7
Counterintelligence	1
	48

9

April - September Focus

Implementation Strategy Requirements

- **Establish the Architecture Philosophy for DoD AIS Migration**
  - *Goals:* Distributed, client-server computing environment, single infrastructure, consistent data schema, etc.
  - *Principles/Assumptions:* COTS vs. GOTS, bundling of functionality, standardized vs. user-tailored H/W, S/W configurations, etc.
  - *Governing Standards:* DoD TAFIM, DODIIS Profile, etc.
- **Define the Target Computing Environment (Infrastructure)**
  - Services/support applications
  - Common-user tools
- **Specify Technical Guidance for Applications development (APIs, conventions (directory structures, naming conventions), etc.)**
- **Specify core set of DoD standard data elements (with required extensions)**
  - include all functional areas
  - load into DDRS
- **Define/recommend Acquisition Structure/Policy**

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April - September Focus

Next Steps

- Resolve issues remaining from first phase
- Perform Applications-level review of migration systems in Key Infrastructure and Mission-specific Functional Areas (April - June 94)
- Conduct detailed examination of current infrastructure initiatives (April - August 94)
  - GCCS Common Operating Environment (COE)
  - DODIIS Client-Server Environment (CSE)
- Obtain data element approvals for all functional areas; load into DDRS (use IDEAS upgrade as starting point)
- Establish a program to coalesce and combine intelligence broadcast/receive systems (April - September 94)
- Develop the template for determining the "cost avoidance" associated with systems migration (April - September 94)

18

ISB Intelligence Systems Migration Strategy

Technical Guidance (Some Key Issues)

Migration Objectives

- How do we re-structure current programs and capabilities?
- What is the construct, composition, and scope of the client-server framework?
- What acquisition issues (policy, funding, ...) impact goal achievement?

COE/Infrastructure

- What is "the COE"?
- What is the "infrastructure" application breakout (infrastructure- vs user-domain)?
- How do we reconcile the intelligence COE with the GCCS "middleware" concept?

Standards Profile

- How do we reconcile and collapse DISA TAFIM, DODIIS, NSA, CIO, and other profiles into a single, affordable, and achievable target profile?
- How do we address standards gaps not resolvable in the migration timeframe?

Design Guidance

- How do we achieve configuration control of interfaces to the infrastructure and information?
- What security posture/rules should form the basis for target implementation? Policy changes?

Transition Considerations

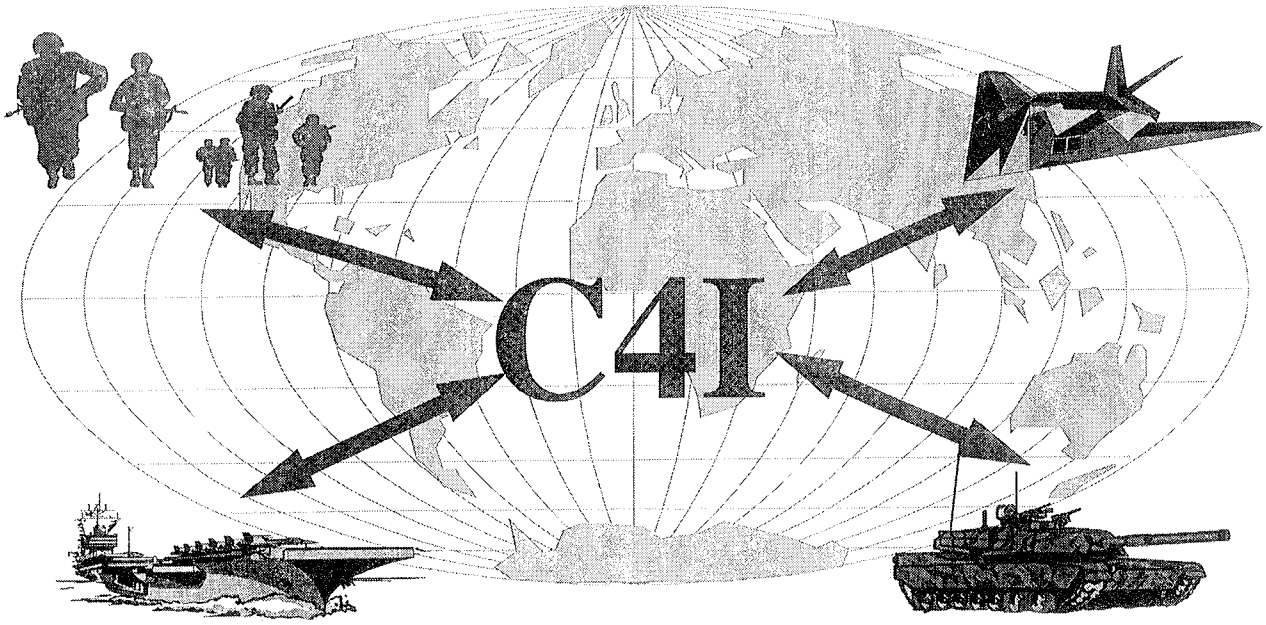
- What capability levels should we ensure are achieved across all programs as a function of time?
- What latitude should we allow for work-arounds, gateways, etc., where affordability issues may preclude full implementation of guidance?

Participants

JS/J6	RADM Charles R. Saffell, Jr.
USA	MG Edward R. Baldwin, Jr.
USN	CAPT David Smania
USMC	Mr. Ronald D. Elliott
USAF	COL Joseph M. Narsavage

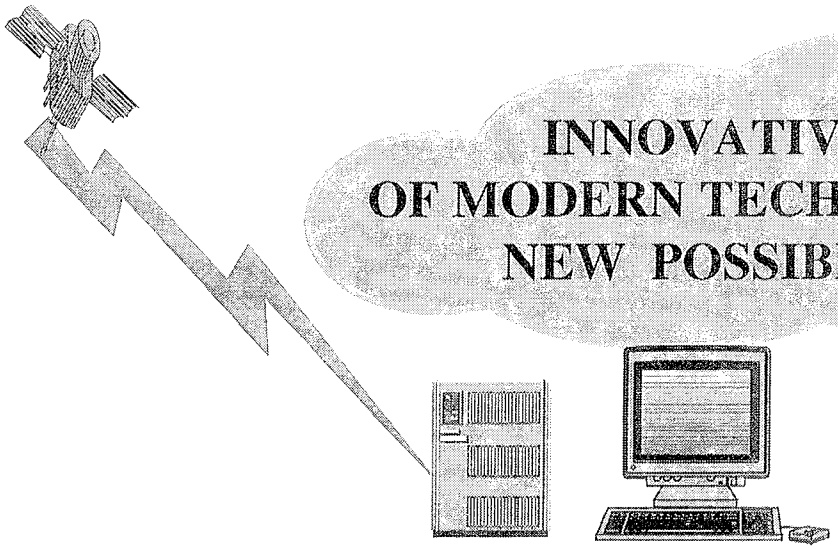
C4I for the Warrior

Four Services--One Team, One Fight



C4I--the tie that binds

INFORMATION is the lifeblood of modern war just as fuel was the lifeblood in the North African desert and munitions and gunpowder were the lifeblood in WWI.



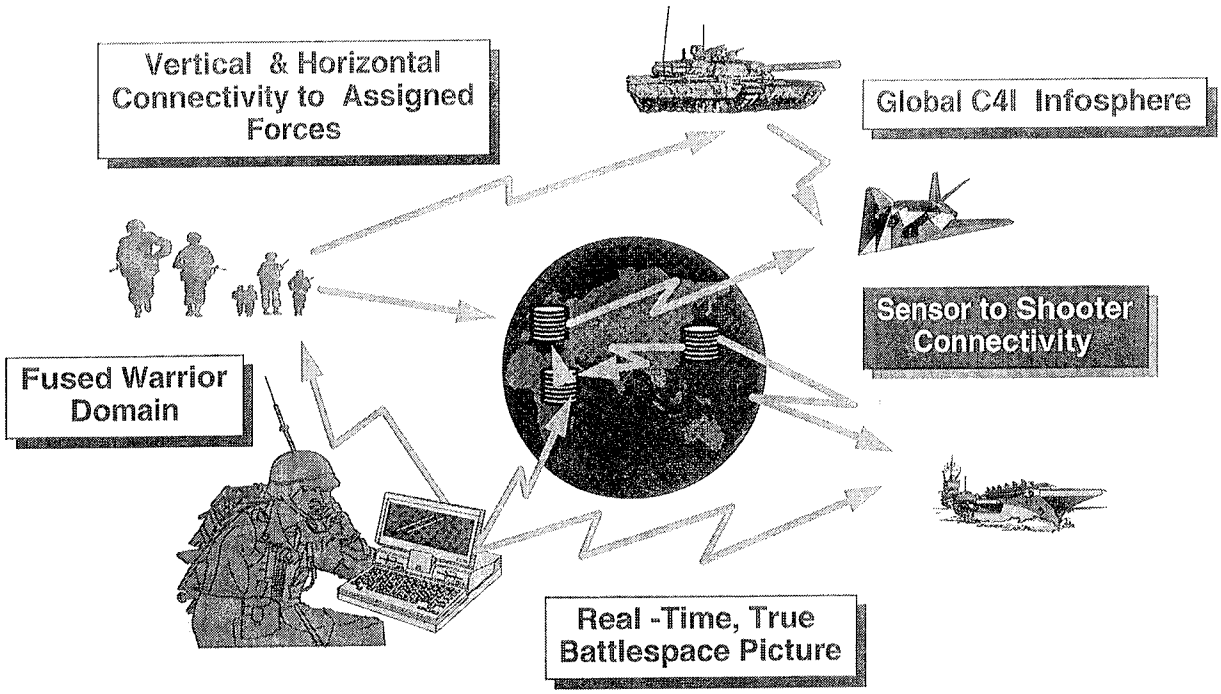
INNOVATIVE USE OF MODERN TECHNOLOGIES = NEW POSSIBILITIES

Vision

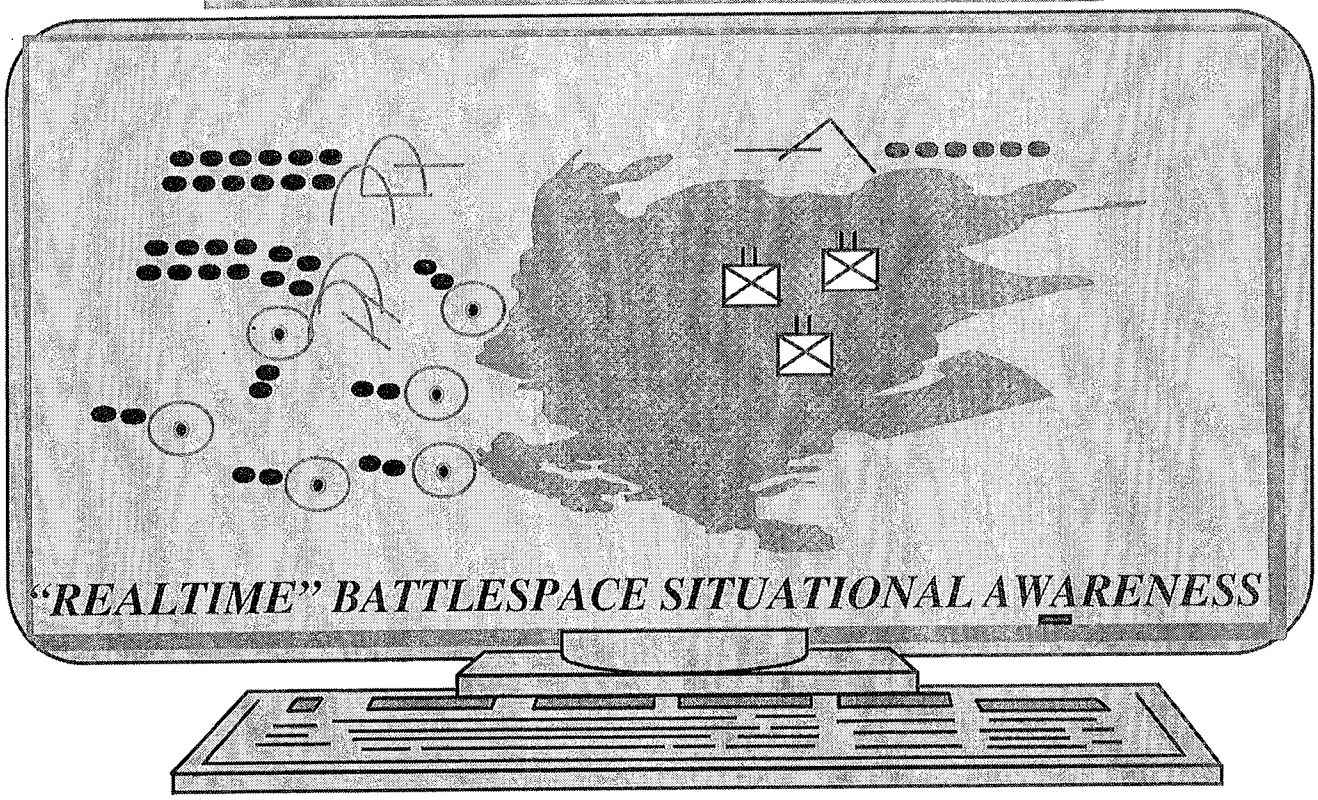
The Warrior needs a fused, real-time, true picture of the battlespace and the ability to order, respond, and coordinate vertically and horizontally to the degree necessary to prosecute the mission in that battlespace.

C2 Vision

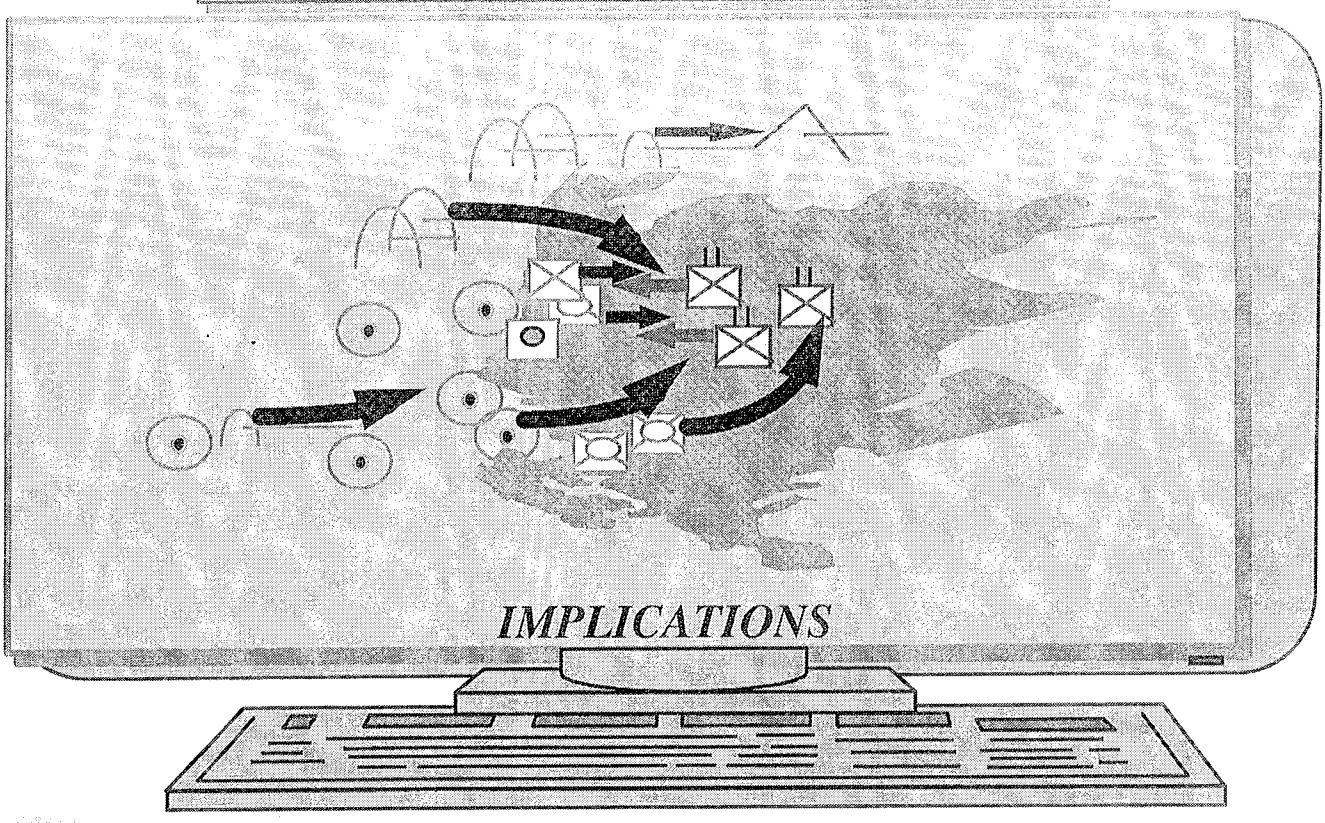
"Expanded" C4I For The Warrior



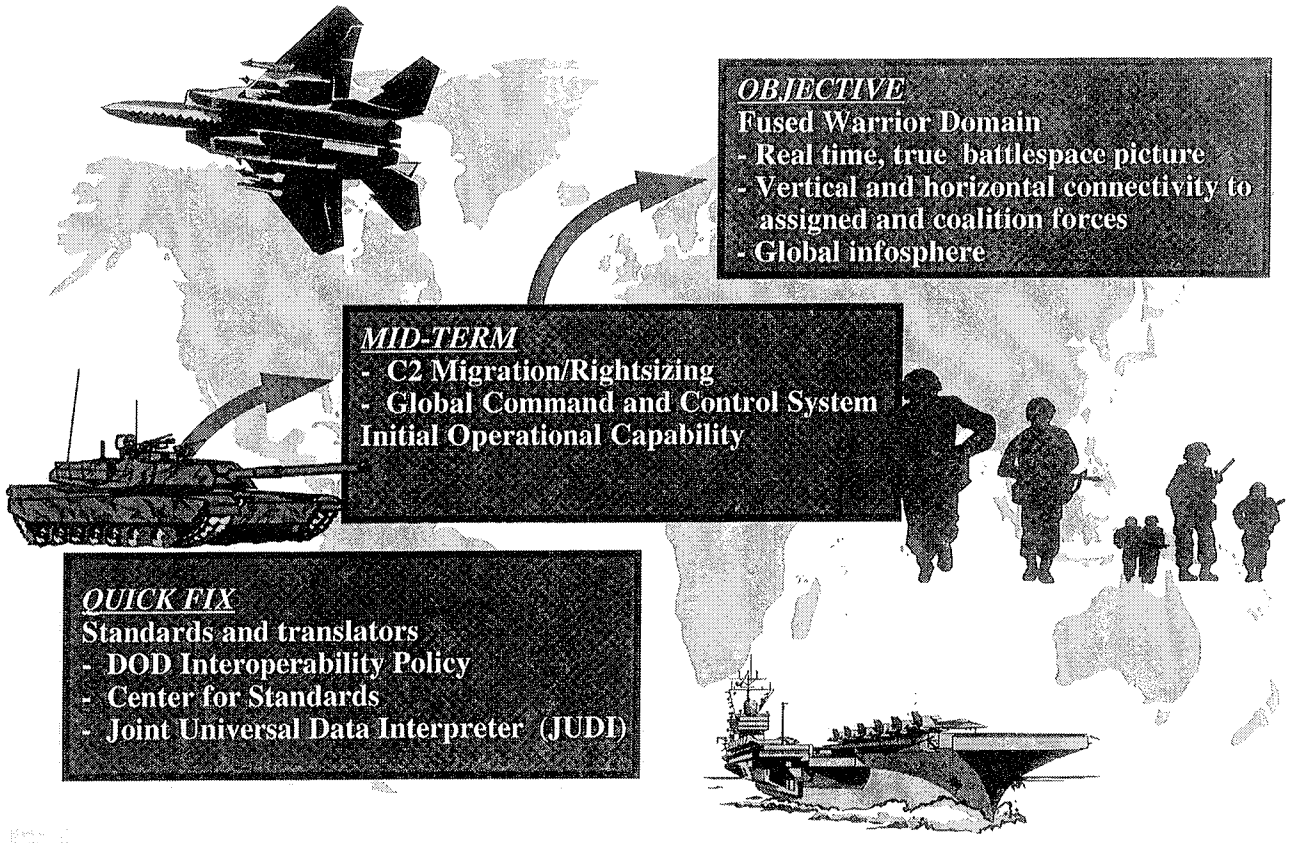
COMMON TACTICAL PICTURE
WHAT IS HAPPENING "NOW"



BATTLESPACE MANAGEMENT
WHAT IS GOING TO HAPPEN



GCCS: The Bridge to the C4I for the Warrior Objective



Migration/Rightsizing
OSD Mandate

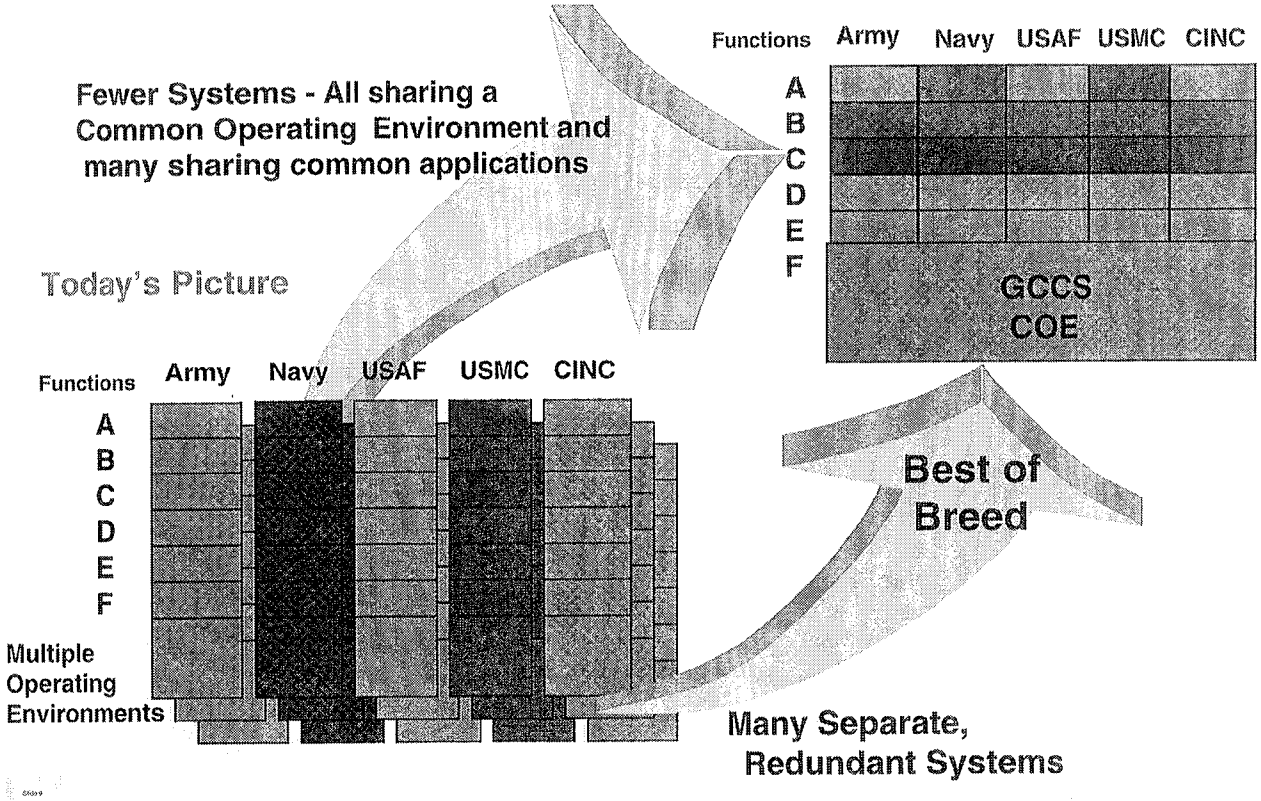
In keeping with the Deputy Secretary of Defense memorandum of October 13, 1993, "accelerated Implementation of Migration Systems, Data Standards, and Process Improvement," the principal migration path for worldwide command and control within DoD will be the Global Command and Control System.

GCCS will be developed under the umbrella of the C4I for the Warrior concept providing the warfighter flexible and interoperable worldwide command and control.

Mr Paige
27 Dec 93

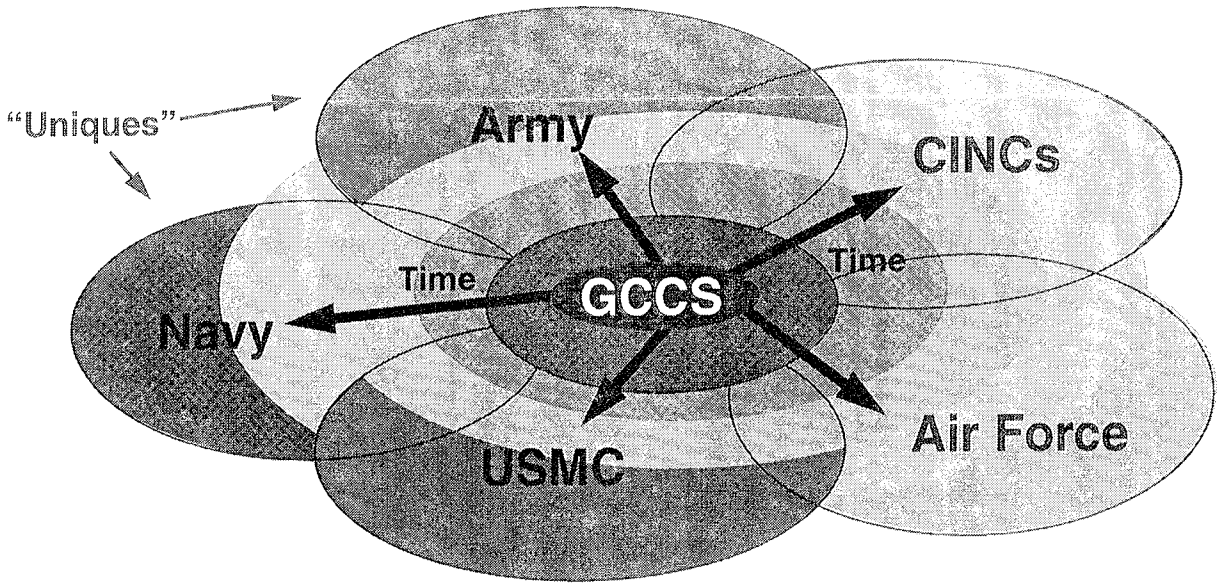
Functionality Migrates to GCCS

GCCS Vision



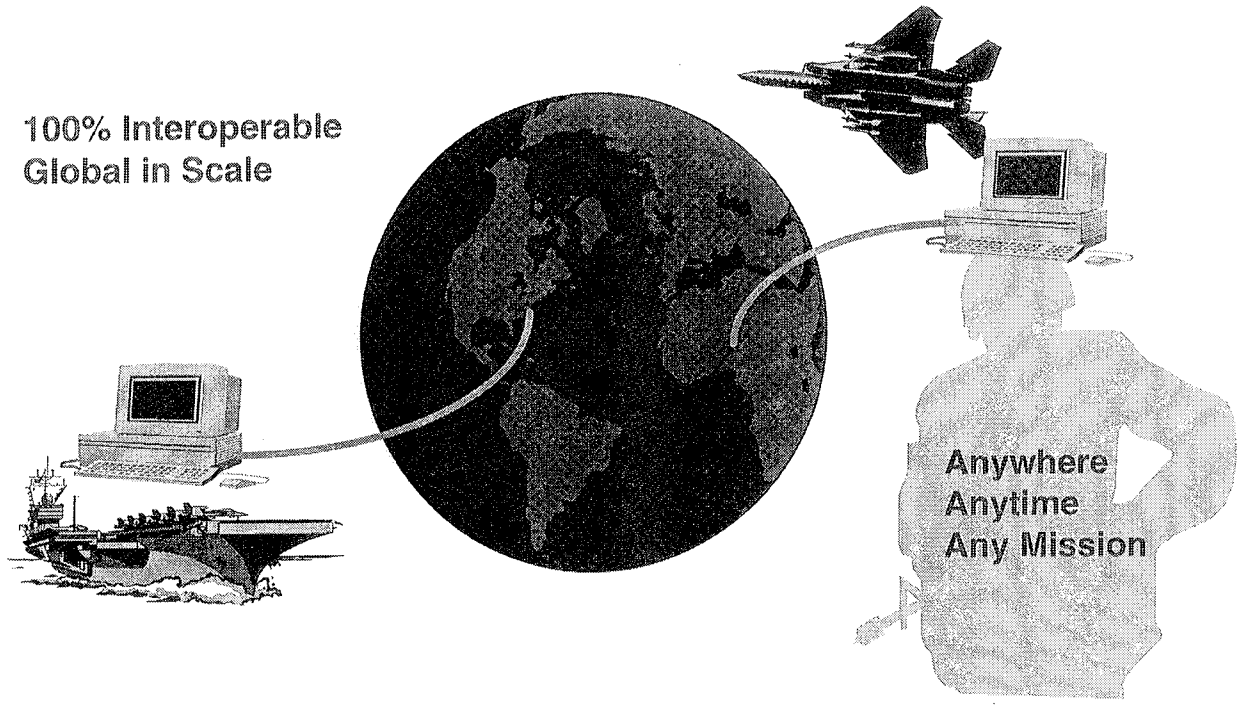
Common Functionality Based on Migration and Integration

GCCS provides a core of functionality that....



... establishes a common C2 standard.

C4I for the Warrior Objective: Fused Warrior Domain



"I will support only one [Joint] Command and Control System."

General Shalikashvili
Chairman, JCS

Army
Command and Control

MG Edward R. Baldwin, Jr.

Vice Director of Information Systems for
Command, Control, Communications, and Computers

Department of the Army

Army Command and Control Efforts

- Based on Joint Doctrine
- Force XXI is "umbrella effort"
  - Coordinated Initiatives
  - Key is Digitized Battlefield
  - Hypothesis for Experimentation
- Army Enterprise - Need for Clear Architecture
  - Three Architectures
  - Top Level Direction/Support
  - Technical Architecture Components
- Army C4I Systems Architecture
- Army Committment to JCOE

FORCE XXI DEFINED

- We have begun to move into third-wave warfare, to evolve a new force for a new century..... *Force XXI.*



- *Force XXI* will synthesize the science of computer technology, the art of integrating doctrine and organization, and the optimization of our quality people. The goal is to create new formations that operate at even greater performance levels in speed, space, and time.

CSA INTENT



"I KNOW WHERE YOU ARE...

I KNOW WHERE YOU AREN'T...

I'M COMING AFTER YOU ...

DAY OR NIGHT!!!"

- GEN Gordon R. Sullivan

What Joint Doctrine Says About Operations

- Joint Force Operations should be conducted across the full breath and depth of the operational area, creating competing and simultaneous demands on enemy commanders and resources.

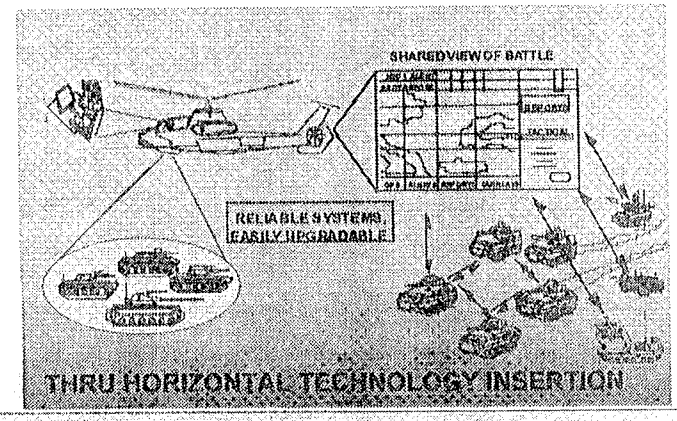
- Areas of Operations must be sufficiently large to allow land and naval commanders to protect their forces, and fight at extended ranges.

- Areas of Operations for land and naval commanders are based on the mission and size of the force being employed. Land and naval commanders are SUPPORTED COMMANDERS within their Areas.

Reference: Joint Pub 3-0, *Doctrine for Joint Operations*, September 1993.

DIGITIZATION

Digitizing the Battlefield is the application of information technologies to acquire, exchange, and employ timely digital information throughout the battlespace, tailored to the needs of each decider (commander), shooter, and supporter...allowing each to maintain a clear and accurate vision of his battlespace necessary to support both planning and execution.



FROM STRATEGIC ASSETS TO THE TACTICAL LEVEL

WITHIN THE ARMY AND WITHIN JOINT / COMBINED OPERATIONS

The Fundamental Hypothesis

IF we know the performance of a baseline organization....

Then we can apply Information Age Technology to that organization, conduct experiments, and gain insights into improved battlefield performance...

Which will cause us to redesign operational concepts and units to optimize military capabilities.

Currently Equipped Units

New Units:
- Digitized
- Redesigned

"THREE AXES"

Three Axes
- *Simultaneous, interactive process*
- *LAM will synchronize*

TDA/Institutional

Big "A" Army
- *TDA*
- *Title 10*

Joint Title 10

Operating Army

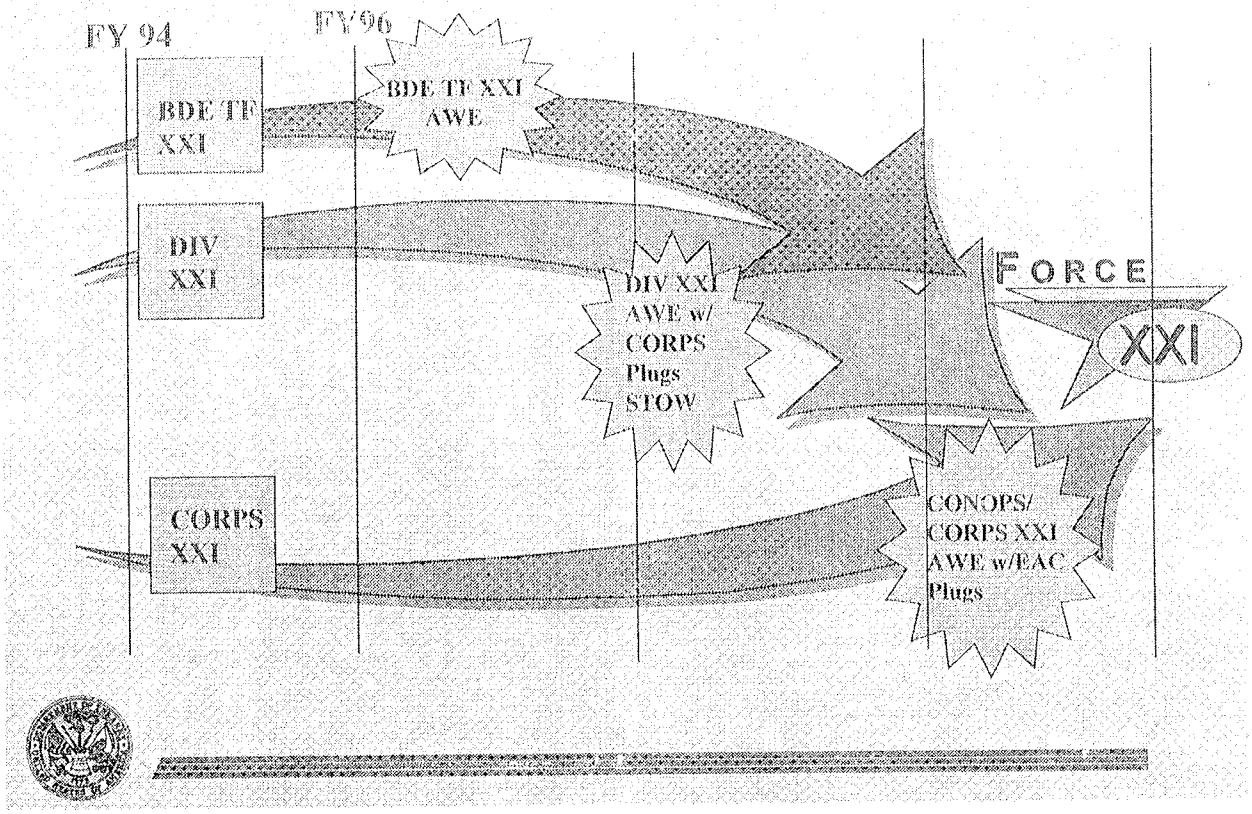
Acquisition Reform must succeed
- *Statutory*
- *Regulatory*
- *Policy*

Army Digitization Office

FORCE XXI

Information Technology Assimilation Programmatics

JOINT VENTURE CAMPAIGN



Army Enterprise Strategy: The Vision

Focus on the Warfighter

The Needs:

- ***Information to support the joint warfighter***
- ***Information to achieve victory***
- ***Information any time any place***

The JCS Vision:

C^4I For the Warrior

The Army Vision:

Enterprise Strategy

- *Provides CAI Vision for Force XXI*
- *Implementation Plan manages process*

Force XXI

Task Force XXI

"Winning the Information War"

Situational Awareness

Seamless Information Architecture

Digitize the Battlefield

ASB Architecture Definitions

- Operational Architecture. A description, (often graphical), defining:

– the required connectivity of force elements - OPFAC to OPFAC, OPFAC to weapon platform, inter-weapon platform;
– types of traffic to be passed over each path, documented in user interface requirements.

This defines processes and the information required to accomplish a function. It specifies what the information system must do and where it must do it.



ASB Architecture Definitions

- Technical Architecture. A minimum set of rules governing the arrangement, interaction, and interdependence of the parts or elements that together may be used to form an information system, and whose purpose is to ensure that a conformant system satisfies a specified set of requirements.



ASB Architecture Definitions

- Systems Architecture. A description, (often graphical), of the physical connectivity of an information system which may include:

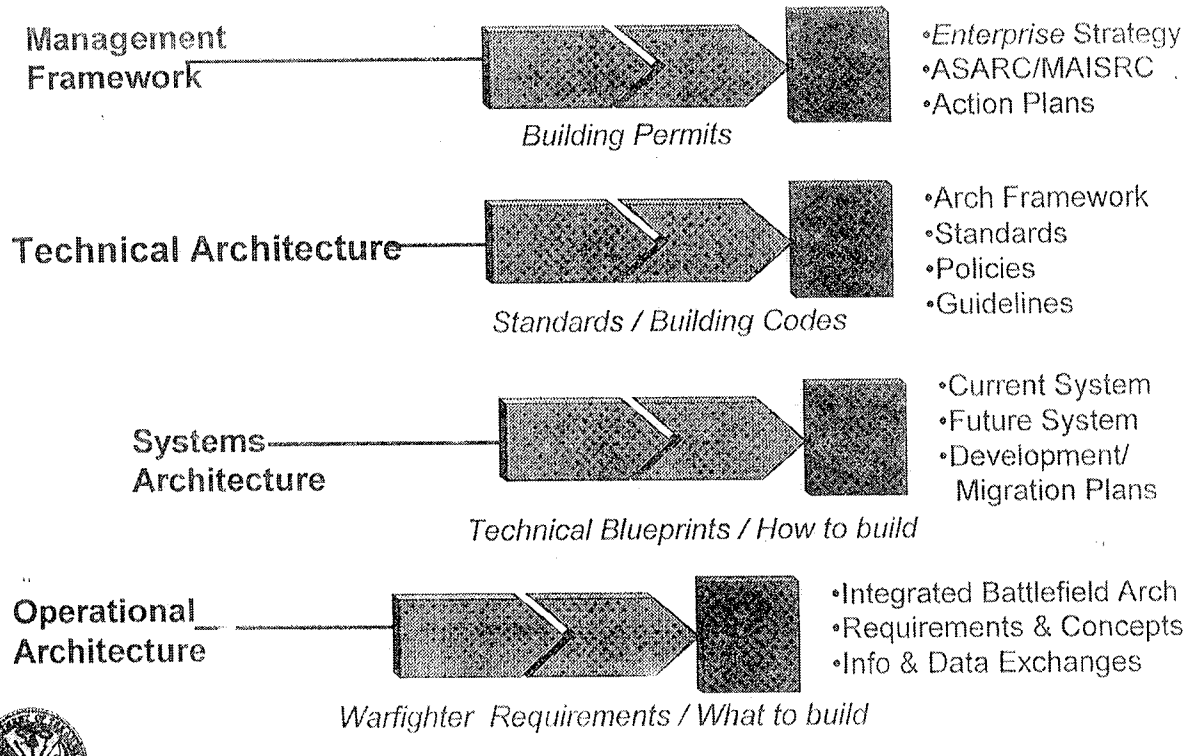
– the identification of all nodes, radio, switches, terminals, and their physical deployment;

– specification of bandwidth required on each circuit.

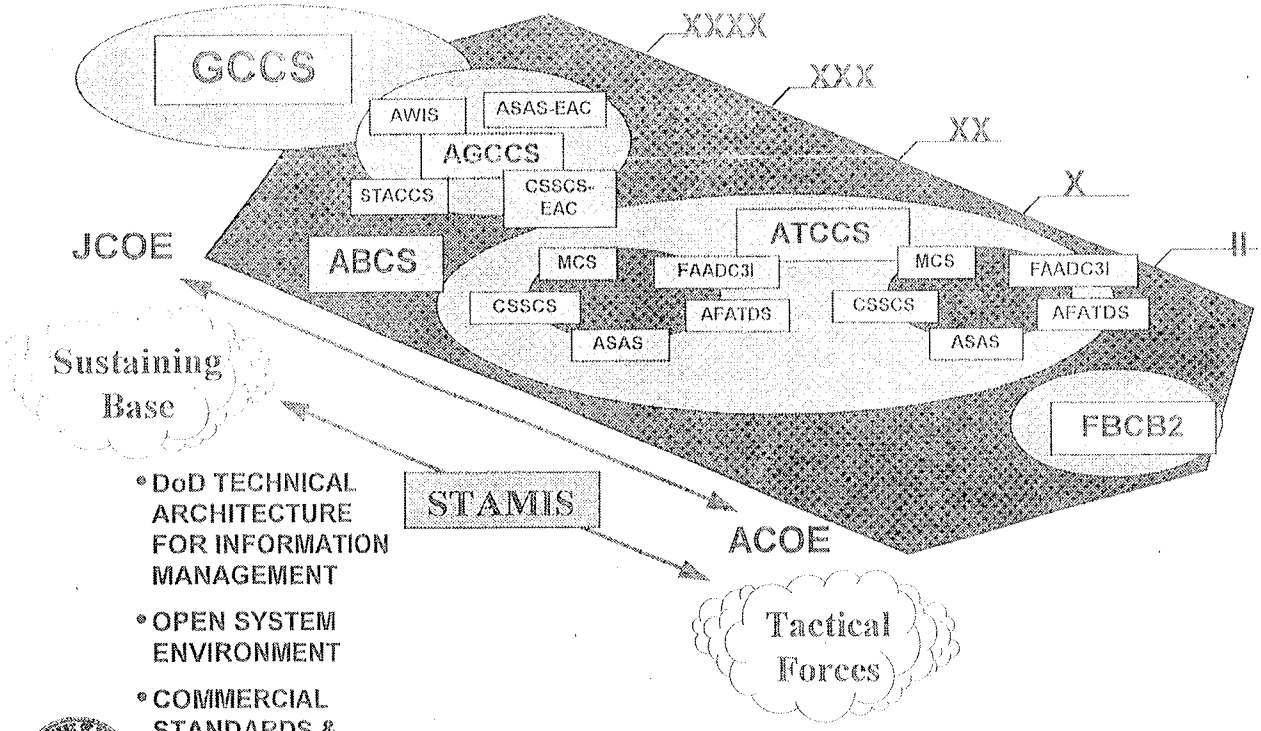
This is a description of which parts will be linked together by which means. It shows the components capabilities.

Army Information Architectures

Applies to all soldier, weapon and information systems

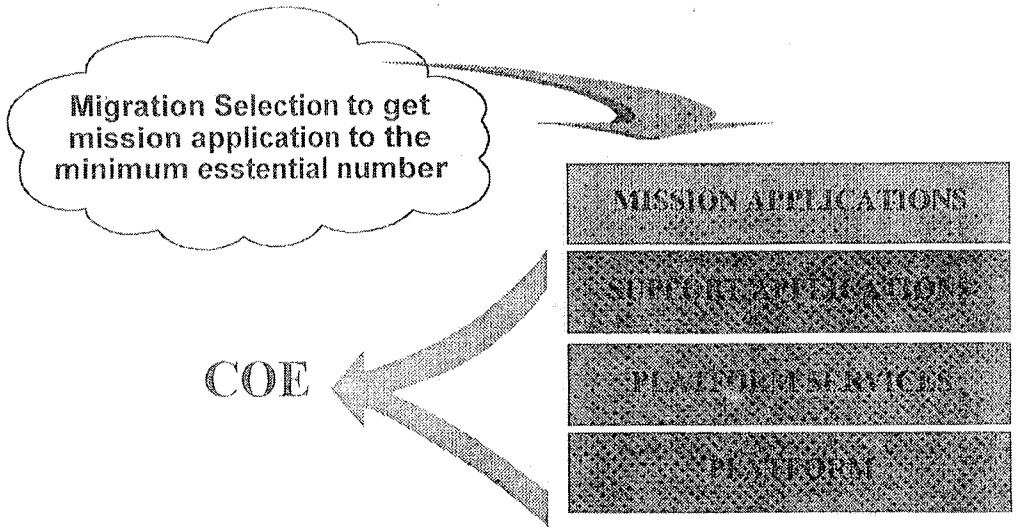


ARMY C4I SYSTEMS ARCHITECTURE



- DoD TECHNICAL ARCHITECTURE FOR INFORMATION MANAGEMENT
- OPEN SYSTEM ENVIRONMENT
- COMMERCIAL STANDARDS & PROTOCOLS

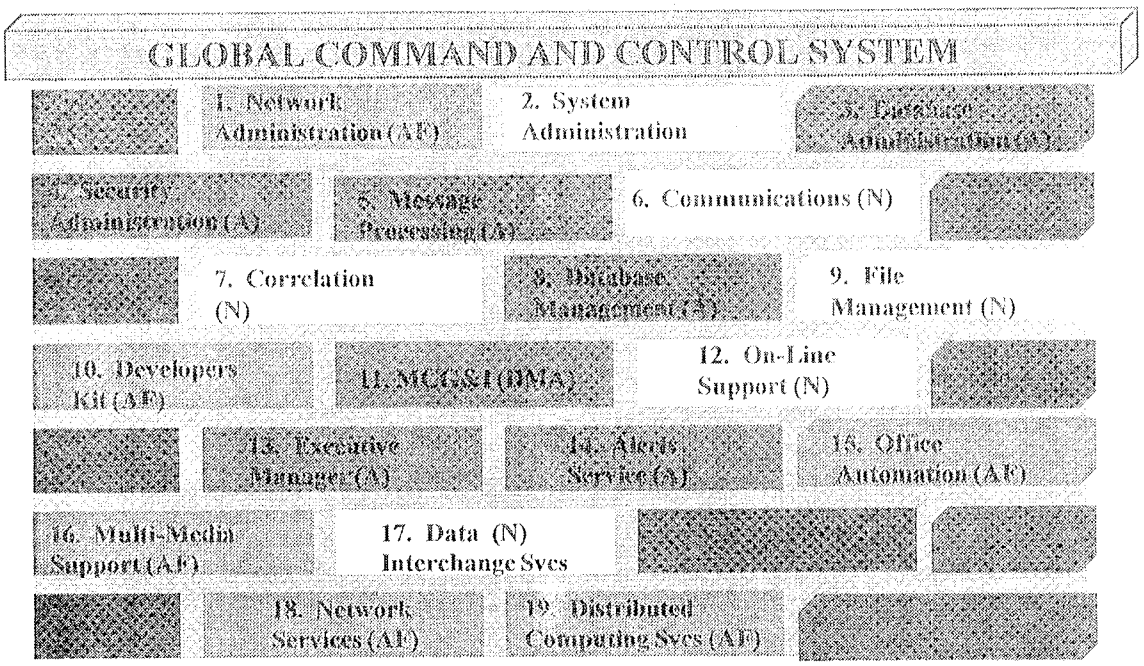
The Joint Common Operating Envrionment is Key



ACOE migration to: JCOE

- AGCCS - implementing JCOE as it develops
- All others - transition plans to be developed

INITIAL GCCS BASELINE FUNCTIONS

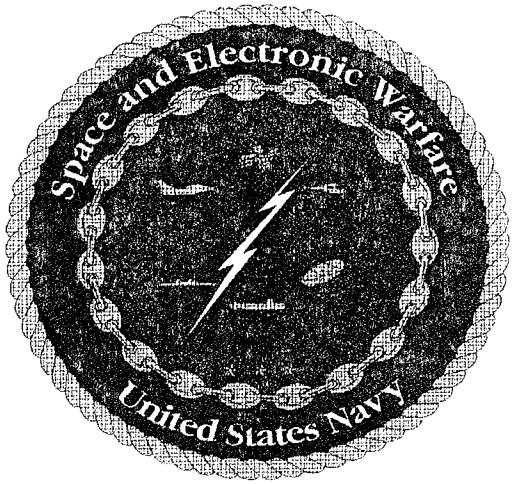


Army Command and Control Efforts

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  - Key is Digitized Battlefield
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  - Three Architectures
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Navy C4I

The Vision and the Strategies



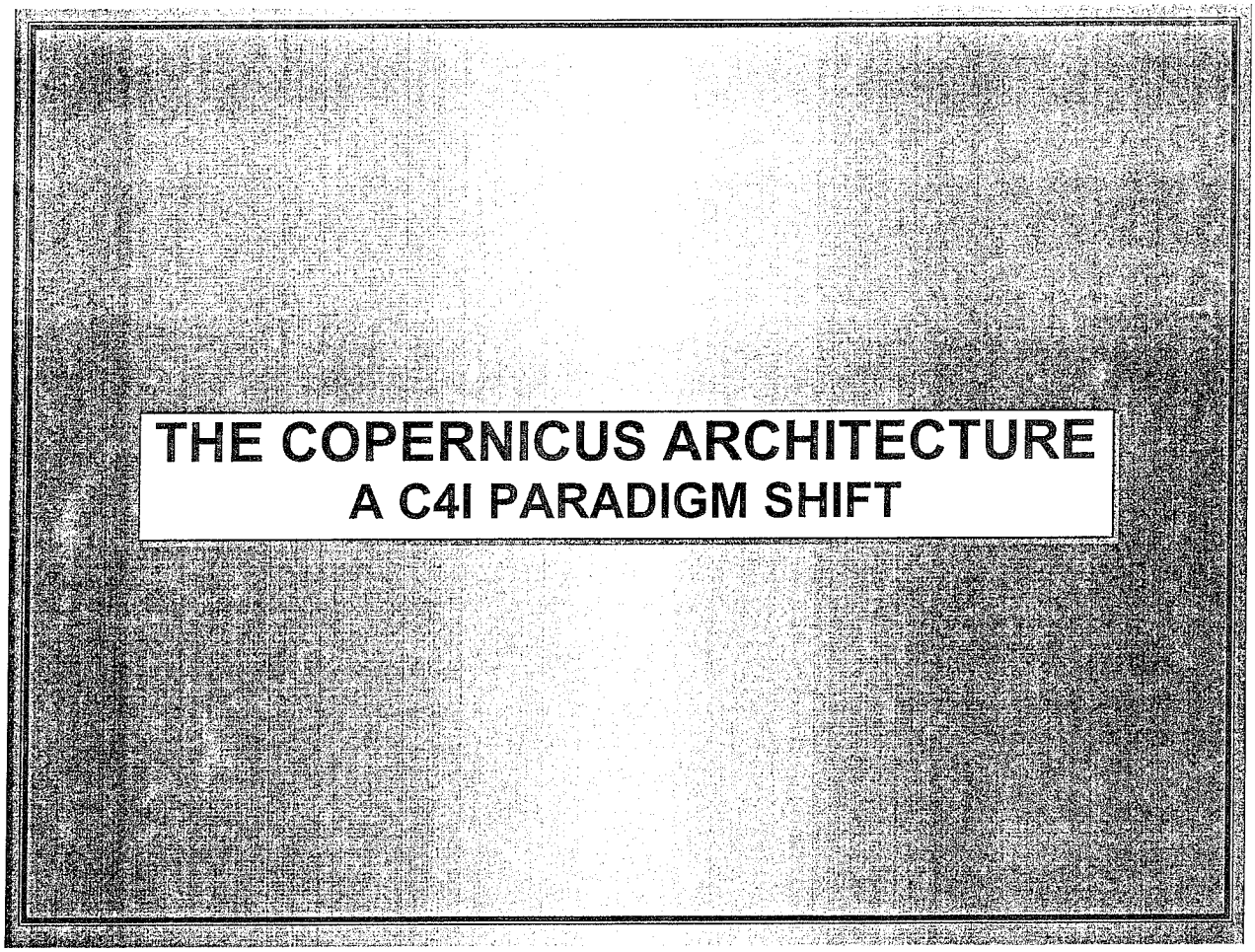
Captain David Smania

Director, Information Resource Management Division (N65)

Chief of Naval Operations

COPERNICUS

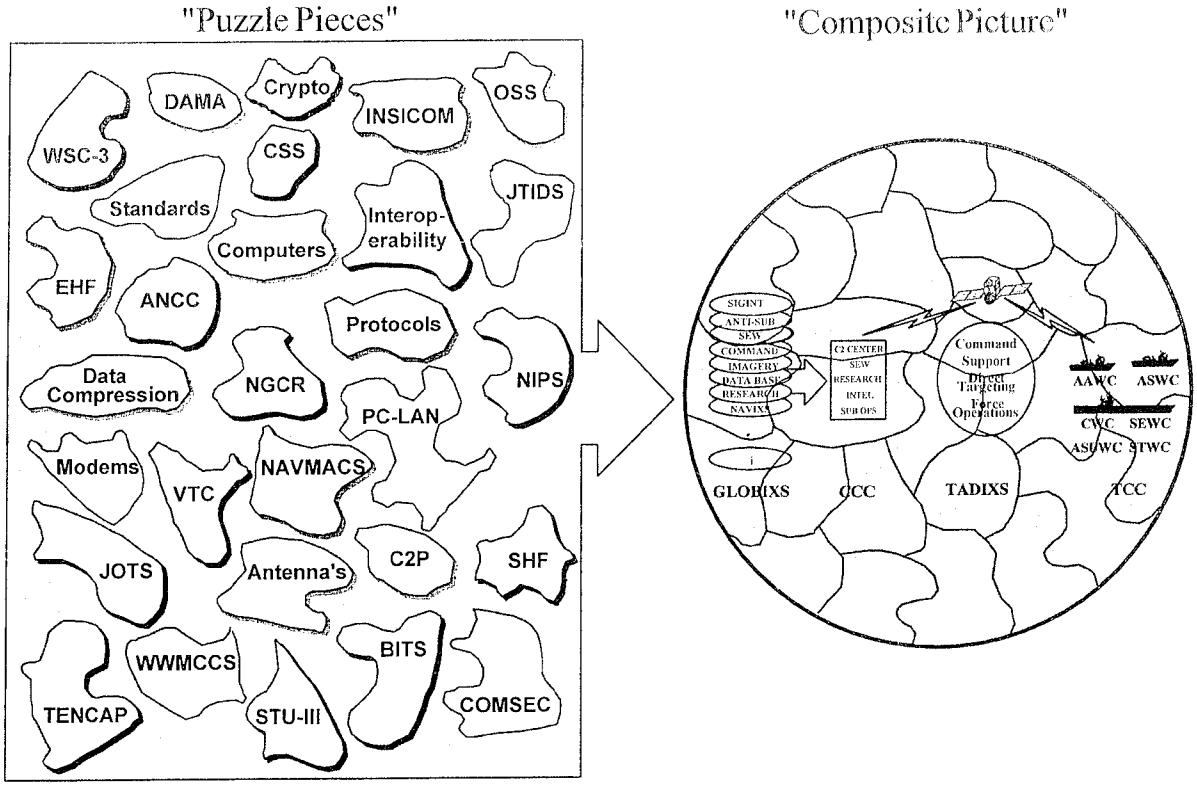
THE BEGINNING



What is Copernicus?

- A *user-centered* approach to information management
- A Command and Control *information management* and *information technology* architecture
- An architecture married to an *investment strategy*
- A *blueprint* for capturing technological change
- Copernicus is NOT a program in the formal acquisition sense, it is the goal architecture and unifying strategy for all C4I programs

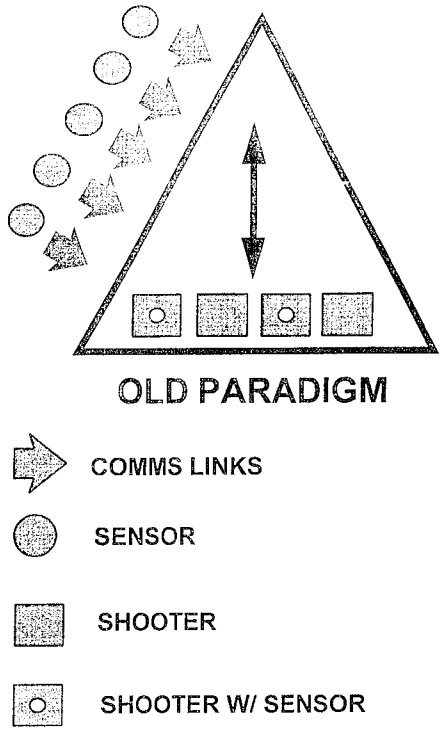
The New Vision



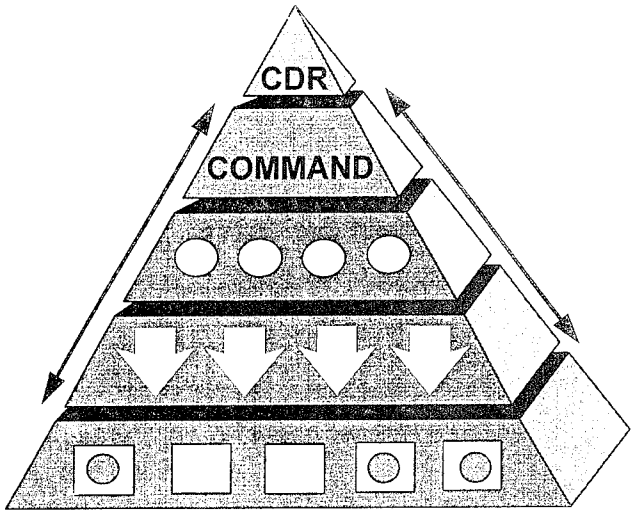
Copernicus is the Goal Architecture for C4I Programs

5 "ESSENTIAL ELEMENTS" OF COPERNICUS

1. Tactical Information (C4I) vs. Non-Tactical
2. "User Pull," "Intelligent Producer Push"
3. Multimedia (Voice / Data / Video)
4. Common Building Blocks = Standardization
5. Common Operating Environment = Interoperability



THE COHERENT JOINT CONSTRUCT

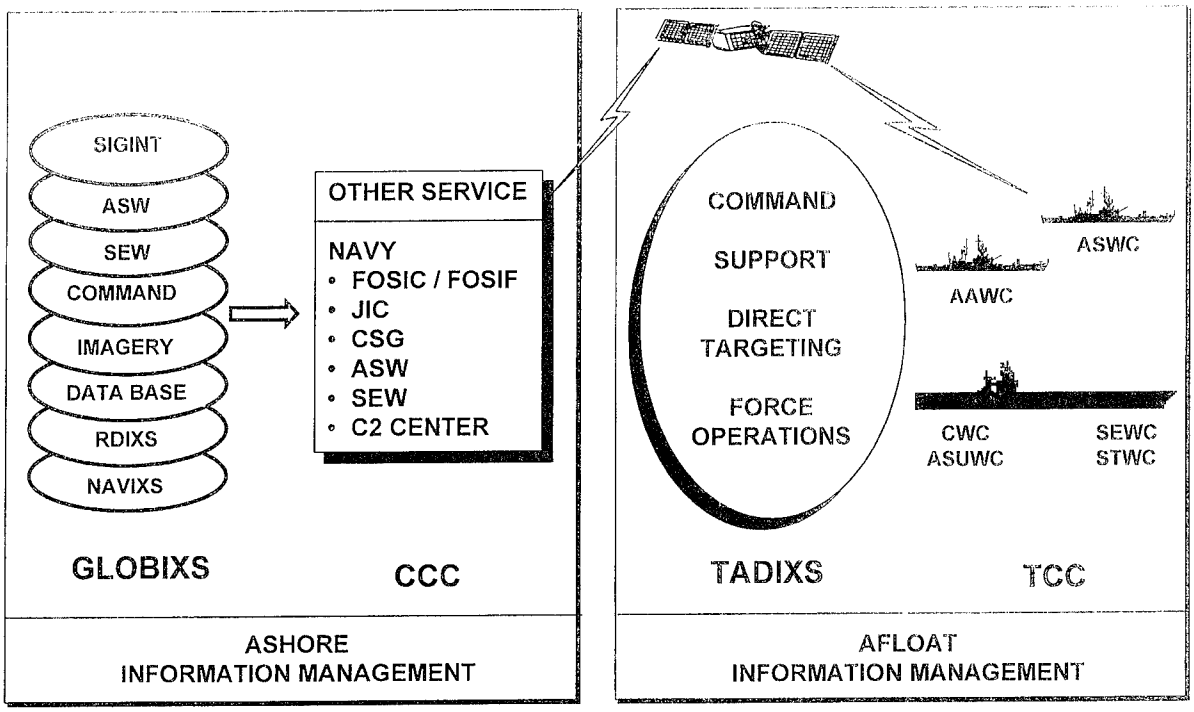


NEW OPERATIONAL CONSTRUCT

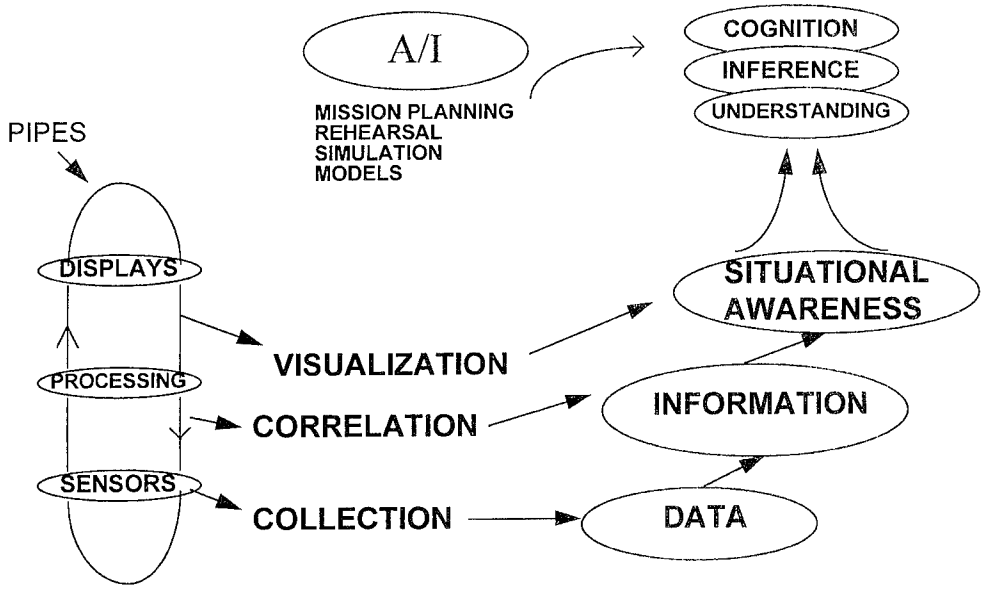
ORGANIZED AROUND SENSOR-TO-SHOOTER COMPLEXES

- JOINT
  - MULTI-SERVICE
  - COMMON OPERATIONAL OBJECTIVE
  - MULTI-DIMENSIONAL (AIR / LAND / SEA)
  - MULTI-FUNCTIONAL (LAND ATTACK / CAS / DEEP STRIKE)
- FULLY INTEGRATED JOINT
  - COMMON TACTICAL OBJECTIVE
  - COMMON DOCTRINE
  - MUTUALLY SUPPORTING
  - SYNCHRONIZED / ORCHESTRATED
- COHERENT JOINT
  - ABILITY TO IMPROVISE COHERENTLY
  - ACCOMMODATES NATURAL OPERATING RHYTHMS
  - INHERENT UNITY OF EFFORT IN THE ORGANIZATION
  - COOPERATIVE INPUT . . . FOCUSED OUTPUT

The Pillars of the Copernicus Architecture



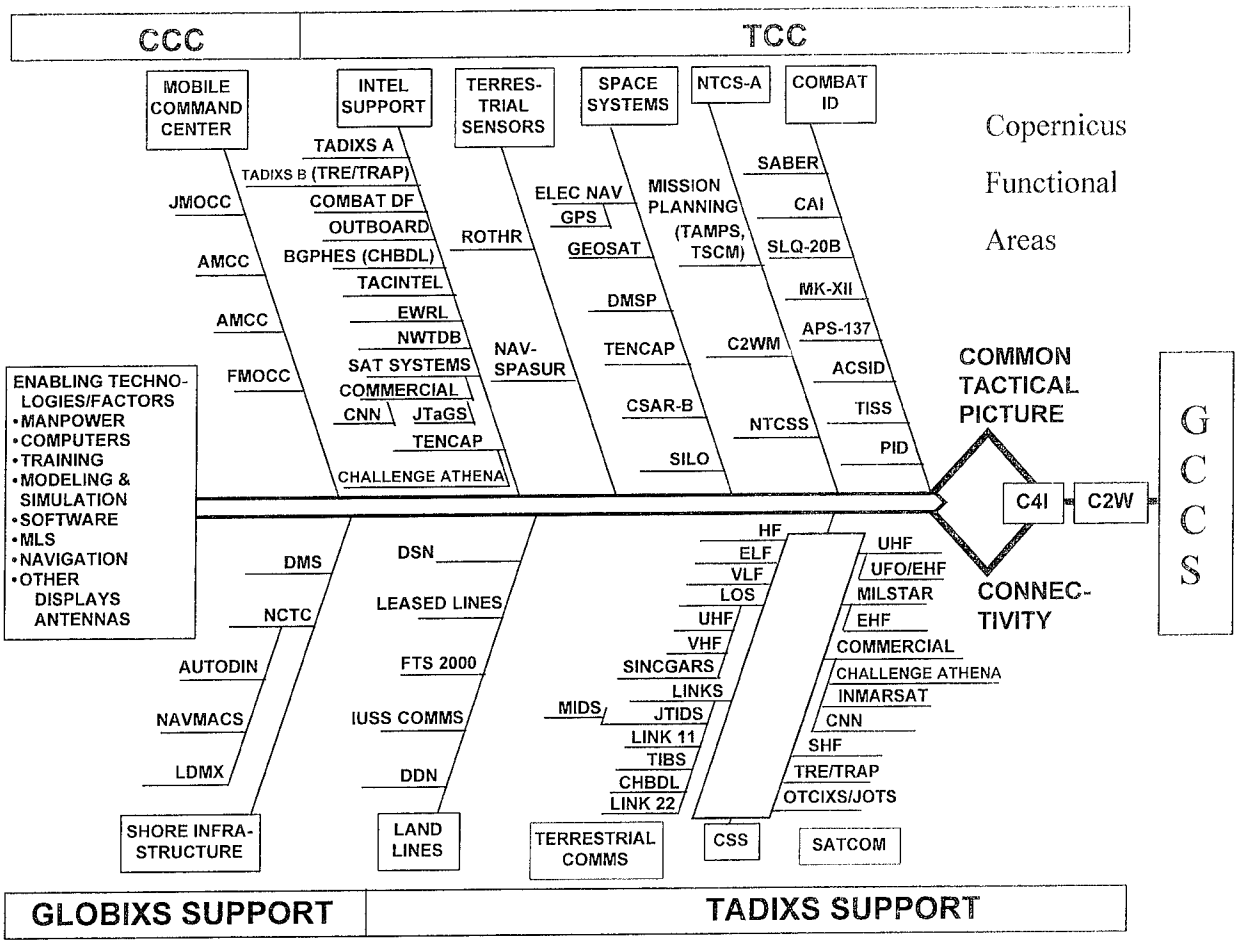
ASCENDING THE COGNITIVE HIERARCHY



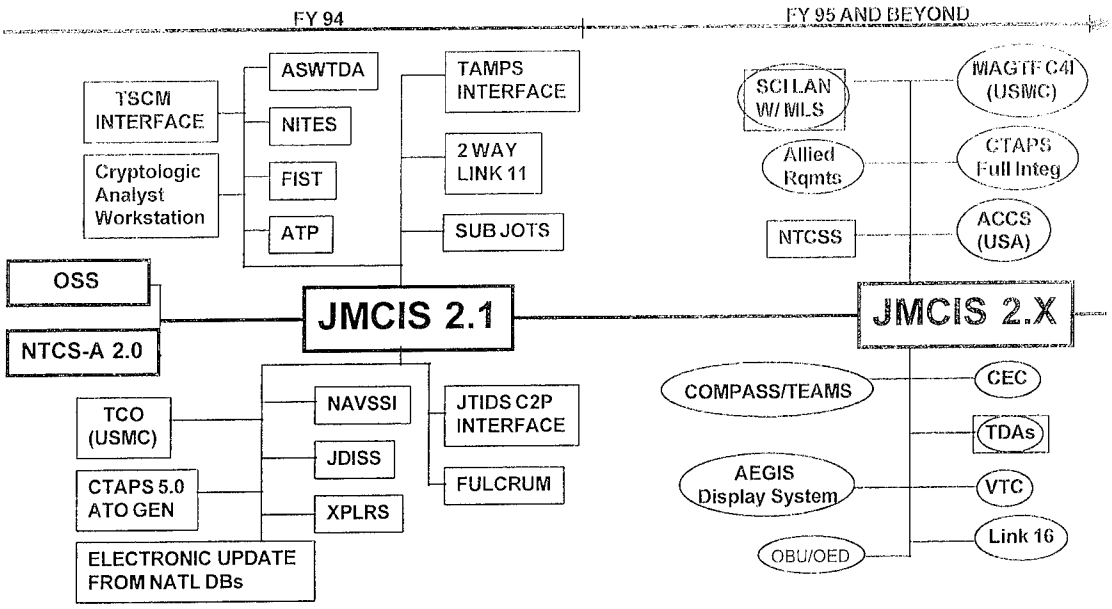
MIGRATION SYSTEM

JMCIS

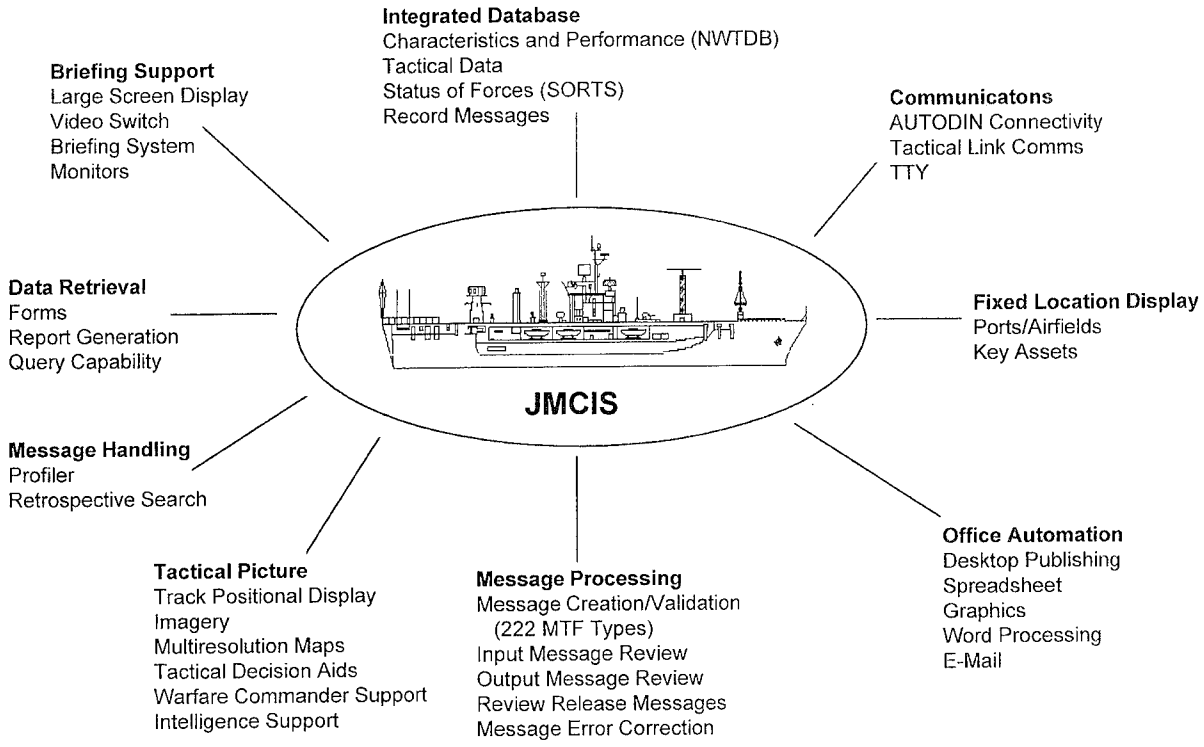
Joint Maritime Command Information System



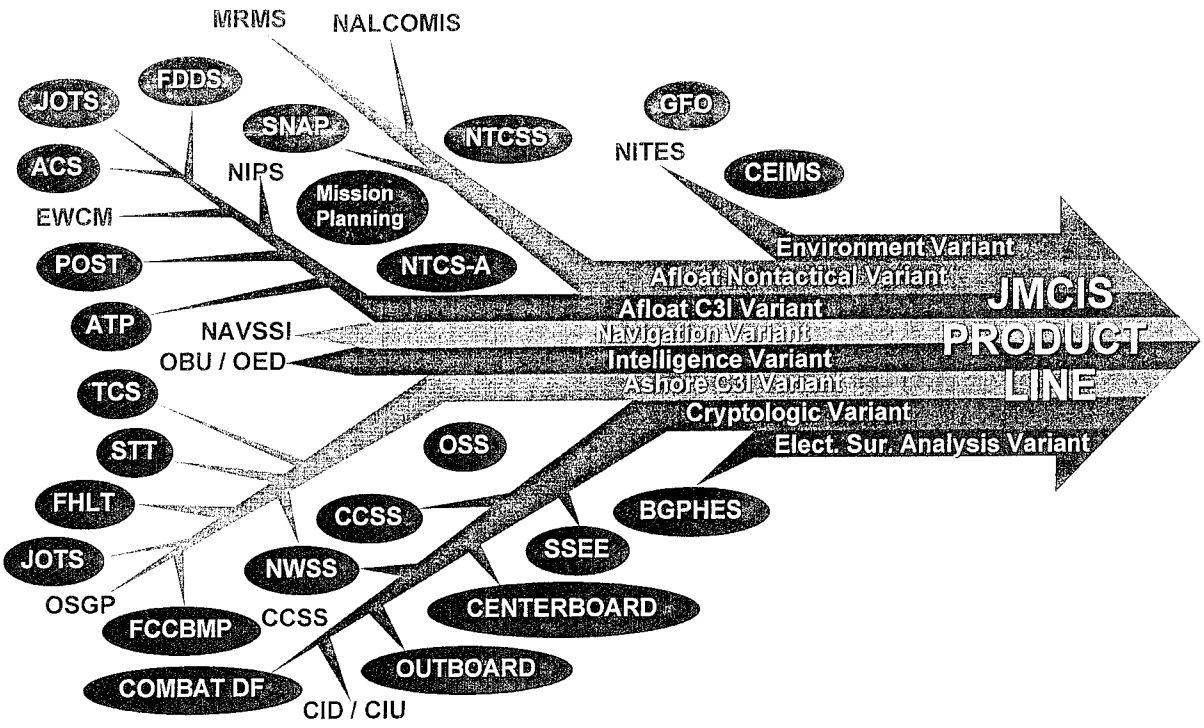
Joint Maritime Command Information System



FUNCTIONALITY



JMCIS EVOLUTIONARY DEVELOPMENT - MODEL FOR C4I/CDS INTEGRATION



JMCIS Contribution to GCCS

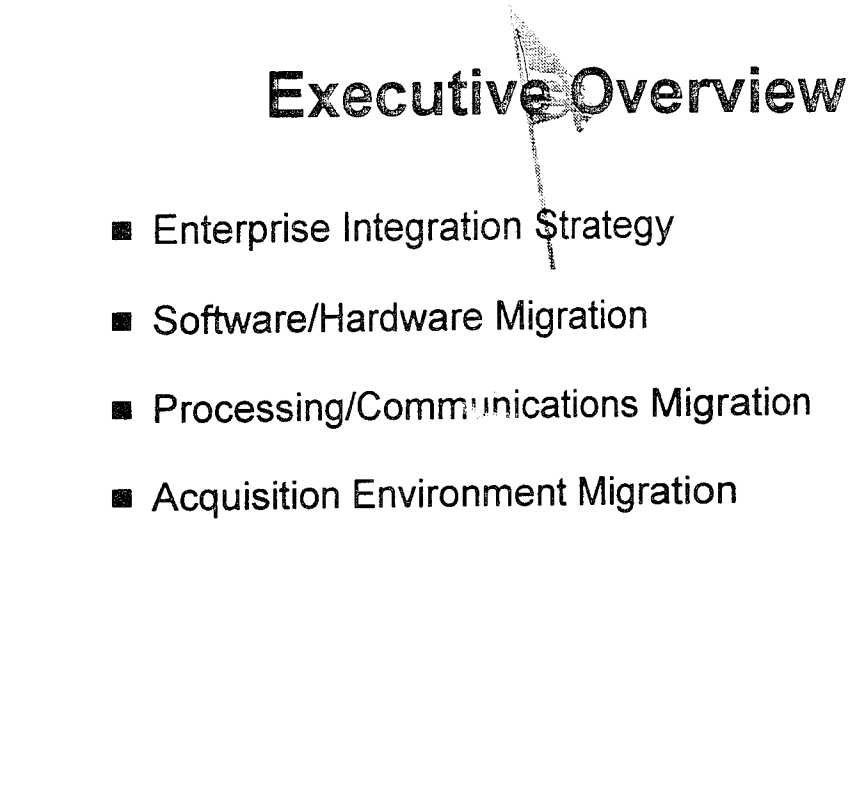
- Original Navy GCCS Proposal
  - OSS provided "80%" solution for GCCS in 4/93
  - J6 sponsored Navy proposal to CINC J6 Conf in 5/93
  - J6 approval in 9/93
- US Atlantic Command (USACOM) Proof of Concept (POC)
  - USACOM HQ functional 10/93
  - POC demo with components 12/93
- Operational employment at USACOM
  - Agile Provider/Joint Task Force 95/Operation Restore Democracy
- JMCIS architecture/COE is the baseline for GCCS Version 1.1
  - Integration Tools/Integration Standard
  - COE Specification/GCCS On-Line Library(GOL)

Glossary

A	
ACS	Afloat Correlation System
ASWTDA	Anti-Submarine Warfare Tactical Decision Aid
ATP	Advanced Tracking Prototype
B	
BGPHES	Battle Group Passive Horizon Extension System
C	
CCSC	Cryptologic Combat Support Console
CCSS	Combat Cryptologic Support System
CIU	Cryptologic Interface Unit
COTS	Commercial Off-the-Shelf
CTAPS	Contingency Theater Automated Planning System
E	
EWCM	Electronic Warfare Control Module
F	
FHLT	Fleet High Level Terminal
G	
GCCS	Global Command and Control System
GOTS	Government Off-the-Shelf
J	
JDISS	Joint Deployable Intelligence Support System
JMCIS	Joint Maritime Command Information System
JOTS	Joint Operational Tactical System
L	
LFOC	Landing Force Operations Center
M	
MAGTF C4I	Marine Air Ground Task Force - Command, Control, Communications, Computers and Intelligence
MRMS	Maintenance Resources Management System
N	
NALCOMIS	Naval Aviation Logistics Command Management Information System
NAVSSI	Navigation Sensor System Interface
NDI	Non Developmental Item
NIPS	NTCS-A Intelligence Processing Services
NITES	NTCS-A Integrated Tactical Environmental Subsystem
NITES	Navy Integrated Tactical Environmental System
NTCS-A	Navy Tactical Command System - Afloat
NTCSS	Naval Tactical Command Support System
NWSS	Navy WWMCCS Support Center
O	
OBU/OED	Ocean Surveillance Information System Baseline Upgrade / OSIS Evolutionary Development
OSS	Operational Support System
P	
POST	Prototype Ocean Surveillance Terminal
S	
SACC	Supporting Area Command Center
SNAP	Shipboard Non-Tactical ADP Program
SSEE	Ship's Signal Exploitation Equipment
STT	Shore Targeting Terminal
T	
TAMPS	Tactical Aircraft Mission Planning System
TEAMS	Tactical EA-6 Mission Planning System
TESS	Tactical Environmental Support System
TESS	Tactical Environmental Support System
TFCC	Tactical Flag Command Center
TSC	Tactical Support Center
W	
WWMCCS	World Wide Military Command and Control System



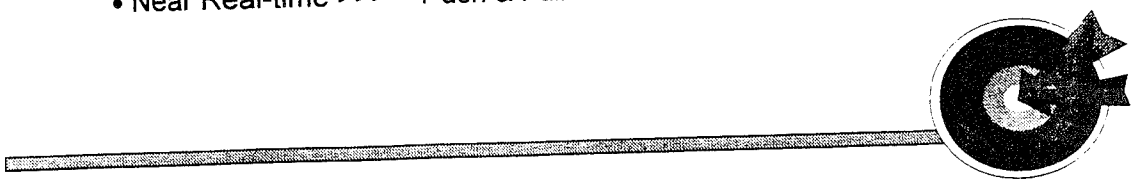
[1] Ladies and gentlemen, it is indeed a pleasure for me to describe to you the Marine Corps information technology migration strategy.



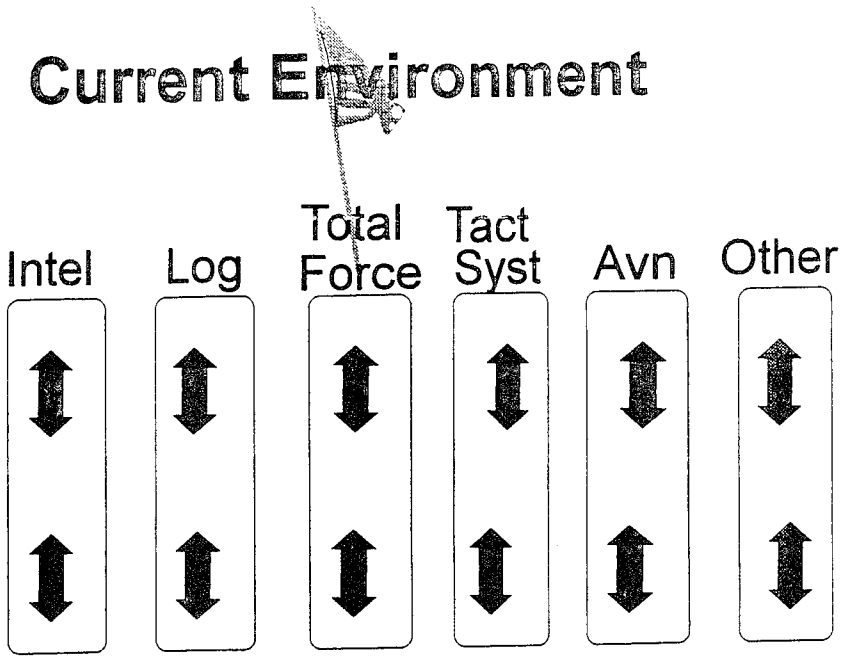
[2] I will describe our primary guidelines leading to enterprise-integration. First, I will describe our plans to run common software on common computer platforms interconnected by common networks. Then I will describe how this will be made possible by a migration to acquisition reforms and organizational changes unifying our acquisition process for information technologies.

Enterprise Integration Goal

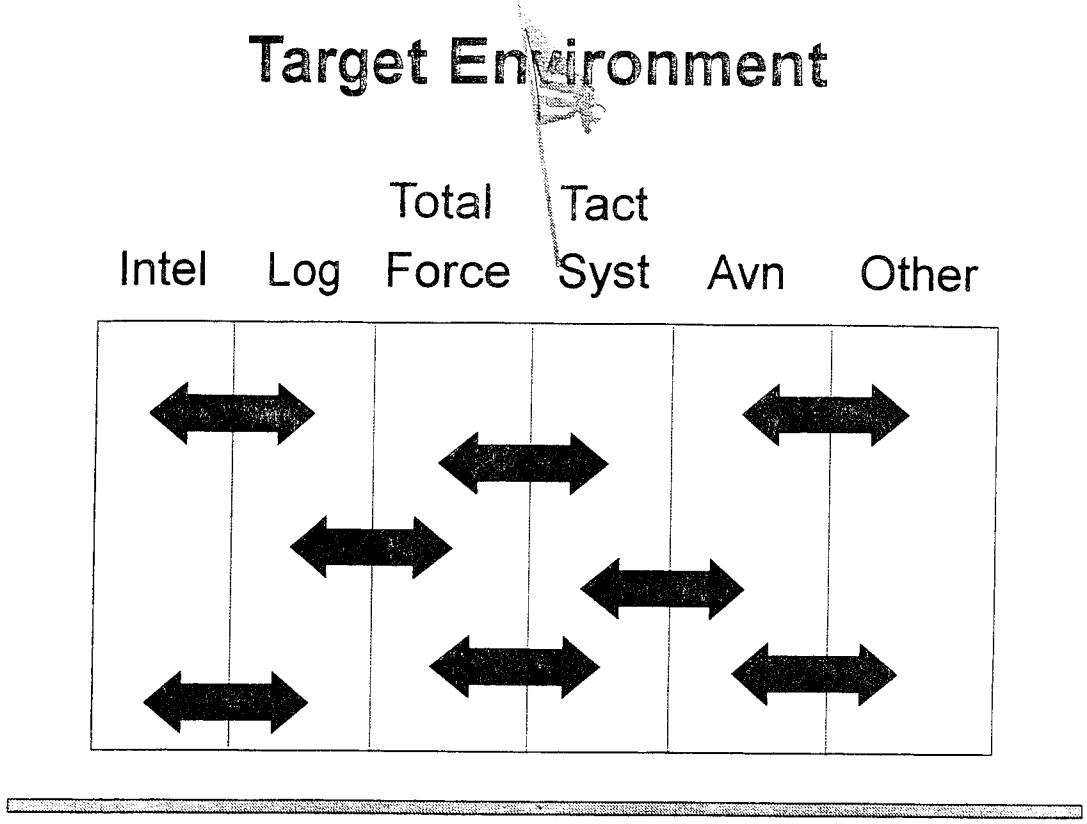
- Single Source of Relevant Information for all Marine Commanders
  - Seamless >>>> Functionally Integrated
  - Multimedia
  - Disciplined >>>> Knowledge-based
  - Multi-level Secure
  - Near Real-time >>> Push & Pull



[3] Our goal is to provide the information required for our warfighters and those supporting them in usable form, when its needed. Due to rapid changes in warfare requiring sophisticated and timely information for planning and situation awareness extending to distant geographical locations, this can only be accomplished by providing distributed multimedia systems with access to non-organic sources involving multiple security levels. Particular attention is necessary to avoid duplication and to share information among functional subscribers by disciplined methods of managing and presenting information that provides knowledge and understanding to the user.



[4] To now, that has not been possible, since program managers developed their programs in isolation and produced systems often incapable of sharing information with each other.



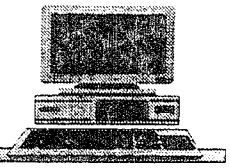
[5] But that's no longer the case in the set of Marine Corps Air-Ground Task Force (MAGTF) C4I systems now beginning to be provided to our warfighters and supporting establishment. They will share information, software, platforms and networks and be capable of adapting as a system of systems to all missions anticipated in the future.

Enterprise Integration

- An ongoing interative process
  - redesign and integrate mission activities
  - eliminate redundant or low-value functions
  - enhance warfighting capabilities.



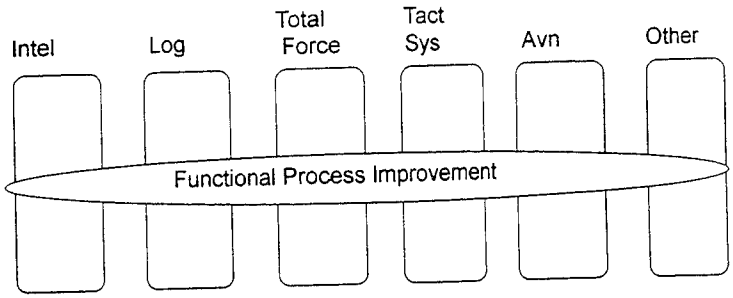
- Standards-based information systems architecture can then support the redesigned functions.



[6] However, the change from closed to open environments and acquisition activities takes time. Particularly with reduced resources available, progress requires innovative approaches and is an iterative process. We must focus not just on the technology, but the processes the technology is to support. Therefore, we are undergoing comprehensive functional process improvement activities throughout the Marine Corps and building standards-based adaptive information systems architectures to support the redesigned functional processes.

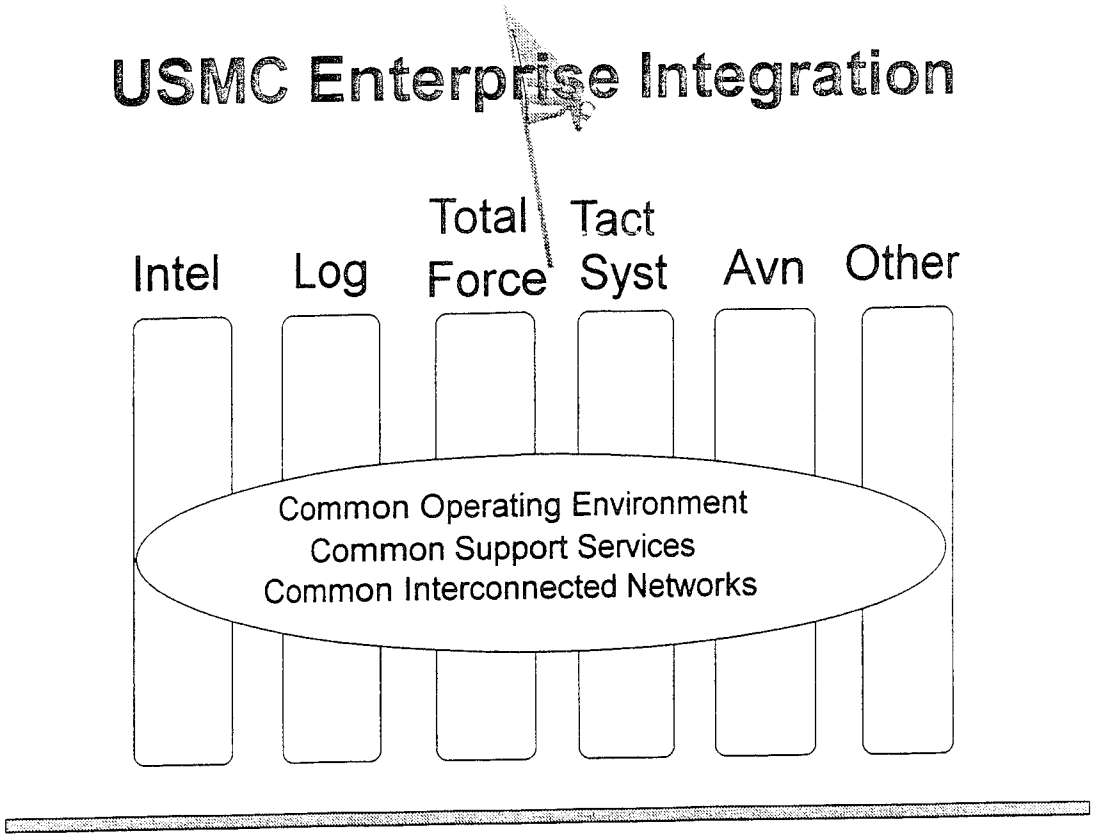
Enterprise Integration

- Cross-functional Process Improvement and Integration



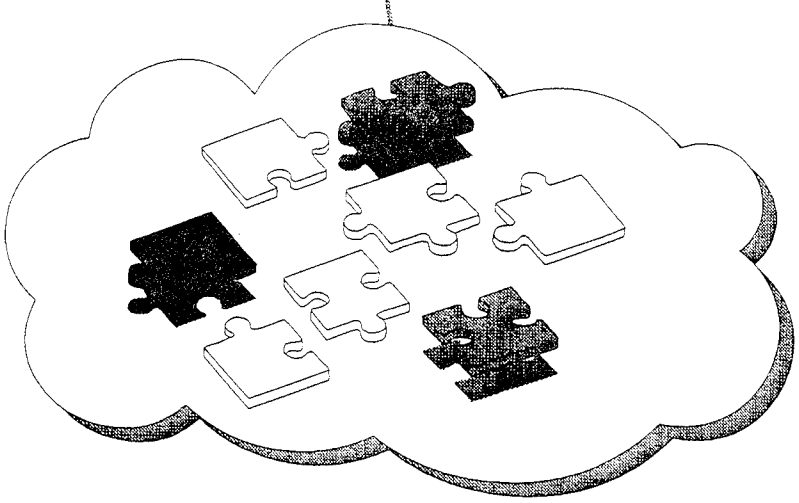
- Information System Support Plan

[7] The Marine Corps' functional process improvement initiative is under the direct oversight of General Hearney the Assistant Commandant and is expected to take several years. The command and control area is one to receive early attention. However, we are not waiting for these to all be completed to develop plans for improving the information technologies to be made available to support the improved processes. Actually, one of the first areas we examined was the processes used in the Marine Corps for the acquisition and life-cycle management of information technologies.

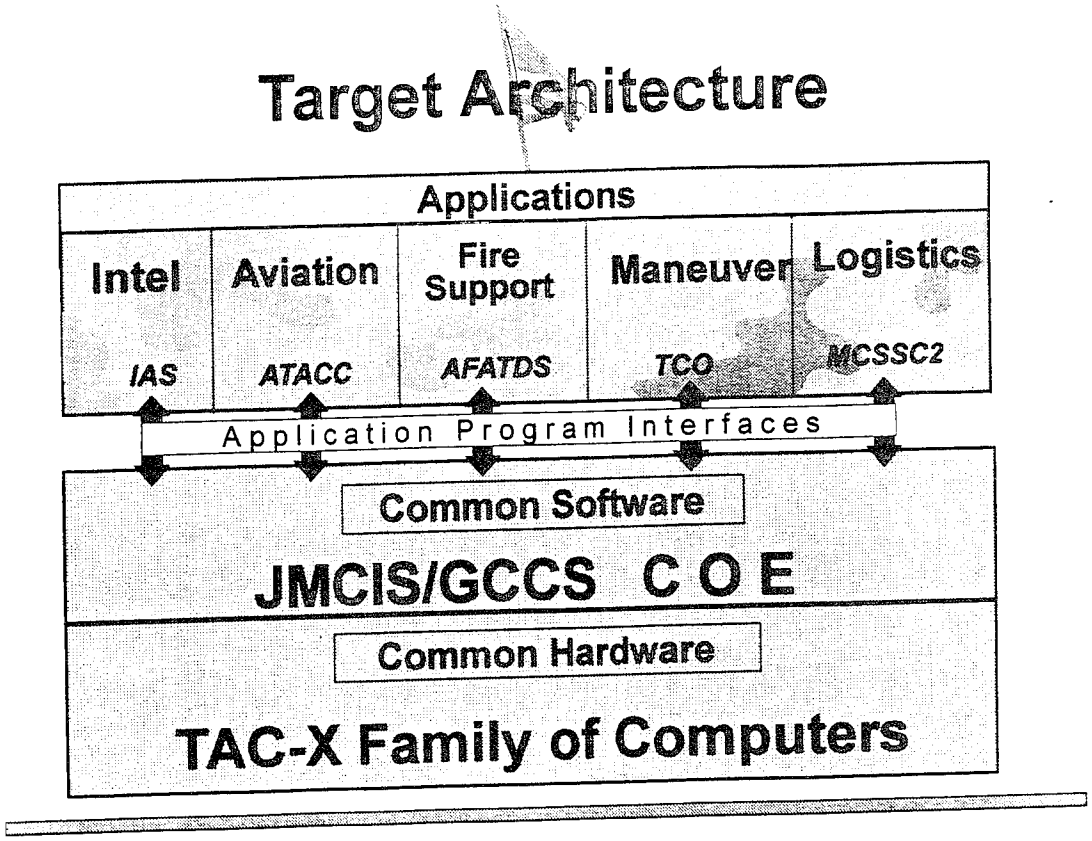


[8] That examination by a cross-functional Information Technology Planning Group led to recommendations and a plan to completely change the technical, acquisition and organizational elements of those processes to more effectively provide the support needed while providing the adaptability needed to respond to joint and combined warfare requirements in the modern era. Those changes were approved by an executive steering group and are already being implemented. The foundation for the revised process is that all Marine Corps systems will be built upon a common operating environment with common software support services, common hardware suites and interconnected by common networks.

Current Architectures

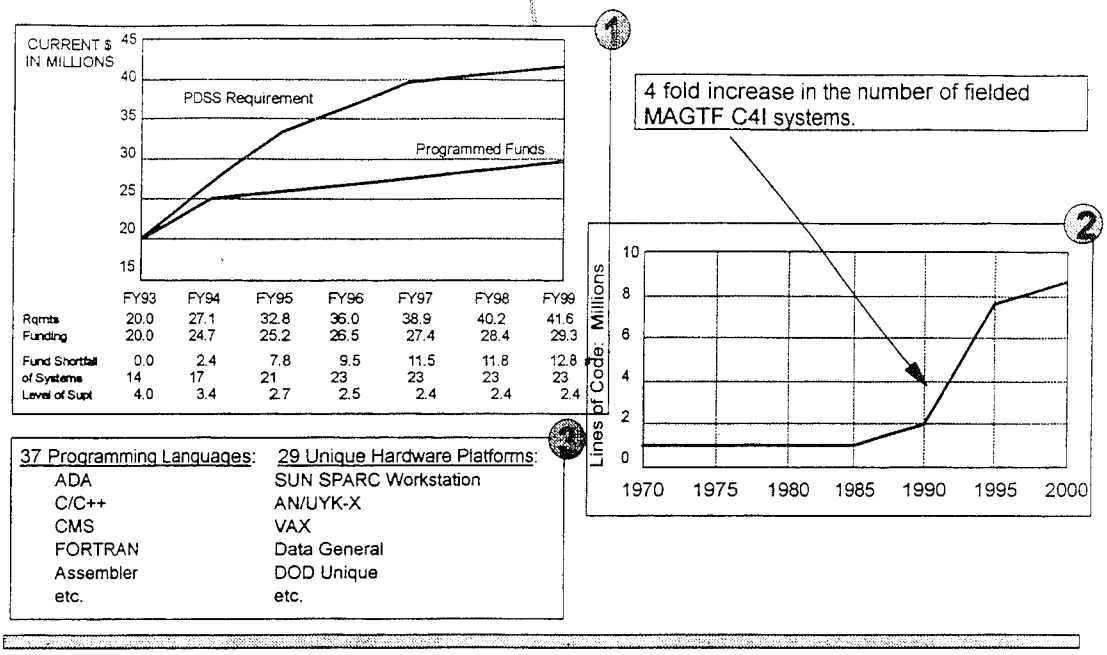


[9] As I said, in the past we had multiple information systems architectures in the Marine Corps, most oriented around functions, but some based upon deployed force systems and separate administrative systems, as well as regionally oriented systems.



[10] No more, in the future, the Marine Corps has one target architecture built upon common computer and software programs of the Navy and joint command and control community. Individual functions are supported by application software with interfaces capable of being ported in a plug and play manner.

Characteristics of MAGTF C4I Software Architectures



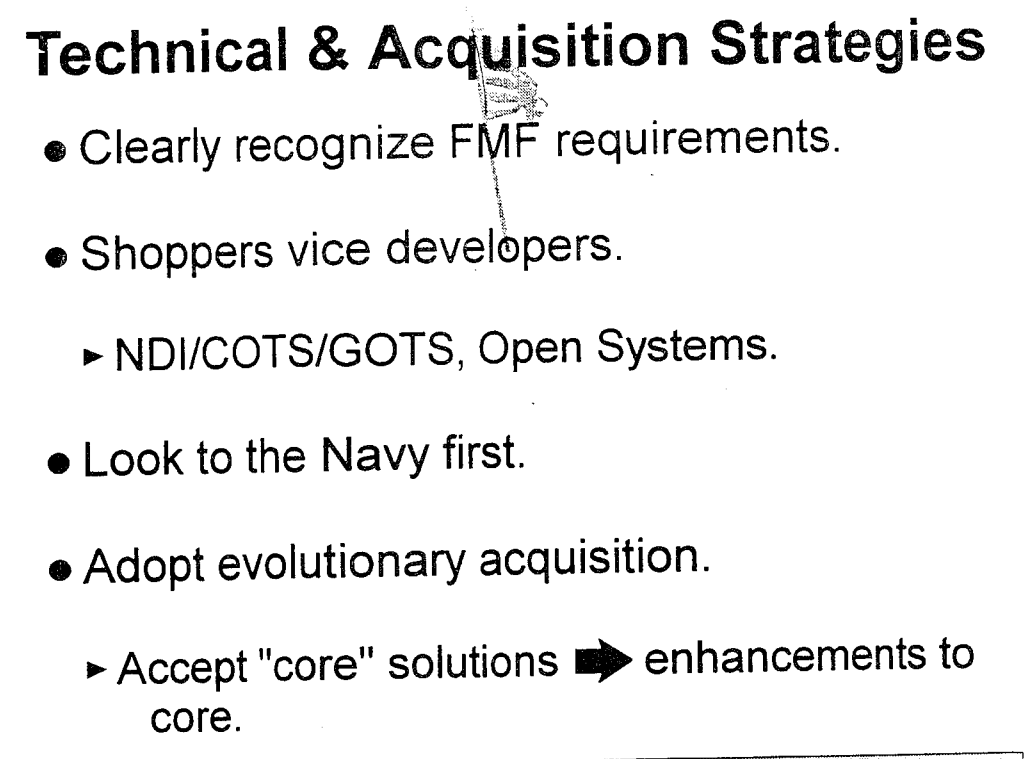
[11] The necessity of such an approach is made clear by this chart which indicates in the upper left corner the dramatically increasing delta between costs to maintain software for increasing numbers of C4I systems (indicated on the right) compared to funds available. It is important to note that the 4 fold increase in systems involved 37 programming languages and 29 unique hardware platforms.

Software Redundancy

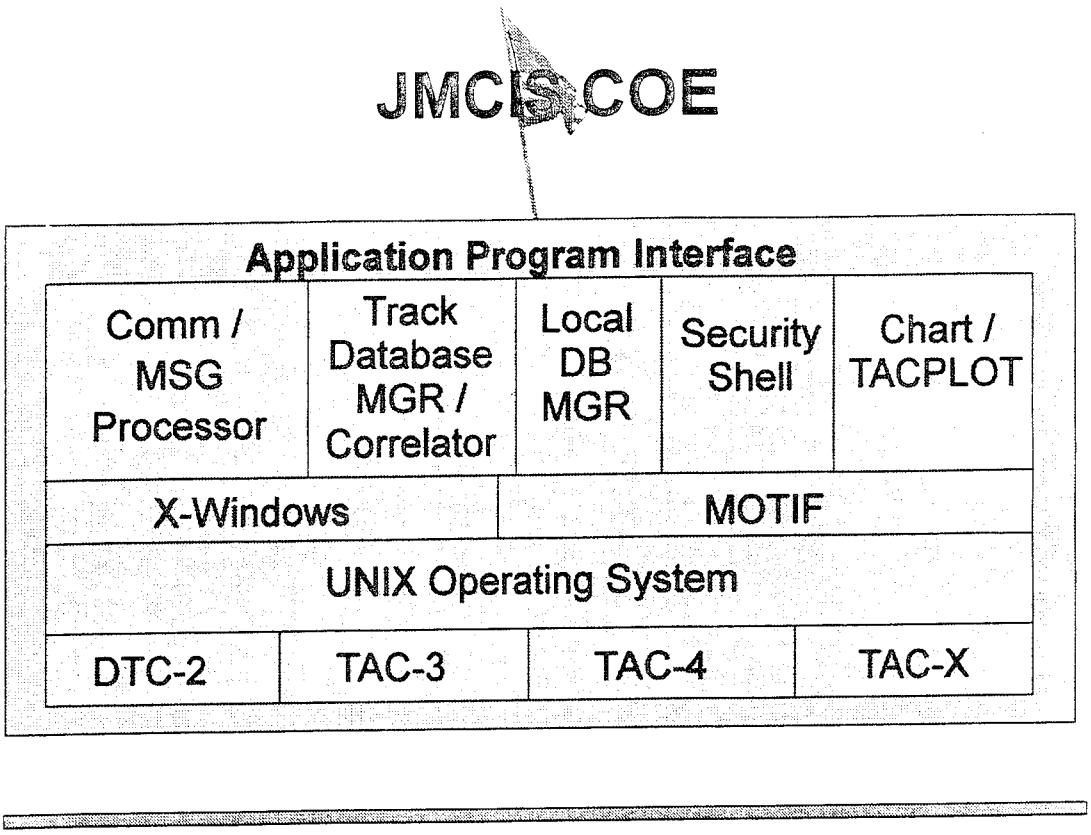
- 70% of the code within MAGTF C4I systems was functionally redundant.
- Each system was "building its own".

Mapping/Overlays	Portray, zoom, pan topographic information and access DMA mapping products related to terrain features, with ability to superimpose overlay graphics.
Imagery	Display photographic imagery.
Track Management	Display land symbology and maintain track related information on air/ground platforms.
PLI	Receiving Position Location Information associated with Air/land Unit locations.
Message Processing	Receive, parse, journal, format and transmit binary and text message traffic in accordance with predefined DOD formats.
TADIL Management	Management of TADIL A, B, and J message traffic, to include receiving, conversion, and forwarding capabilities.
Comm Processing	Communication processing of traffic across multiple communications paths.
Correlation	Correlation of unit information received form multiple sources.
Security Shell	Security Shell providing access control to tactical information.
System Admin	Systems Administration/Network Administration/Database Administration housekeeping functions.

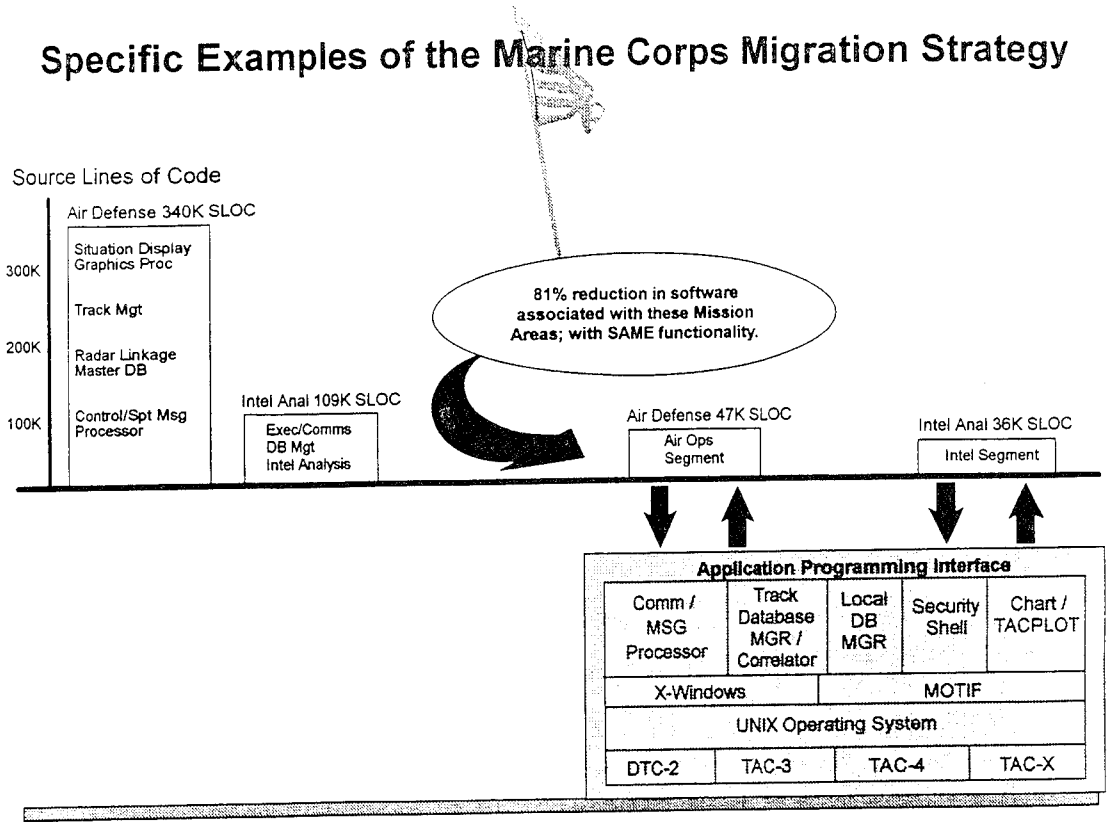
[12] Obviously, we could no longer continue to provide the needed capabilities with available resources. In response to the situation, we had some smart Marines look for another way. They found that 70% of the code in our C4I systems was functionally redundant with each program manager building his own software "from the ground up" in isolation. Many common services were found which could share software if care was applied in its preparation so that it would be platform independent and program management procedures were adapted to allow the use of shared common core software services.



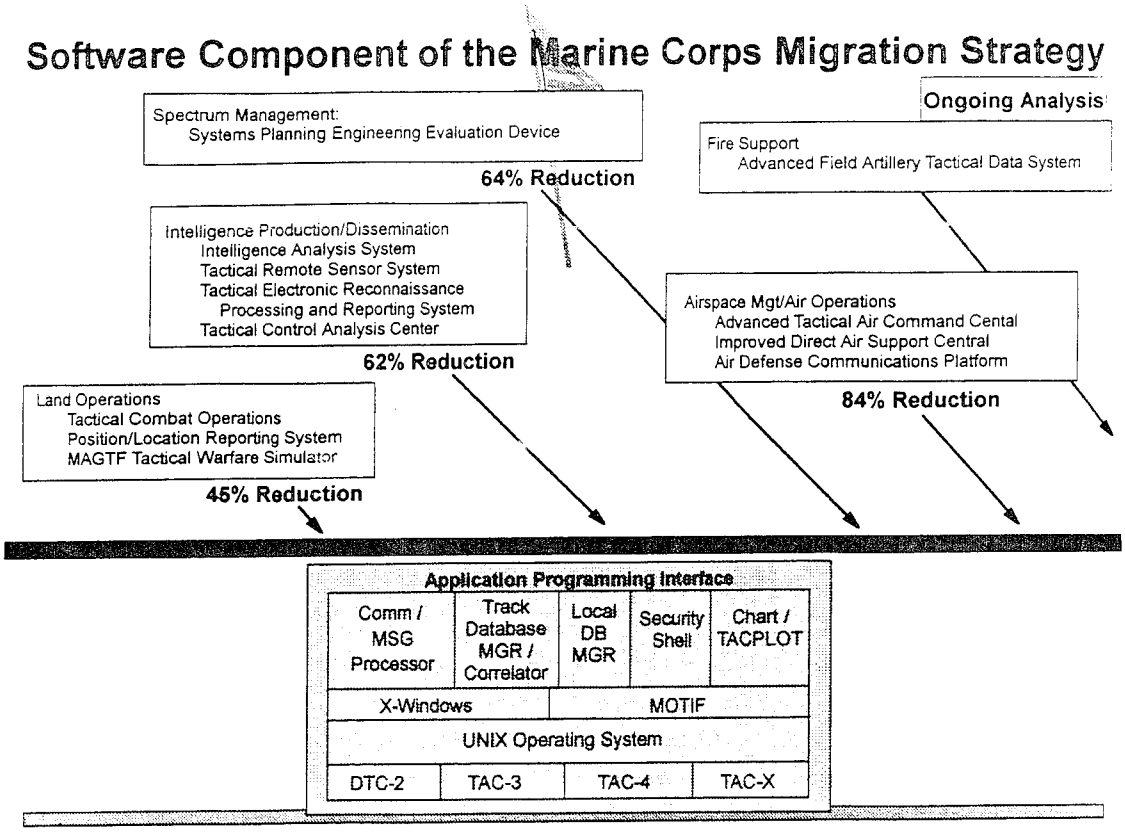
[13] But, it was also clear that we needed more than changing to common software and computer platforms to be able to expedite the fielding of more and improved capabilities to the Fleet Marine Force with reduced resources. We needed to reform other technical and acquisition strategies. Other innovative approaches were necessary. We looked at the world around us for existing Naval, Joint and commercial products that could meet the majority of our needs. We needed to become shoppers - and developers ONLY AS A LAST RESORT. We looked to the Navy first for solutions to our challenges. We also wanted to more rapidly get capability in the hands of the Fleet Marine force. Our conclusion was to field less than perfect solutions now and upgrade them over time using an evolutionary acquisition process. We quickly discovered the capability we were looking for. It was something called the Joint Maritime Command Information System (JMCIS) Unified Build (now called the Common Operating Environment,



[14] The JMCIS COE provides much of the functionality we were looking for in a common software suite capable of running on common hardware. It consists of a common hardware backbone, a common operating system and common software support services which provide the common functionality we had envisioned.



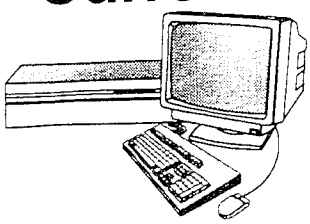
[15] This slide shows the results of some preliminary analysis done by our software support experts at the Marine Corps Tactical Systems Support Activity (MCTSSA) (though you'll soon hear that their mission now expands beyond deployable systems to support all Marine Corps systems). The first example is an air defense C2 program. MCTSSA estimates an 81% reduction in the amount of code they will have to support by employing the JMCIS COE in this program. In the second example, an intelligence analysis system, MCTSSA believes they will see a 67% reduction in the lines of code for which they will have to provide post deployment software support.



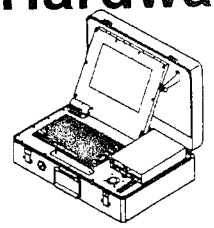
[16] As you can see, we expect to similar reductions in the amount of code we will have to support across all functional areas [[REVIEW CHART[[.

But, we are looking to the Navy for not only software, but hardware as well.

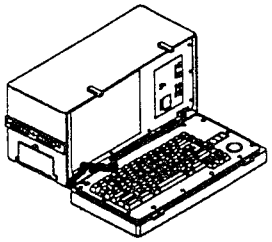
Current Common Hardware



Class A
Workstation/File Server



Class B
Network Workstation

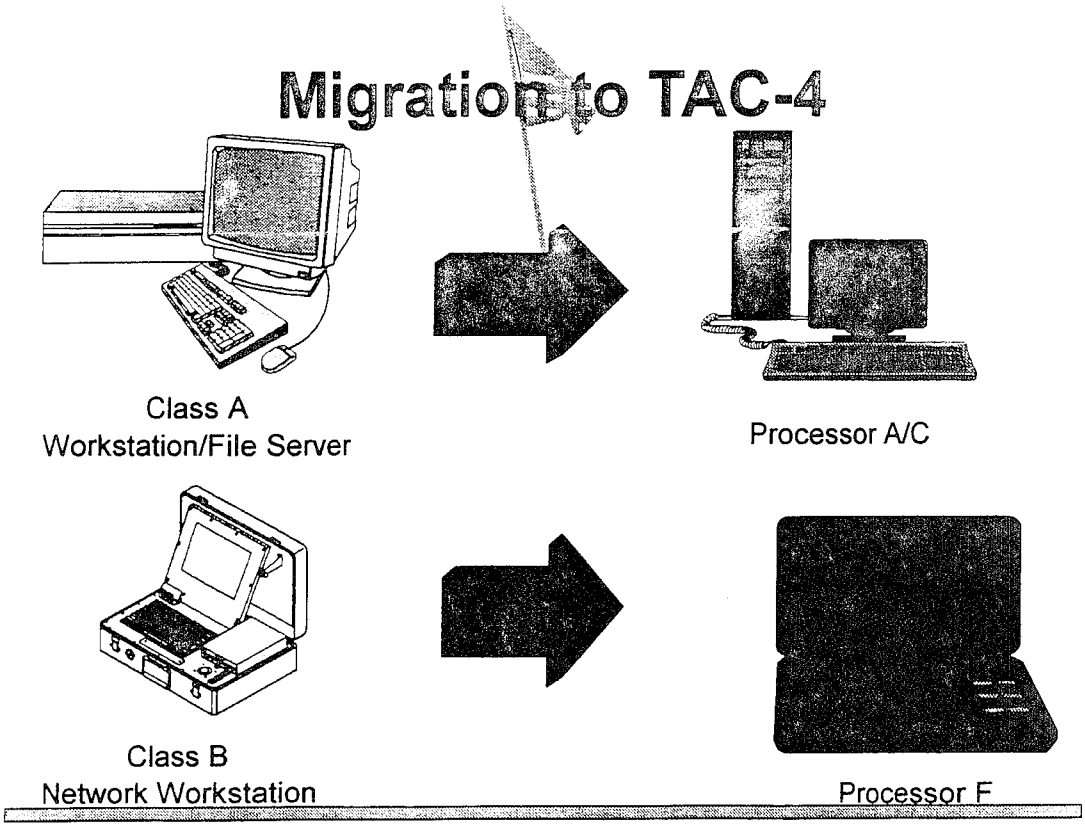


Class C
Lightweight Tactical Computer



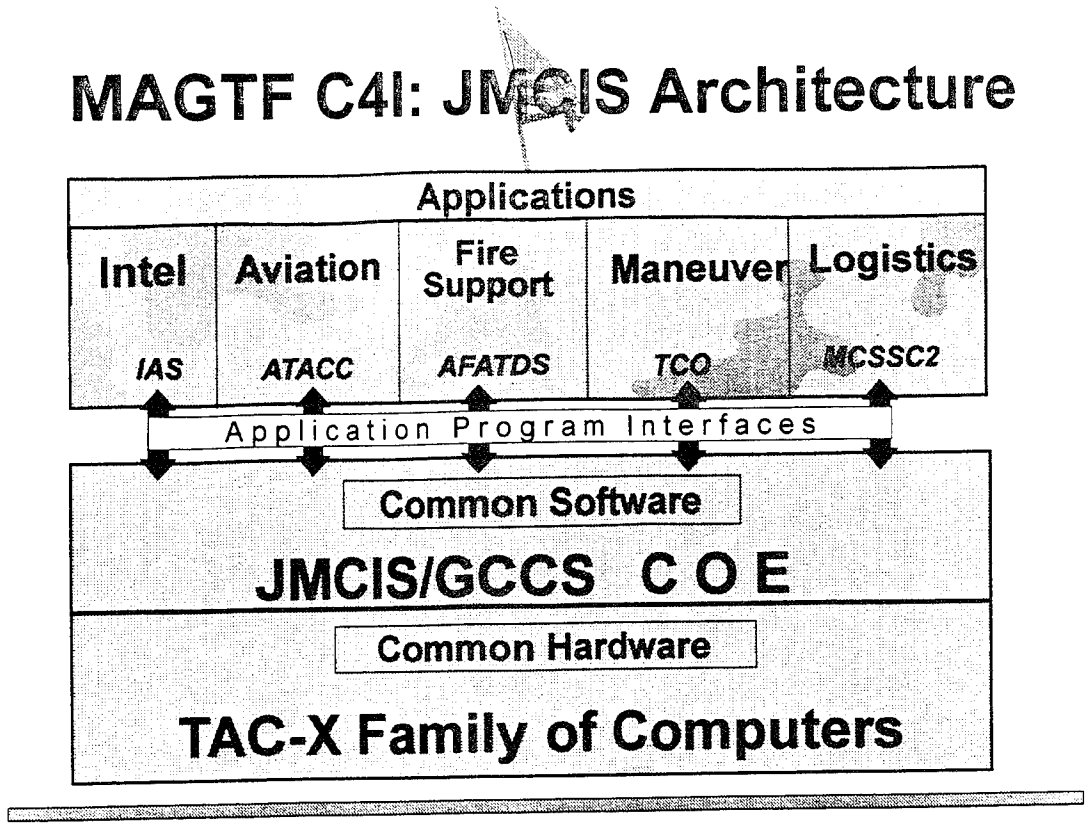
Class D
Pocket Tactical Computer

[17] Currently, our Marine Corps Common Hardware Suite (MCHS) consists of the four classes of computers you see here. They range from the Class A computer capable of serving as a network server, to the Class D, which is a handheld device that will fit in your pocket. We currently depend on other Services or agencies for contract vehicles for each of these computers. For example, we order Class B machines through contracts at the National Photographic Interpretation Center (NPIC) and the Navy's Information Systems Engineering activity at St Inigoes, Maryland. The Class C machines are ordered through the Army's Program Manager for Common Hardware at Ft Monmouth, N.J. In nearly every case, the Service or agency which owns the contract has a different integrated logistics support philosophy than ours. Consequently, we have had to ask them to modify their contracts to obtain the types of data we need to apply the Marine Corps' maintenance management concept to the machines. (This increases costs.) Also, usually, we've had no input to the original design of these boxes. In other words, it has been painful to depend on diverse sources for computer hardware and its maintenance. We intend to change this.

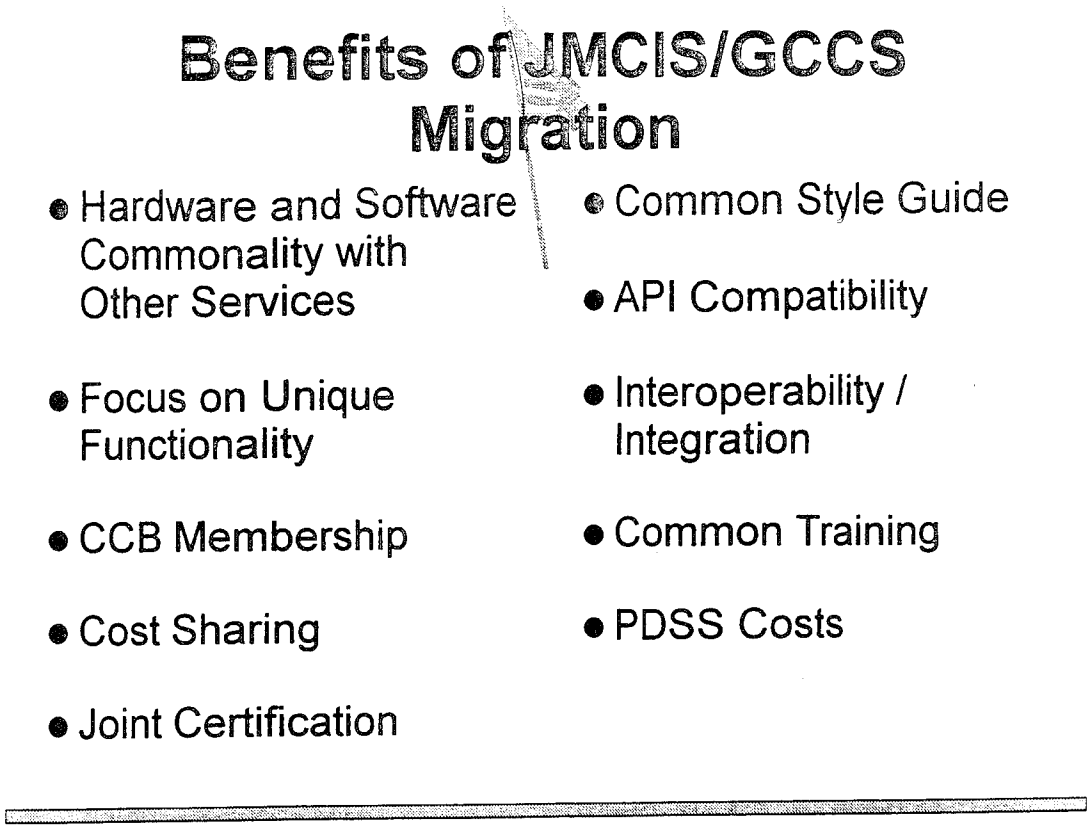


[18] The Navy has a Tactical Advanced Computer (TAC) program, To capitalize on the many advantages of this program, the Marine Corps has collaborated in the development of specifications for the fourth version (called TAC-4). Our maintenance concept and environmental requirements are now reflected in TAC-4 documentation. We also were active participants in the TAC-4 procurement process. We are counting on TAC-4 to provide a common source of follow-on computers for our Class A and B common hardware suite requirements.

So, when you put TAC-4 and JMCIS together with our Marine Corps C4I programs, this is what you get ...



[19] Our common hardware suite foundation will consist of TAC computers. Our common software will be JMCIS COE transitioning to GCCS. Well documented, well defined application interfaces (APIs) are key to this strategy. These APIs define how applications software plugs into common core software upon which it depends. Applications and core software changes may occur but APIs remain constant. We also continue to work closely with the Navy to evolve Marine Corps required capabilities into JMCIS. A good example of capabilities we have already incorporated into JMCIS is "coordinate conversions" - the Navy works in nautical miles and latitude/longitude while Marines talk in terms of kilometers and the Military Grid Reference System.



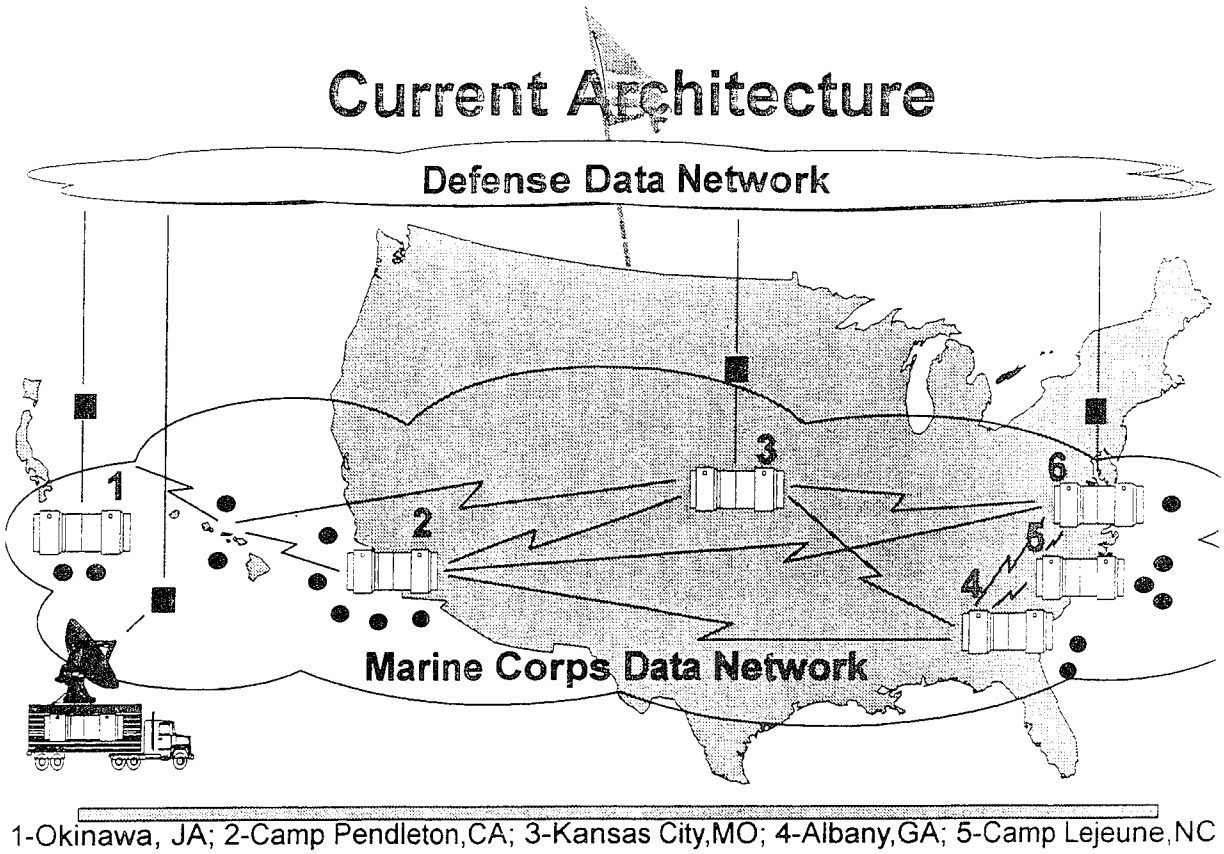
[20] Although I have alluded to many of the benefits of a Marine Corps migration to Naval and Joint hardware and software, here are some of the key considerations.

[REVIEW BULLETS ON SLIDE]

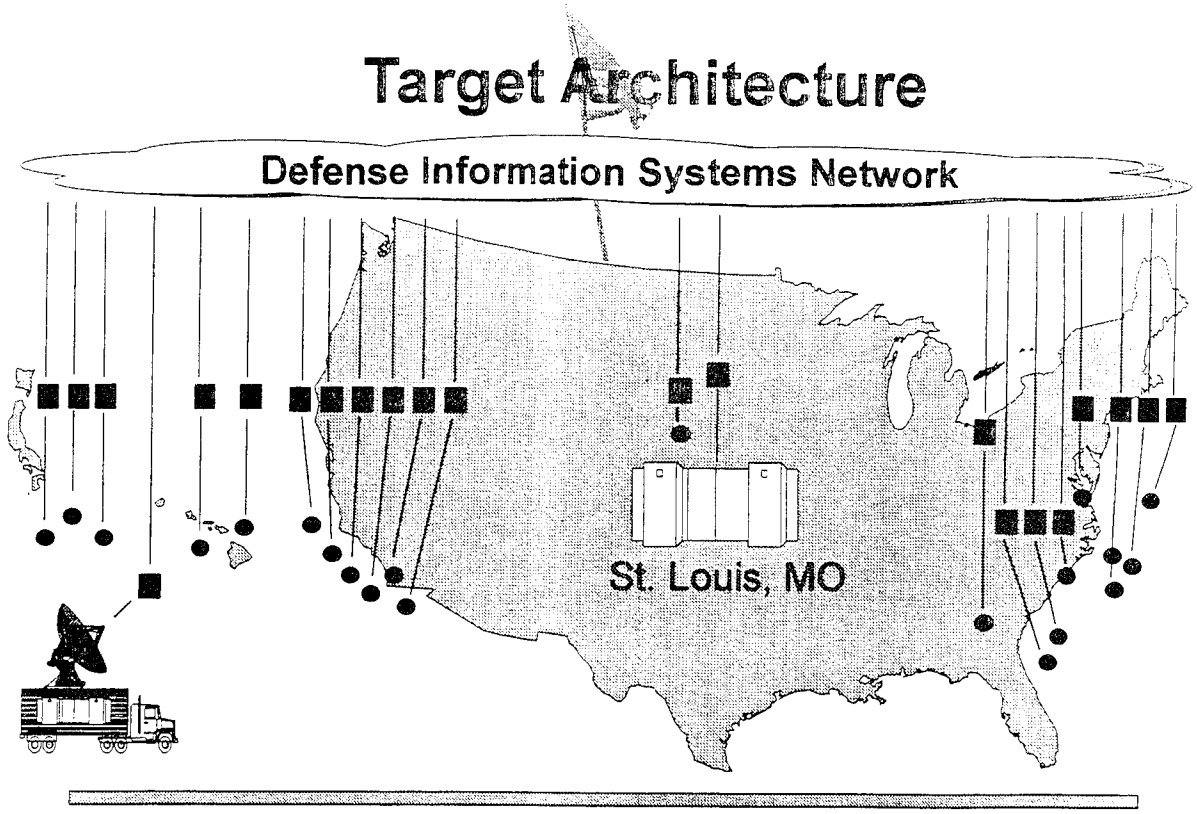
Migration Drivers

- BRAC-93: Directed 3 out of 6 Major Data Centers to Close
- DMRD-918: Migration to Defense Information Infrastructure
- Likely Effects of BRAC Directed Closures:
  - Diverging Standards
  - Higher Costs
  - Diminished Support
- Solution: Consolidate All Major Data Centers using a Standards Based Approach

[21] Now, let's look at the Marine Corps' migration to a single mainframe processing center and wide area network run by DISA as part of the Defense Information Infrastructure. You are certainly aware of the BRAC-93 and DMRD-918 decisions. Together, these and other considerations led the Marine Corps to decide to expedite consolidation of its processing and network support by leading the way in implementing comprehensively the underlying goals of these initiatives.



[22] We will move from the current architecture depicted here. It consists of six geographically dispersed data centers interconnected by a single integrated data network, augmented by a mobile data center. As you refer to the legend, you can see the locations of these data centers.



[23] Our TARGET architecture, depicted on this slide consists of all sites interconnected by the Defense Information Systems Network (DISN) and a single Defense Megacenter at St Louis, Missouri.

Current Architecture Characteristics

- Standard Hardware
- Standard Software
- Single Data Communications Network
- Integrated System and Network Management
- Few "Black-box" Interfaces to DDN

[24] Let's look at some characteristics of the current architecture, then compare them to the target. All data centers maintain standard software platforms, identical commercial off-the-shelf software products are used on each computer, and our single inter-computer network and data centers are managed by the Marine Corps Computer and Telecommunications Activity at Quantico, Virginia. There are three interfaces from the Marine Corps Data Network (MCDN) to the Defense Data Network (DDN). These are at Okinawa, Kansas City and Quantico.

Current Architecture
Characteristics

- "Twenty-two" Geographic Regions Supported
  - One Wartime Contingency
  - Sixteen CONUS
  - Five O-CONUS
- Support Configurations
  - One Deployable Processing Center
  - Six Major Data Centers
  - Fifteen Remote Job Entry (RJE) Sites

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[25] Continuing our look at the current architecture, we support twenty-two geographic regions (16 CONUS/5 OCONUS/1 DEPLOYABLE FOR DEPLOYED OPERATIONS). The non-deployable units consist of 6 major data centers and 15 remote job entry sites (RJEs). The RJEs are supported by the major data centers at other bases, posts, camps and stations. The deployable force automated services center is a mobile data center and has proven very effective and reliable in Operations Desert Shield/Storm and Restore Hope.

Target Architecture Characteristics

- Same "Logical" Standard Hardware
  - Megacenter partitioned as six logical mainframes
  - Major Data Centers reconfigured as RJEs
- Same Standard Software - running in partitions, until migration systems fielded
- MCDN absorbed into DISN - circuits adjusted as needed
- Integrated System and Network Management Responsibilities - transferred to DISN

[26] Compared to the CURRENT architecture, you will find the characteristic environment in the TARGET very familiar.

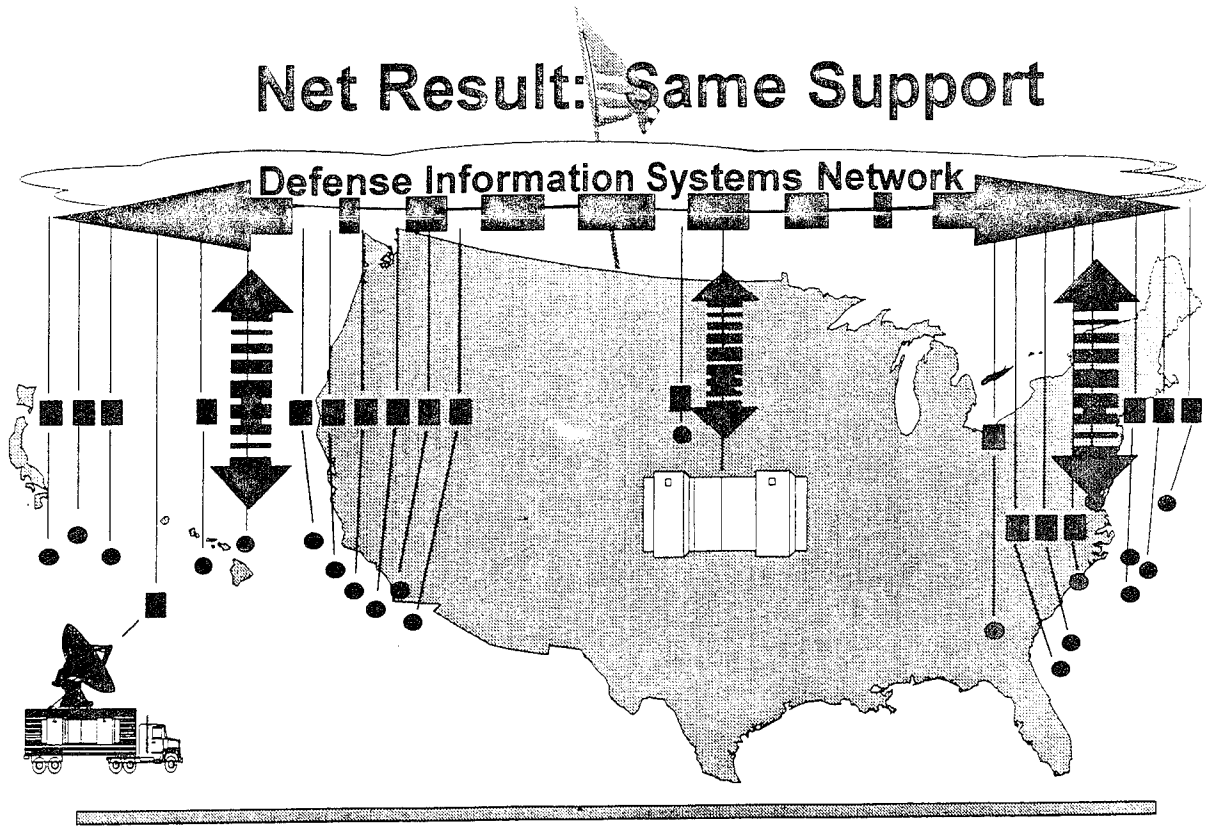
[REVIEW BULLETS]

Target Architecture Characteristics

- Multiple "Black-box" Interfaces to DISN
- Same Regions Supported
- Support Configurations
  - One Deployable Processing Center
  - One DoD Megacenter
  - Twenty-one Remote Job Entry Sites

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[27] Continuing the comparison, you'll note increased connectivity to the DISN from the same Regions, but with a single consolidated Megacenter supporting 21 RJEs.



[28] The net result after our migration to the DoD Megacenter is the same support to our end users, but we will have become part of the global Defense Information Systems Network in accordance with current DoD initiatives.

Unified IT Acquisition Environment

- Diverse Organizations Currently Responsible for IT Architecture, Standards, Acquisition and LCM within USMC
  - Tactical Data Systems: MARCORSYSCOM, MCTSSA,
  - Non-Tactical AIS: Funcs, MCCTA, CDAs
- "Stovepipe" Environment Encourages Proliferation of Redundant, Non-Interoperable Systems
- Discourages "Unified Build"

[29] But, as I noted earlier, more acquisition reforms were needed to effectively implement those I've described. It was necessary to unify diverse acquisition processes for deployable systems and those of functional sponsors and the supporting establishment, in order to truly unify our systems into a seamless architecture.

Unified IT Acquisition Environment

- July 1993, ESG Determined that:
  - MARCORSYSCOM should exercise single acquisition authority
  - CG MCCDC should assume oversight of ISSC
- March 1994, ITPG Formed to Make Recommendations to Achieve Those Goals

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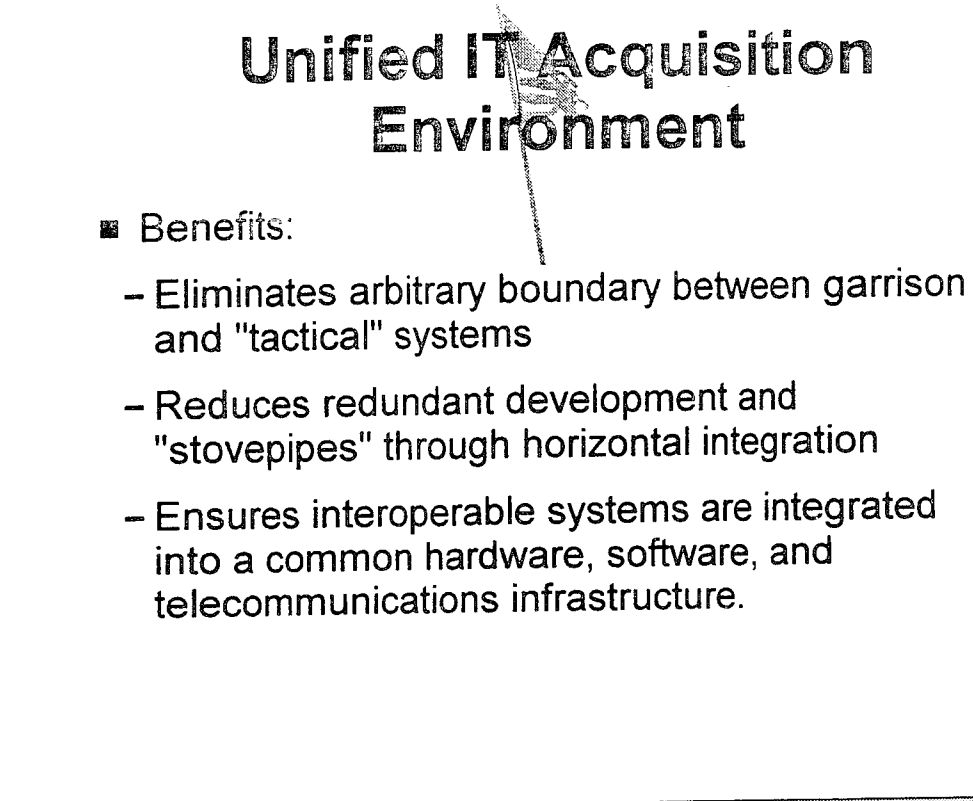
[30] During recent months, decisions by the Marine Corps leadership have led to organizational, policy and procedural changes to unify the acquisition decision authority and requirements responsibilities at the Marine Corps Systems Command and the Marine Corps Combat Development Command at Quantico, Virginia.

Unified IT Acquisition Environment

- ITPG Recommendations:
  - All IT requirements to include IT Architectures and standards fall under cognizance of CG, MCCDC
  - MDA for ALL IT should reside with COMMARCORSYSCOM
  - PM for hardware, telecommunications and operating systems software should be under COMMARCORSYSCOM
  - PM of software application segments should remain with functional sponsors.

[31] As recommended by a Marine Corps Information Technology Planning Group, except for some special applications software for unique functions, all hardware and software for Marine Corps computer and communications will be handled by the Marine Corps Systems Command, currently commanded by MAJGEN Carol Mutter.

The Combat Development Command will be the maintainer of a single integrated standards based architecture supporting requirements maintained there. These two commands will be tightly linked by a common Information Technology Steering Group which includes representation by functional users and policymakers in its membership.



[32] This provides the final element needed in the reengineered process to ensure a truly integrated Marine Corps information infrastructure in the future which is built tightly around the evolving DoD information infrastructure (DII).

Summary

- Enterprise Integration Strategy
- Software/Hardware Migration
- Processing/Communications Migration
- Acquisition Environment Migration

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[33] The migration strategy I have described to you will ensure a truly integrated Marine Corps enterprise built on common software, hardware and processing services linked by a common seamless network supported by a common community of acquisition professionals applying acquisition reforms which expedite improved warfighting capabilities with fewer resources.

Air Force Global Command and Control System

Col Joe Narsavage, Jr.
Director of Mission Systems
Headquarters, USAF
HQ USAF/SCM

13 Dec 94

AF Global Command and Control System

OVERVIEW

- USAF View of GCCS
- AFGCCS Strategy
- Implementation of AFGCCS
  - Migration of C2 systems
- Relation to AF C4I HORIZON Concept

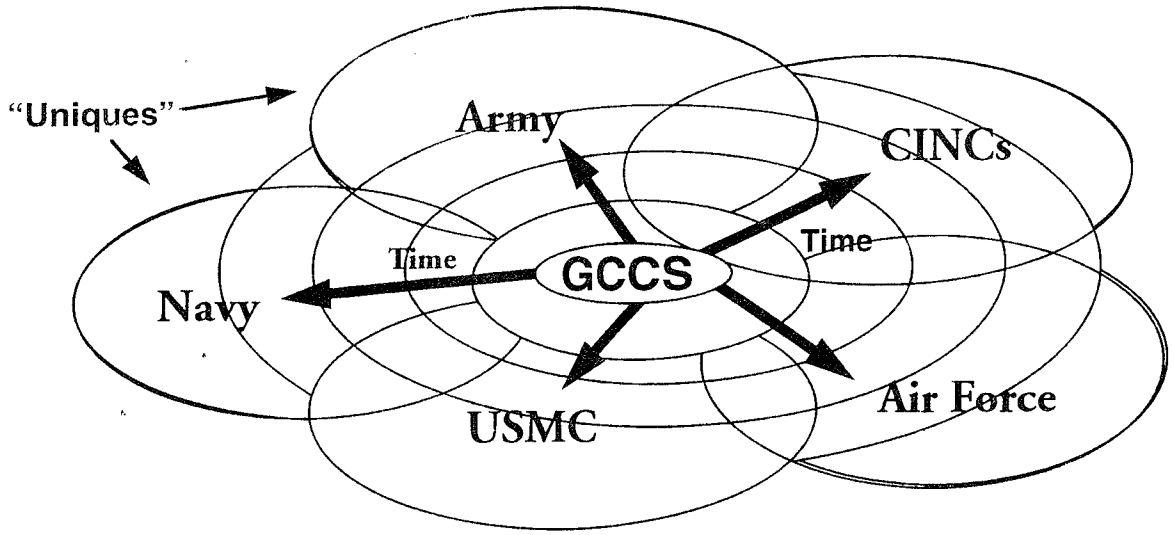
USAF VIEW

Concept: flexible and iterative approach allowing command and control (C2) applications to reside on a common operating environment (COE) supporting Commander-in-Chief (CINC) and Joint Task Force (JTF) operations.

Product: a collection of C2 systems, operating on that COE, that may vary from customer to customer.

Global Command and Control

GCCS provides a core of functionality that...



... establishes a common C2 standard.

AF Global Command and Control System

AFGCCS Strategy

- Have warfighter define operational requirements
- Evolve system functionality
- Develop GCCS Common Operating Environment
- Migrate C4I applications

AF Global Command and Control System

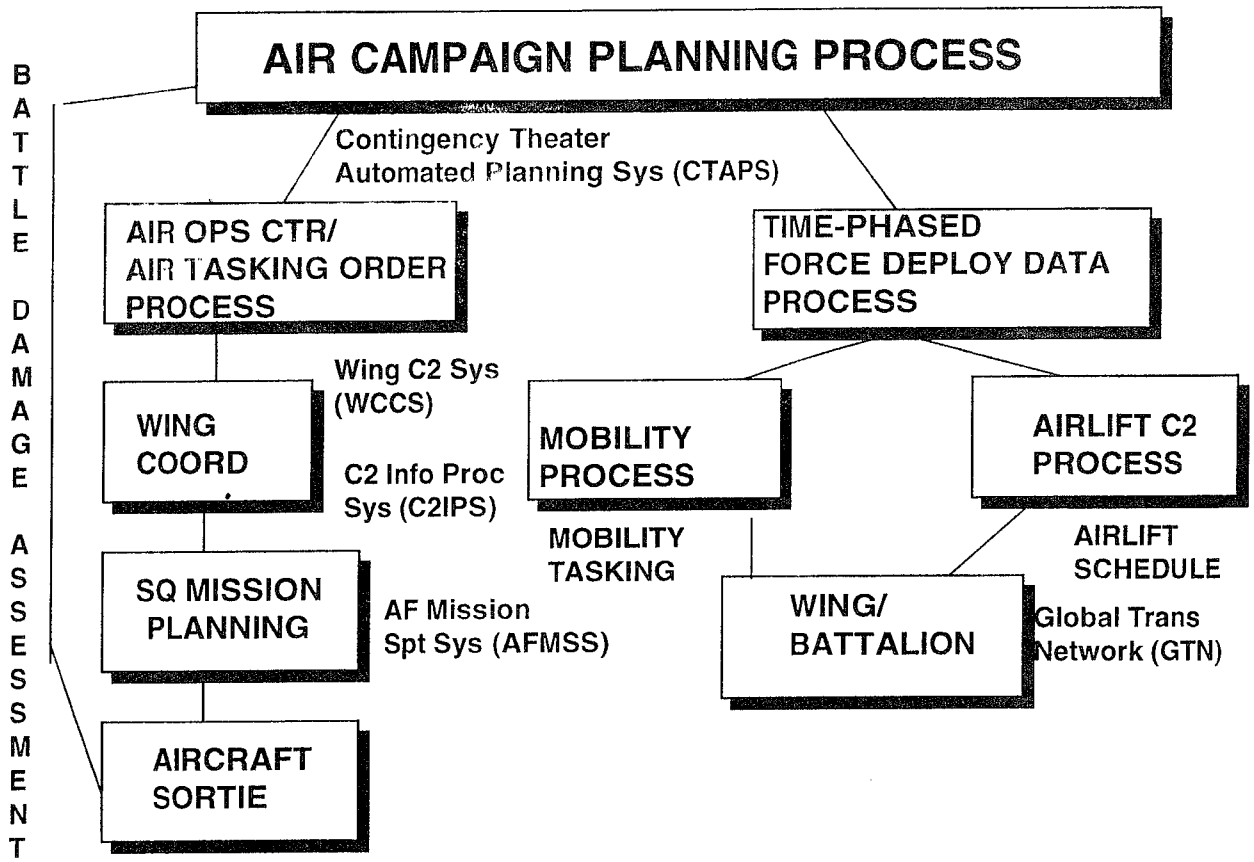
AFGCCS Implementation Tasks

- Worldwide Military Command and Control System (WWMCCS) shutdown
- Common Operating Environment (COE) development
- C2 migration

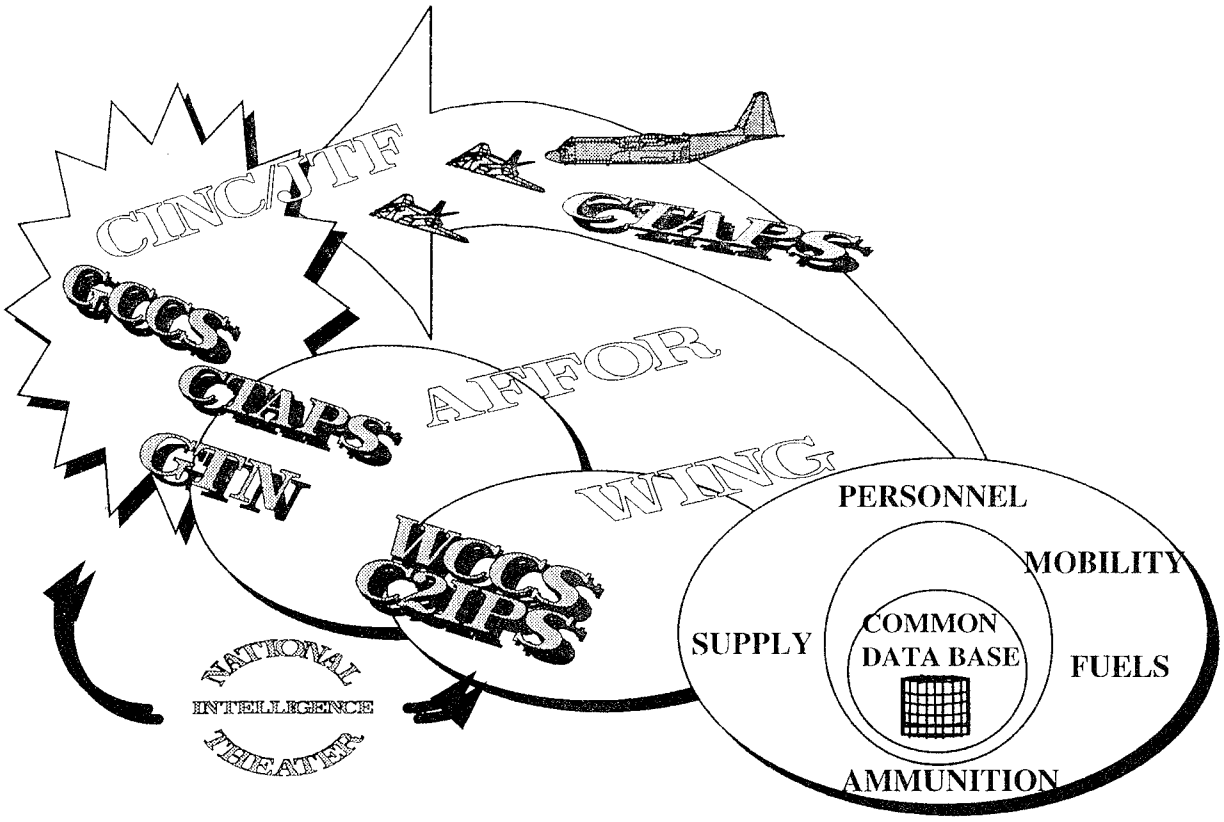
AF Global Command and Control System

USAF C2 Migration Process

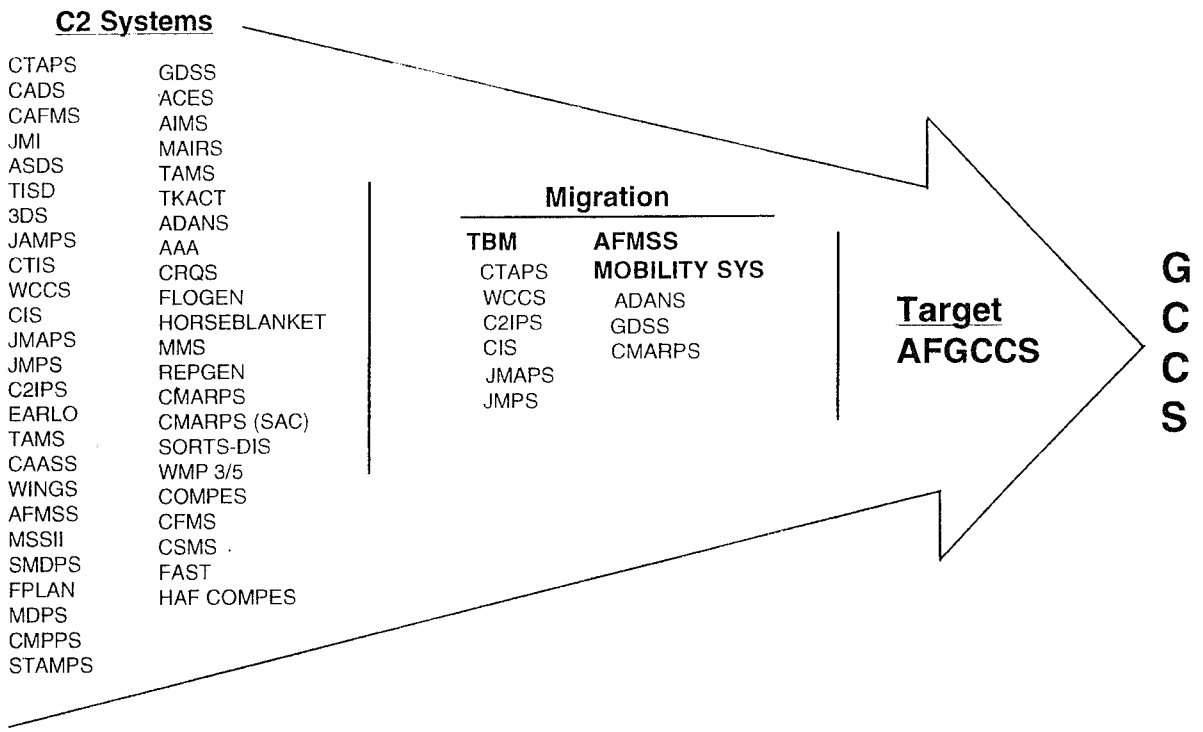
- Identify critical functionality requirements
- Select C2 migration system candidates
- Modify programs to incorporate GCCS COE



AIR FORCE GCCS

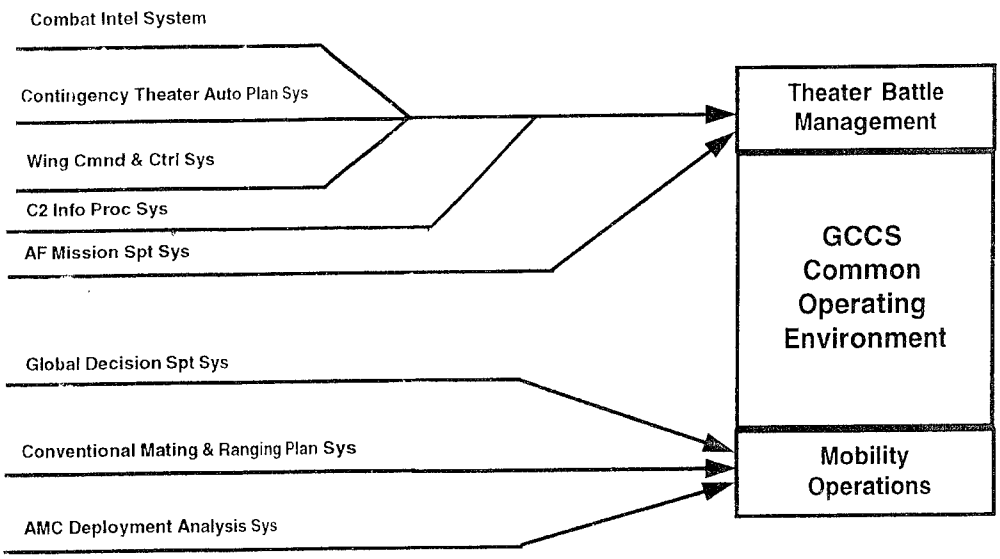


Migration of Air Force C2 Applications



AF Global Command and Control System

AFGCCS Migration Approach



AF Global Command and Control System

USAF C2 Migration Status

- **Awaiting migration systems approval**
- **Theater Battle Management (TBM) Request for Proposal (RFP) sent out with GCCS COE standards incorporated**
- **Evaluating several existing systems for crisis action/ deliberate planning requirements**

AF Global Command and Control System

Other AFGCCS Implementation Actions

- Shutdown of the Worldwide Military Command and Control System (WWMCCS)
  - Establish connectivity
  - Install hardware
  - Migrate functionality
- COE Development
  - AF responsible for 6 of 19 GCCS COE modules
  - Mid-term COE to be completed by Feb 96

AF Global Command and Control System

Relation to USAF C4I "HORIZON" Concept

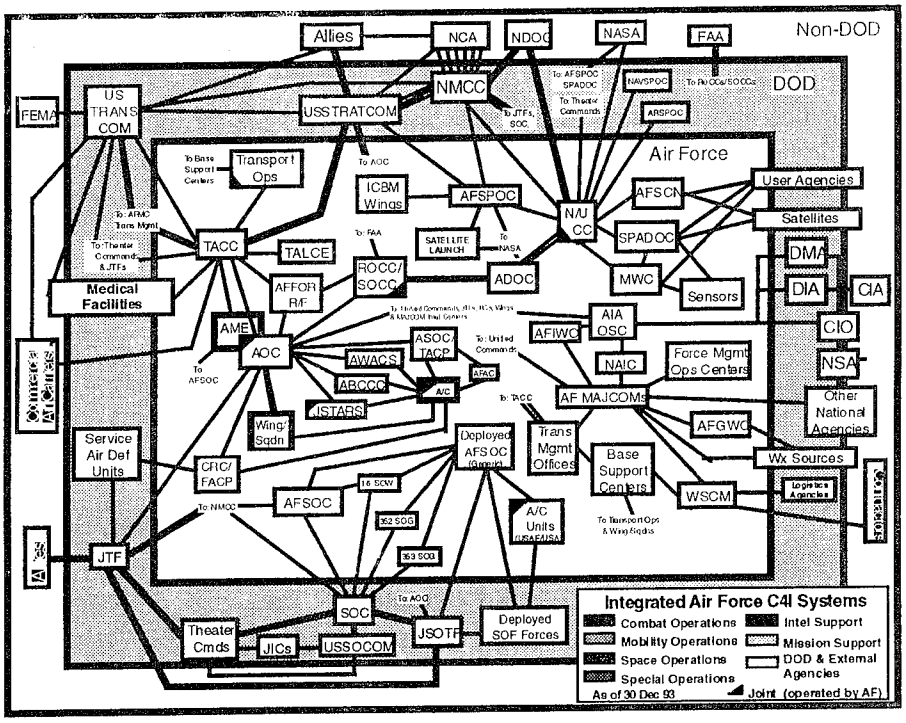
- HORIZON: the overarching USAF C4I concept
  - Provides warfighter with responsive, advanced C4I systems/services
  - Supports USAF's "Global Reach, Global Power" vision
  - Encompasses several elements
- AF GCCS will reflect HORIZON's architecture management process

AF Global Command and Control System

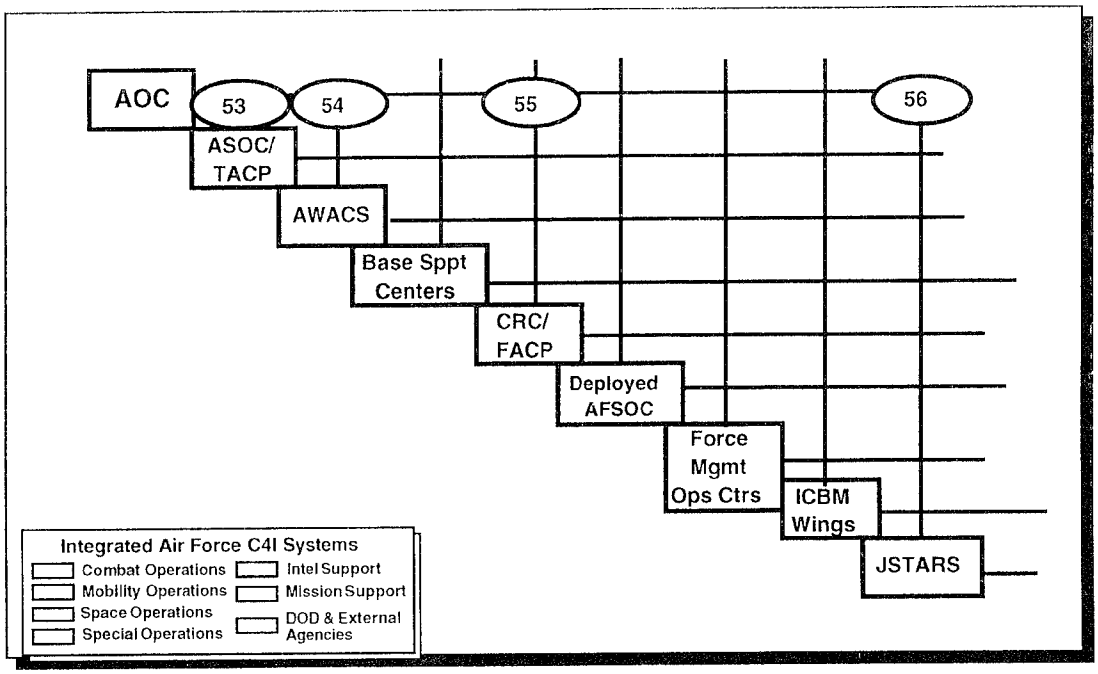
USAF C4I Architecture Management

- Shows enterprise-wide view of USAF C4I
- Shows information flow throughout
  - Four mission areas (Combat, Mobility, Space, Special Ops)
  - Two support areas (Intelligence and Mission Support)
- Shows key C4I nodes and intersections
  - Within Air Force, within DoD, and external to DoD
- Includes supporting diagrams, N2 charts and interoperability summary tables
  - Provides manageable set of critical C4I nodes and links
  - Provides means to identify interoperability concerns
  - Provides focus for in-depth modeling and analysis

Top-Level Air Force Architecture View

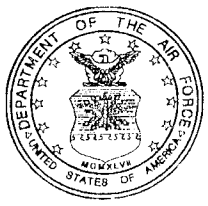


Node-to-Node (N2) Chart



Top Level Interoperability Table

Number	Source	Destination	Mission	Information Type	Issue(s)
49a	AFISC	NMCC	Intelligence Support		
49b	NMCC	AFISC	Intelligence Support		
50a	AFISC	Theater Commands	Intelligence Support		
50b	Theater Commands	AFISC	Intelligence Support		
51a	AMB	TACC	Mobility	Movement status, Asset Information Exchange	Intratheater
53a	AOC	ASOC/TACP	Combat Operations	Tasking, Plans, Coordination	Inadequate ATO Dissemination
53b	ASOC/TACP	AOC	Combat Operations	Reporting CAS Requests, Mission Result, Coordination	Inadequate Communications
54a	AOC	AWACS	Combat Operations	ATO Dissemination, ACO Change, Warning	Inadequate ACO/ATO transfer
54b	AWACS	AOC	Combat Operations	Air Picture	None
55a	AOC	CRC/FACP	Combat Operations	Tasking, ATO Changes, Air Space Management	Inadequate ACO/ATO Transfer
55b	CRC/FACP	AOC	Combat Operations	Status, Results, Air Picture	None
56a	AOC	JSTARS	Combat Operations	Tasking, ATO Changes, Allocation	Inadequate ACO/ATO Transfer
56b	JSTARS	AOC	Combat Operations	ATM Coordination, Target/Track Data	No MTI/SAR Data Provided



AF Global Command and Control System

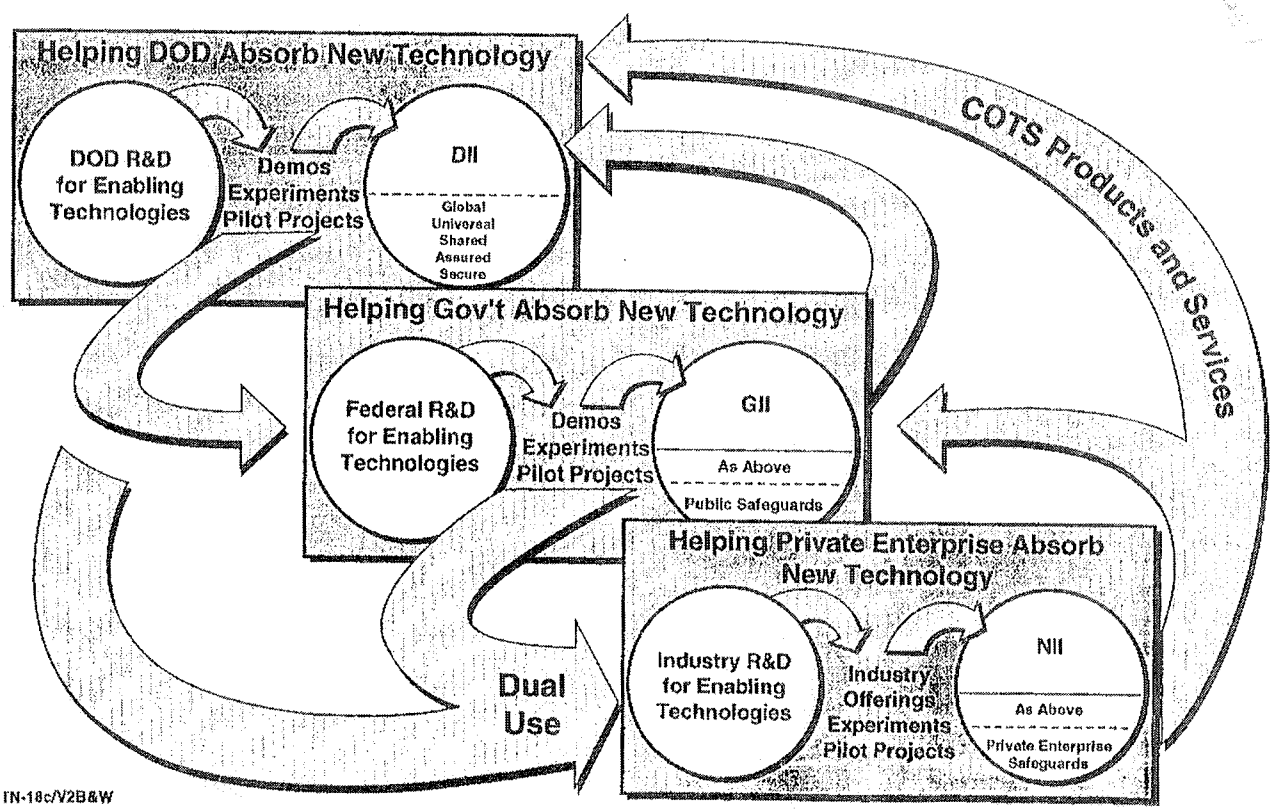
SUMMARY

- USAF C2 migration started before GCCS
- USAF is full partner in GCCS implementation
- AFGCCS is manifestation of USAF HORIZON Concept

CIM-EI Symposium Panel
for
DoD Policy, Technical Standards and Joint Interoperability Initiatives

14 December 1994

Overall Strategy to Obtain IT Products/Services Necessary for the DII/GII/NII



IN-18c/V2B&W

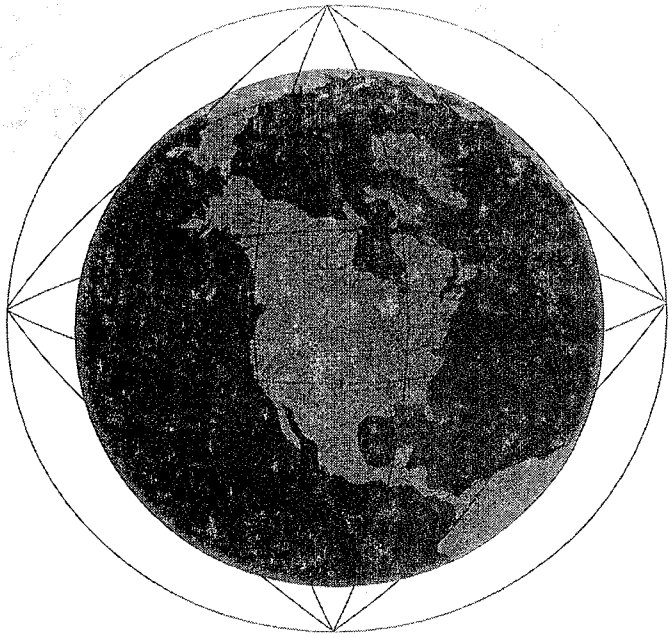
P.2
DEC 13 '94 03:52PM MITRE WDSS

The Defense Information infrastructure

A seamless, global, secure, standards-based, end-to-end information architecture that provides

- assured
- flexible
- and affordable

information services to the warfighter.



Some Key DoD Management Thrusts

Software	Congress	DSB	SMI	DISA/SCE	
Standards	Disa IT Exec Agent	Perry Memo	OSJTF	FIRP	
Interoper-ability	DODD/I 4630.5/8	CJCSI 6212.01	DISA Review/ Certification		
IW / Security	3600.1 MOP 30	DISA DII Protect	JSC	US, NII FXRA	

Defense Information Infrastructure

Seamless, Flexible, Affordable, Assured Information Services for the Warfighter

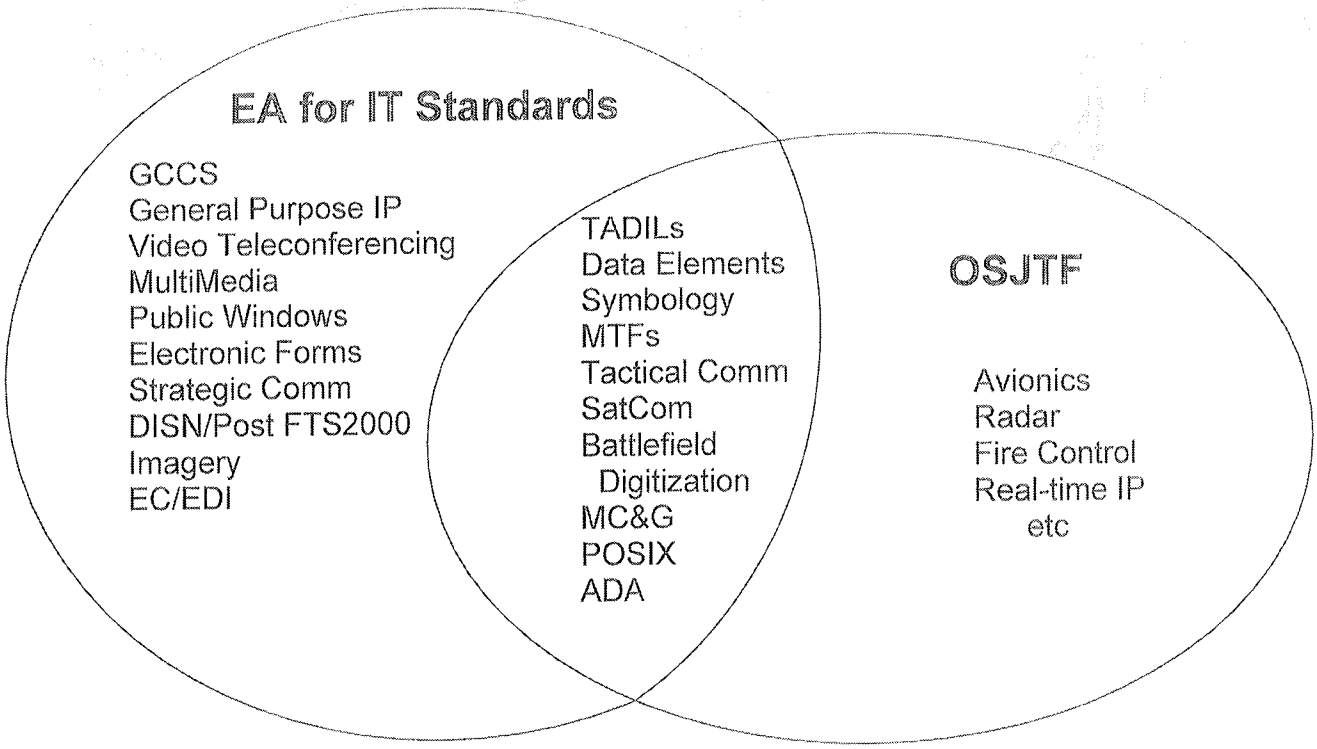
DoD Specifications and Standards

- Perry Memo, June 1994
  - Commitment to performance and commercial standards
- Kaminski Memo, November 1994
  - "Open Systems" standards for acquisition of weapon system electronics to the greatest extent possible
  - Joint Task Force to lead standardization activity

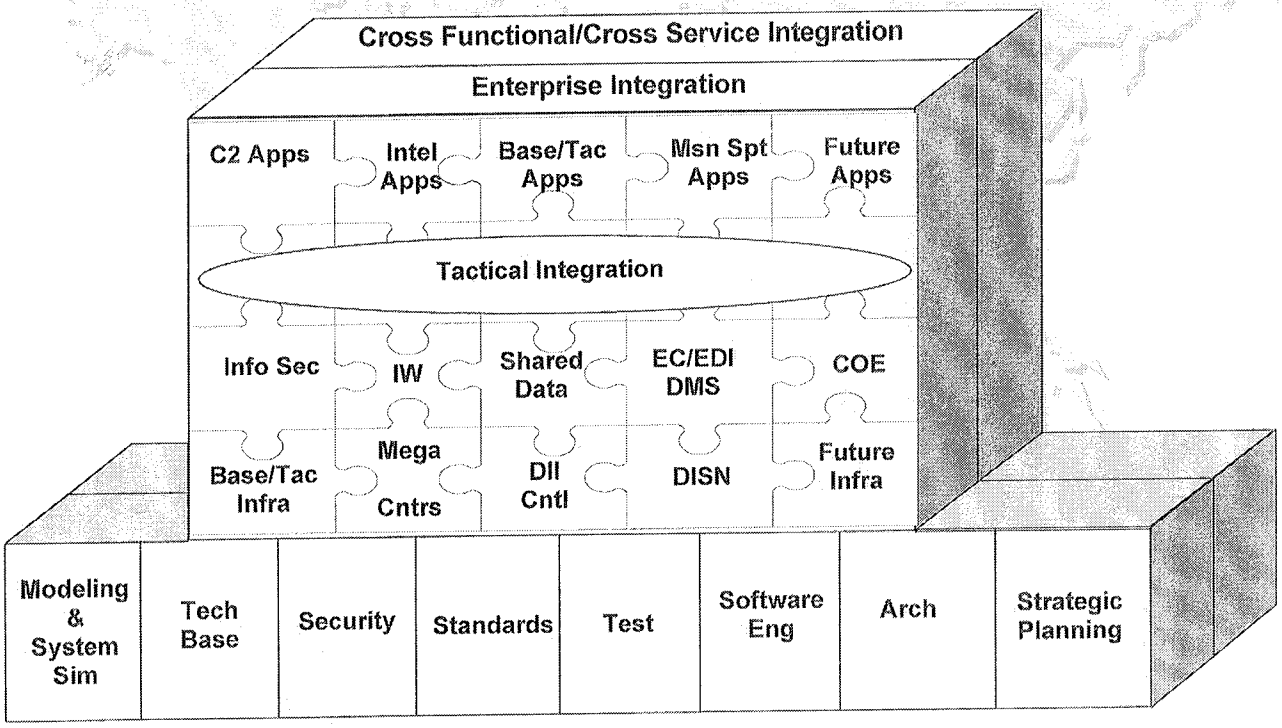
DISA as Executive Agent for IT Standards

- Has been moving in this direction
- Current standards are
  - 99% Performance (interface)
  - 77% Commercial/Internaitonal
  - only 13% purely Military
- Some initiatives
  - Government Industry alliance
  - Early interoperability testing
  - Accelerated process
  - Tie into acquisition process

Relationship



Elements of the DII



Panel Members and Topics

ASD(C3I)

Diane Fountaine

Federal InterNet Working Requirements Panel

A/T

John Burt

Software Initiatives

ASD(C3I)

Barbara Valeri

Information Systems Security

DISA

Belkis Leong-Hong

Software Center

DoD Software Management Initiatives

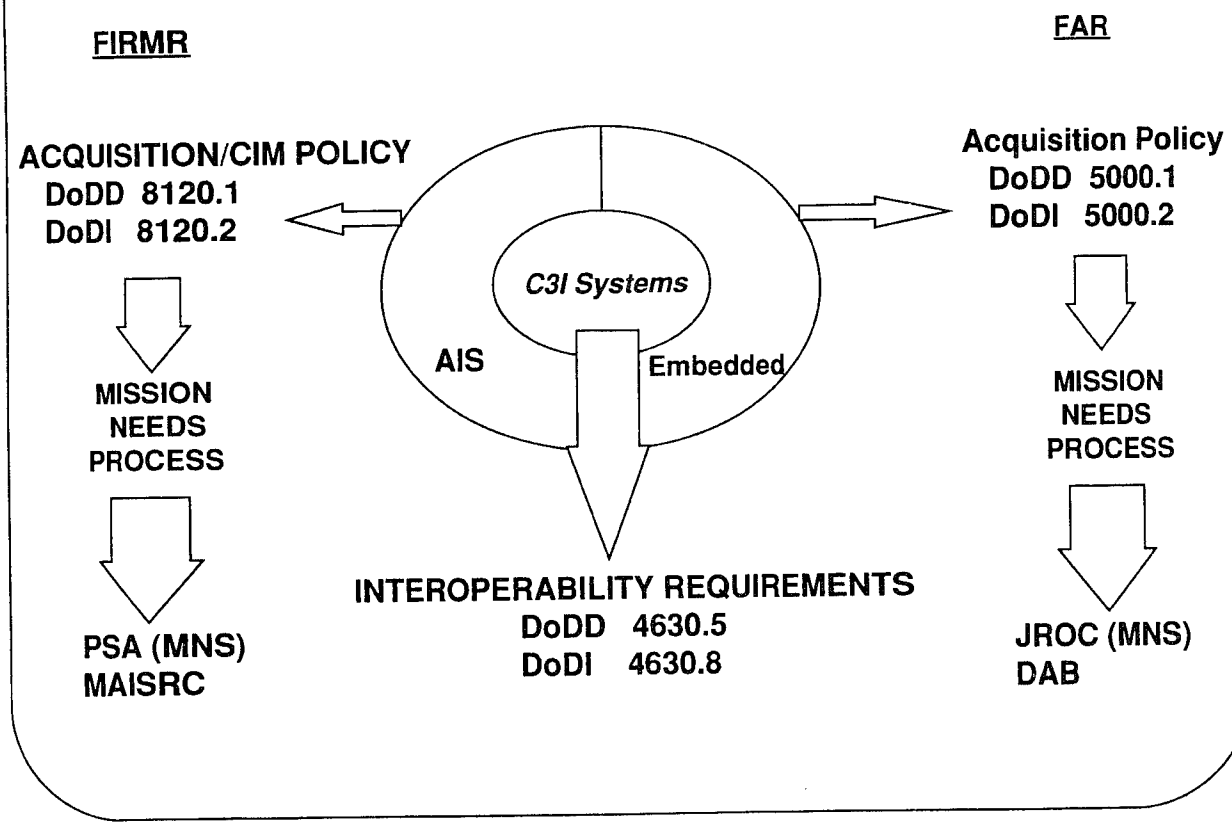
and

Enterprise Integration Symposium

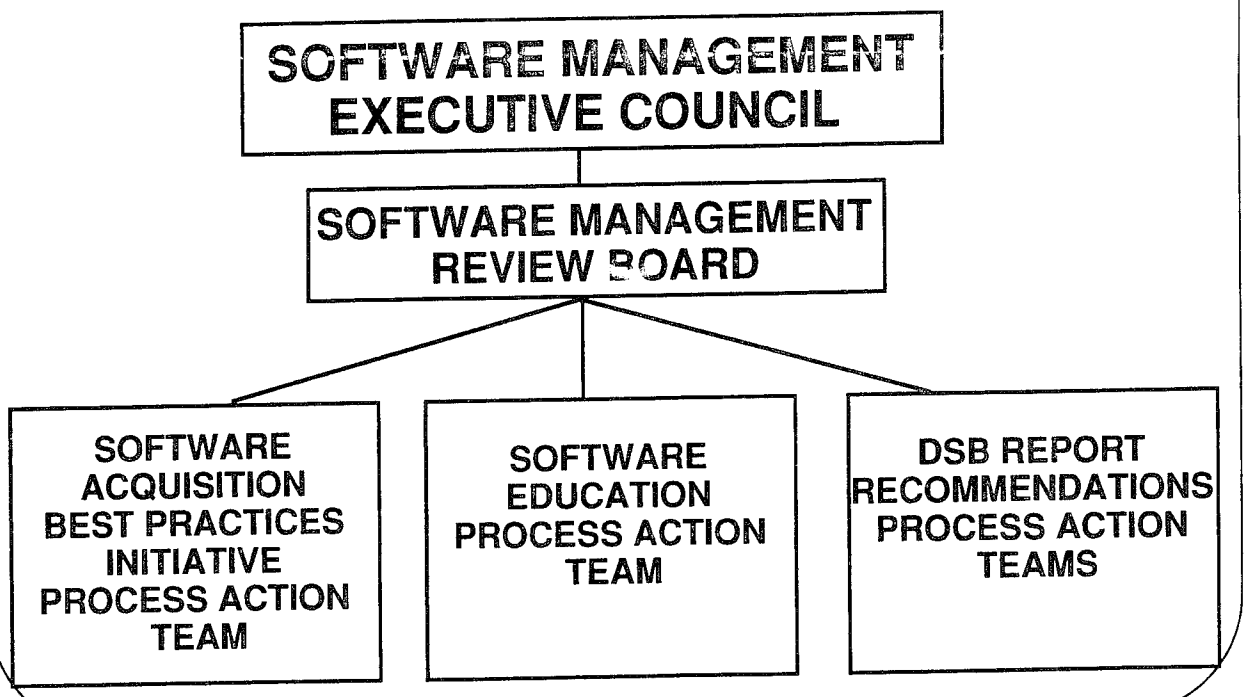
13 - 14 December 1994

John A. Burt
Director, Test,
Systems Engineering and Evaluation
OUSD (A&T)

DoD SOFTWARE ACQUISITION POLICIES



SOFTWARE MANAGEMENT INITIATIVES ORGANIZATION



THE MISSION

- Identify "New Practices"
- Tailor and adapt best practices from other areas to software life cycle processes
- Extended the best practices to a larger scale
- Adapt "Core Concepts" of best practices to other (early) stages of the software life cycle
- Control Panel of Best Practices Initiative will identify “global” techniques
- Concurrent engineering ("Codesign", etc.)
- Controls based on quantifiable measures

SOFTWARE MANAGEMENT INITIATIVES (SMI) OBJECTIVE FOR INTEROPERABILITY:

Provide fundamental access to data between a variety of systems.

- Open Systems Concept
- The Challenge:
  - Different machine locations, multiple software vendors, and various product vintages (legacy and emerging systems)

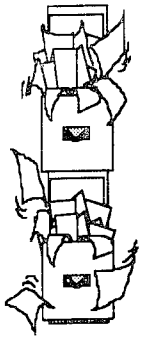
MIGRATION OF VINTAGE INFORMATION SYSTEMS

- Objective:
  - Proper correlation of common data elements among systems
- Implementation by authorized users
- Revalidation of interconnections and access to data

COMMON ACCESSIBILITY TO INFORMATION REQUIRES MORE THAN COMMON INTERFACES

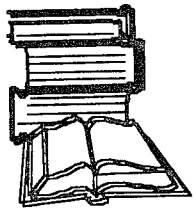


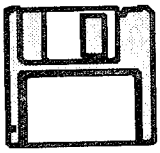




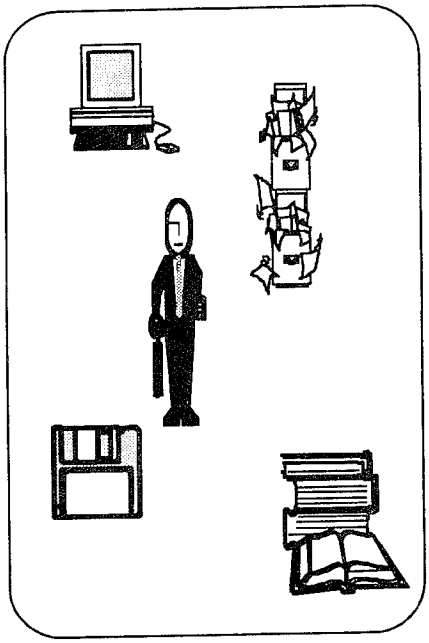
Information System Components

- Data
- Software Applications
- Hardware
- Computer Operating Procedures
- Information Operating Procedures
- System Operating Procedures
- Trained Personnel
- System Physical Resources

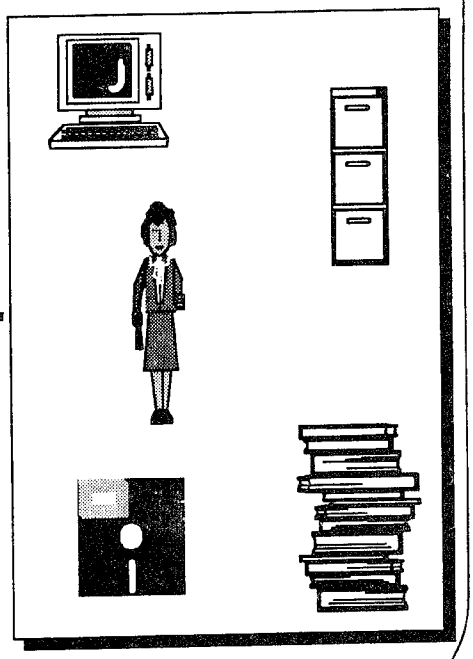




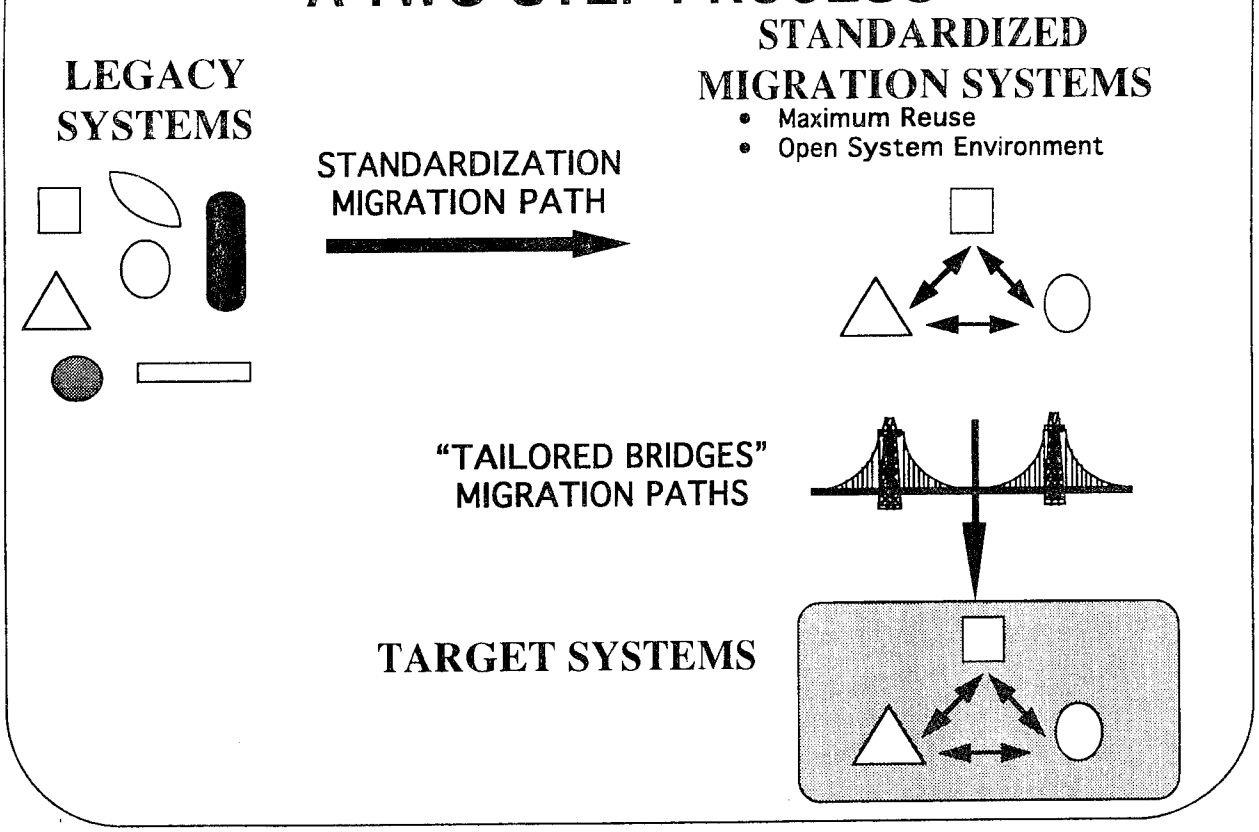
"TAILORED BRIDGES" MUST BE DEVELOPED TO PROVIDE SYSTEM ENGINEERING COMPATIBILITY



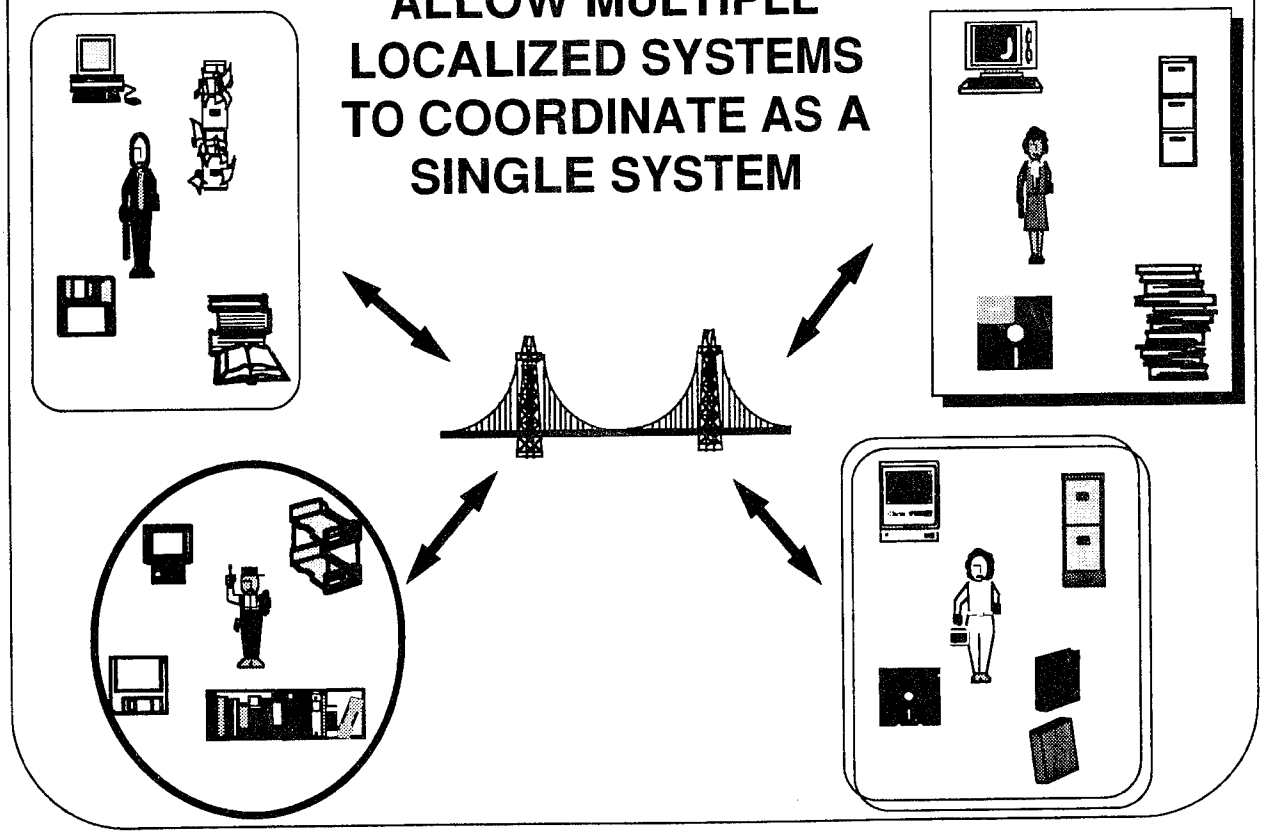




EFFECTIVE MIGRATION PATHS REQUIRE A TWO-STEP PROCESS



"TAILORED BRIDGES" ALLOW MULTIPLE LOCALIZED SYSTEMS TO COORDINATE AS A SINGLE SYSTEM



Examples of existing systems which utilize tailored bridges

- Large banks which acquire small local banks;
- International business which must conform to local customs and procedures;
- Legacy information management systems which share common data elements, but different procedures.

SOFTWARE MANAGEMENT INITIATIVES (SMI) CRITERIA

CONSOLIDATION & INTEGRATION OF DoD CIM SYSTEMS

- "Migration" systems should allow re-engineering for new technologies.
- CIM migrations must allow reuse with any new technology.
- "Migration" systems must not only standardize the interfaces and data elements, but must also standardize systems engineering elements.

  such as the underlying layer of data transfer (protocols, data handling methods, security, etc.)

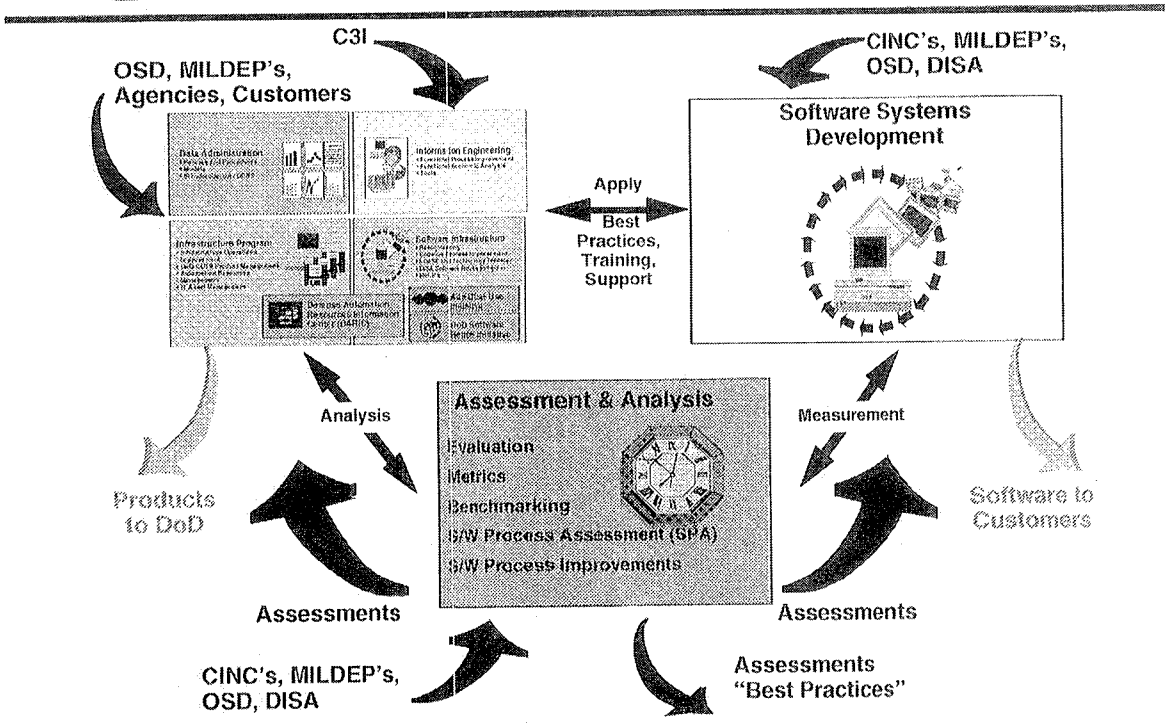
SOFTWARE CENTER OF EXCELLENCE AND DATA ADMINISTRATION

Ms. Belkis Leong-Hong
Deputy Commander

Joint Interoperability and Engineering Organization
Defense Information Systems Agency

14 Dec 1994

Center for Software



Mission

The Center for Software:

- Delivers and supports software products, practices, and processes for DoD.
- Provides software development and life cycle services for DISA information systems and DoD migration systems.
- Provides best business processes, tools, technologies, and methods in data administration, software engineering and development, business processes, DII operations, asset management, and education.

Software Systems Engineering

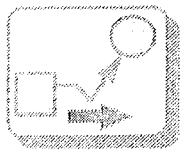
DII Software Infrastructure

Technical Processes and Methods	Tools and Environments	Management Processes & Controls
Domain Engineering Reengineering Domain Models Standards-Based Architectures Reusable Software Assets COTS GOTS Object Oriented Technology	SEE I-SEE I-CASE Object Oriented Technology Ada 9X AdaSAGE DSRS Repository Interoperability	Software Process Assessment Software Process Improvement Metrics/Software Measurement Project Management Acquisition Management Education/Training

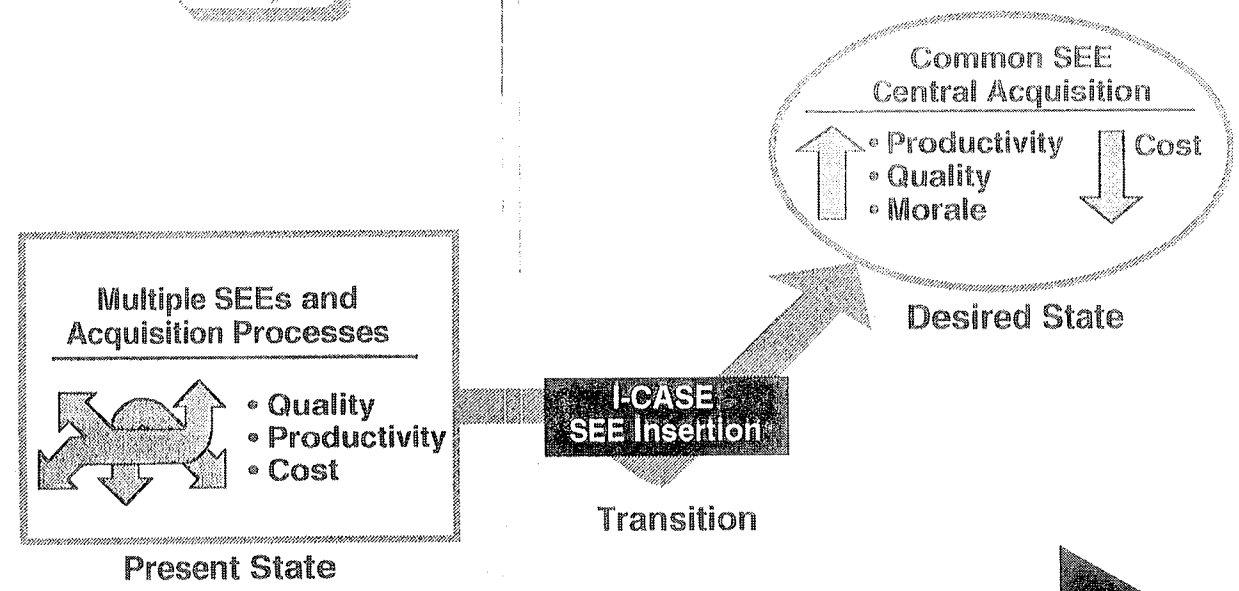
DoD Customer Satisfaction

CDAs
IPCs
PMs
PEOs

Improved DoD Information Systems, Software Life Cycle Management, Customer Services & Workforce Competency

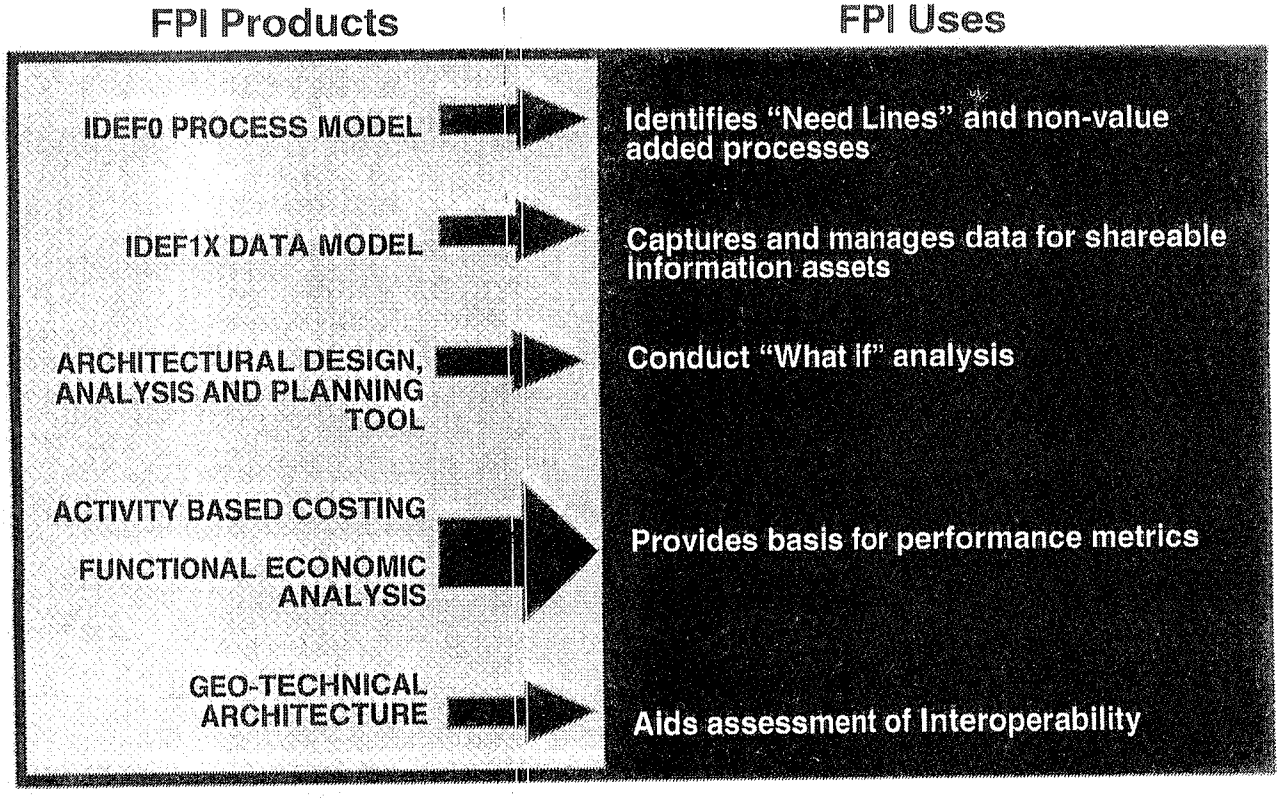


Software Infrastructure
I-CASE Readiness Support Model

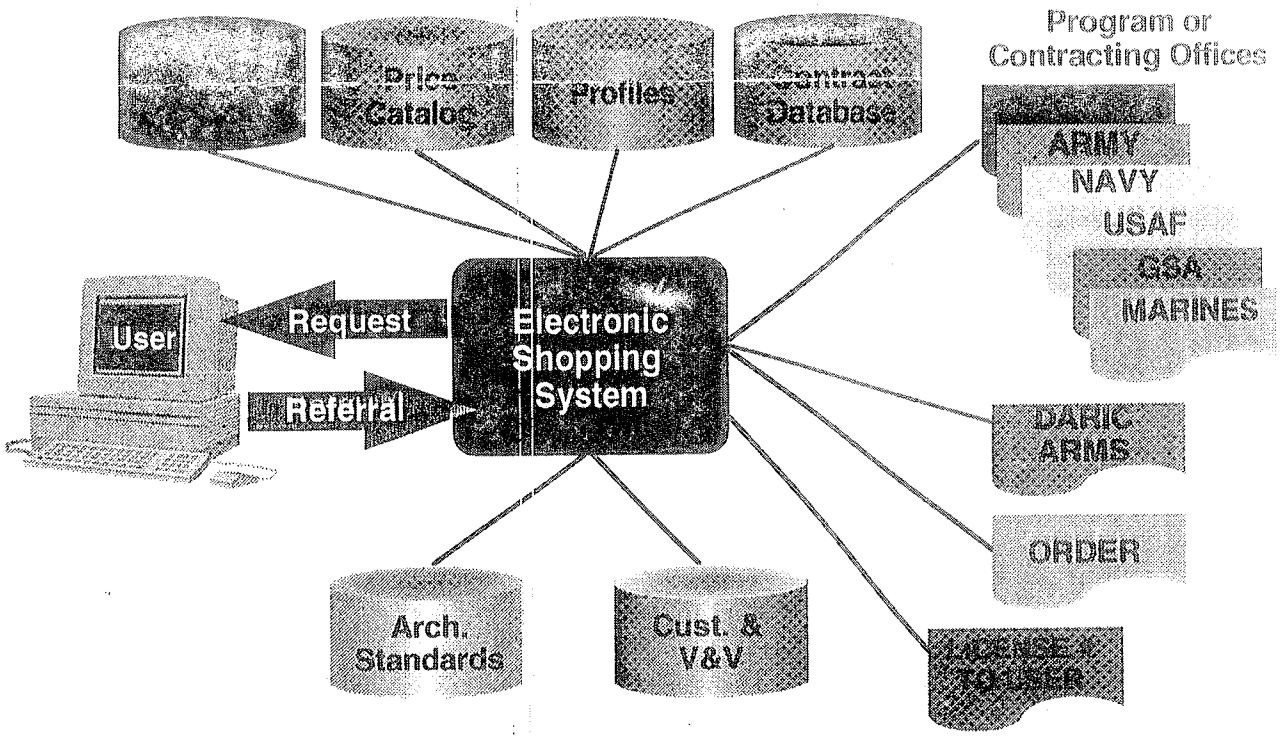




FPI Products and Uses



Infrastructure
IT Store -- Electronic Shopping



Ada Dual-Use

GOALS:

1. Support the Warfighter
2. Accelerate launch of Ada 9X
3. Increase use of Ada in:
   - Academia
   - Commercial
   - Government Sectors

Increase Marketing

- Expand Outreach
- DoD Marketing
- 4 Target Commercial Parallel Markets
- Market Survey

Establish Partnerships

- Early 9X Adopters
- ARPA
- DOE/AdaSAGE
- University BAA
- USAF Academy

Maintain Current AJPO Activities

- Ada 9X
- Validation Test Suite
- Evaluation Test Suite
- Education & Training
- AdaIC Information Dissemination

Provide Support & Incentives

- Bindings
- Compilers
- ATIPs
- Transition Support

Re-enforce Commitment

- DISA Policy
- DoD Policy Recommendations
- Policy Deployment

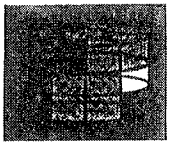
DoD Software Reuse Initiative

MISSION: Establish Reuse as Part of Systems Life-Cycle Management

GOALS:
1. Transition Reuse Technology into Mainstream
2. Develop Infrastructure
3. Effect Paradigm Shift

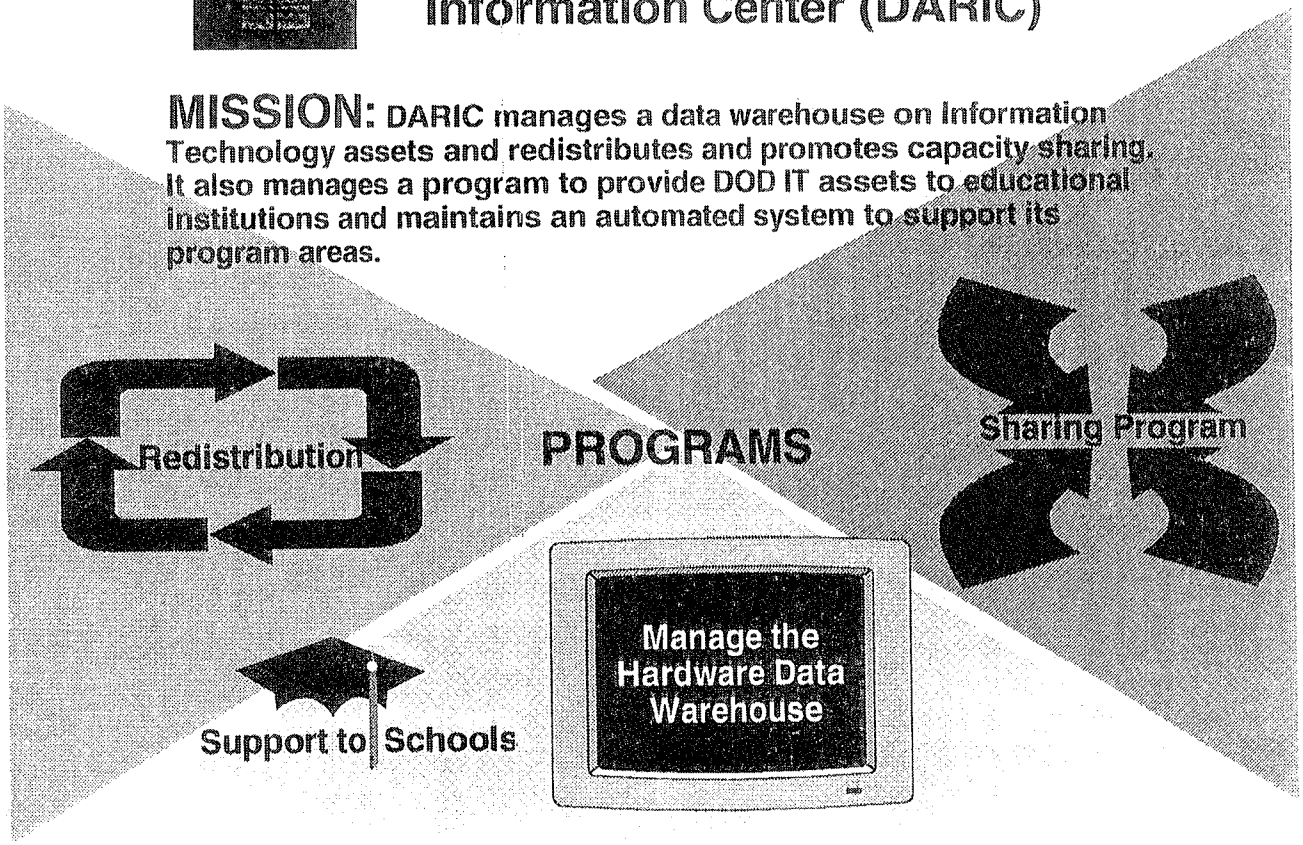
Manage SRI	Promote Reuse	Define/Implement Infrastructure Changes	Manage Reuse Products	Product Line Partnerships
• SRI Infrastructure Establishment • Coordinated Planning • Overall Direction • Tracking and Reporting	• Marketing • Coordination • Information Dissemination	• Organizational • Management Practices • Technical Practices • Education and Training	• Reuse Oriented Tool Sets • Reuse Library Establishment • Virtual Reuse Library • Reuse Library Population and Maintenance	• Services and Agencies • Other Govt. Agencies • Academia • Industry • Feedback and Assessment

Results: Increased software quality and reliability.; Improved management of technical risks; Reduced system development and maintenance time; and Increased productivity

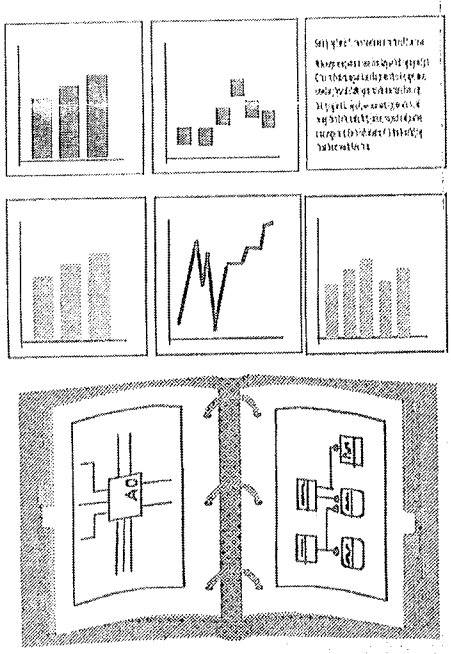


Defense Automation Resources Information Center (DARIC)

MISSION: DARIC manages a data warehouse on Information Technology assets and redistributes and promotes capacity sharing. It also manages a program to provide DOD IT assets to educational institutions and maintains an automated system to support its program areas.



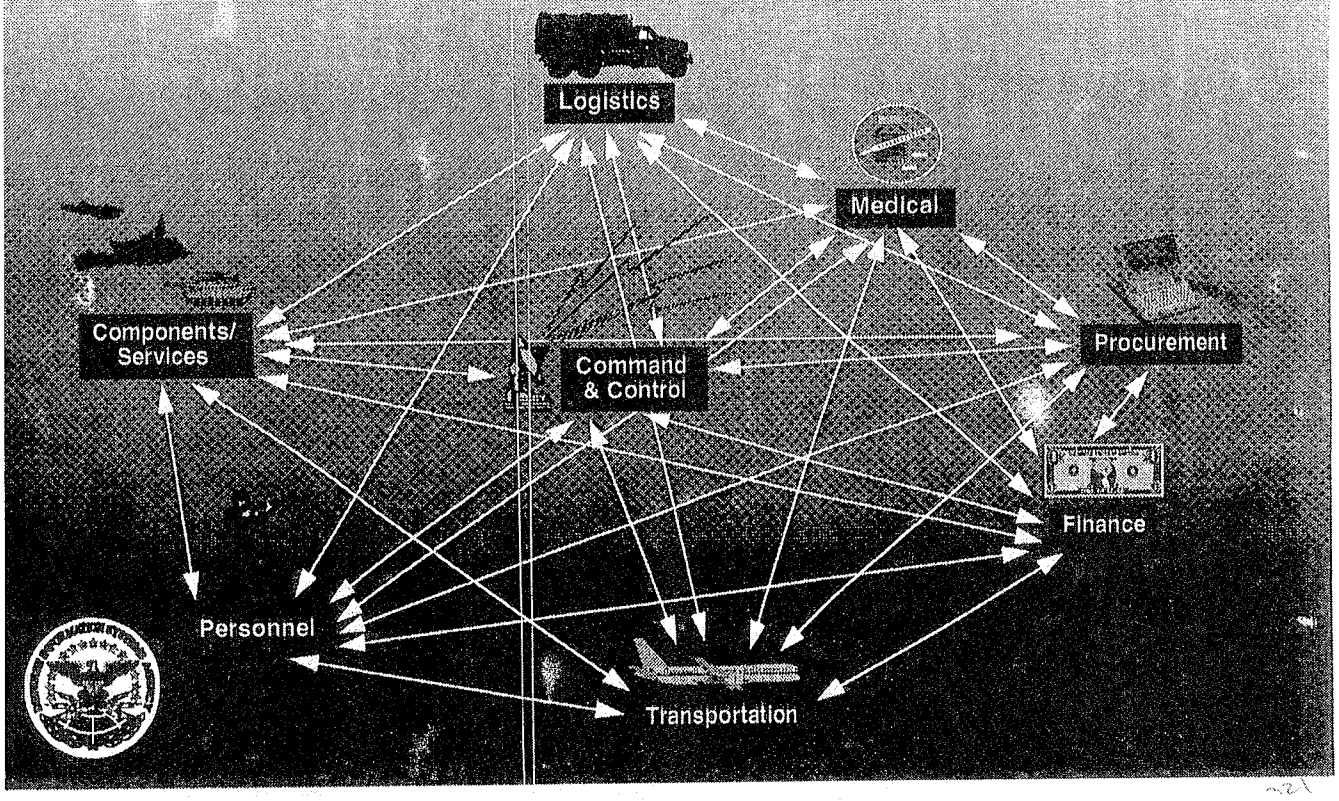
Data Administration Program



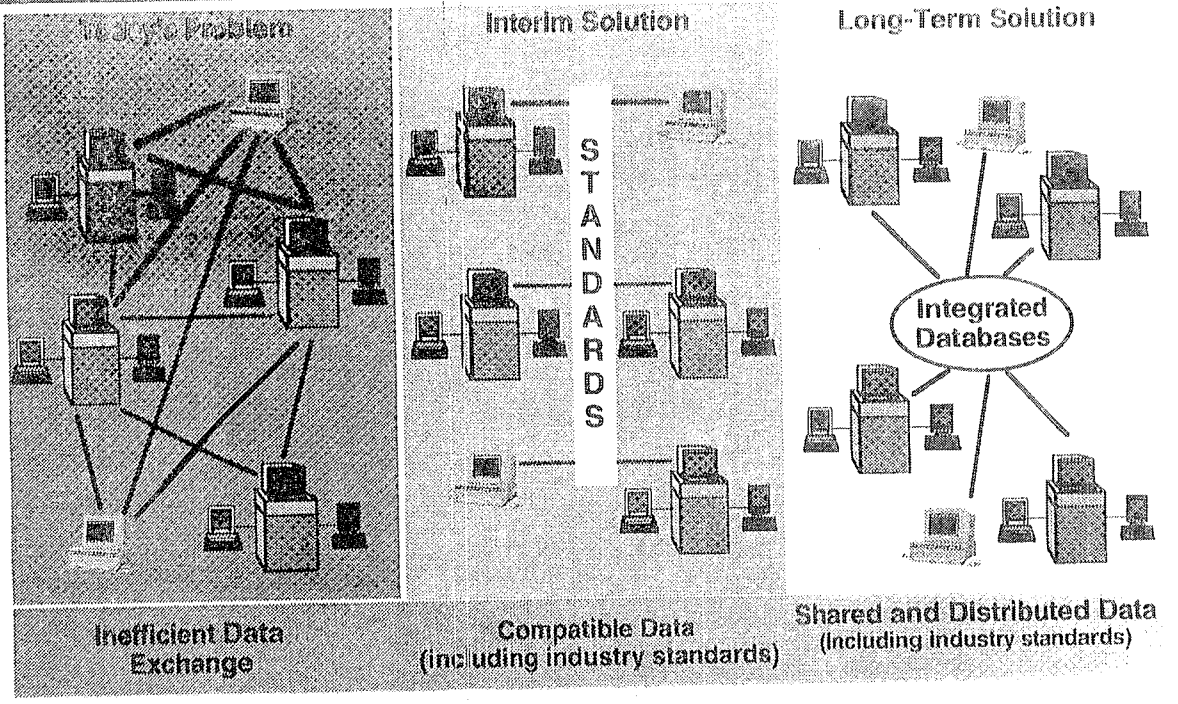
- Policies and Procedures
- Models
- Standardization / DDRS

Data Integration Complexity

Same Data Requirement —
Different Functional Needs and Different Descriptions



Data Administration Interoperability Challenge



Data Standardization Status

JULY 1, 1994

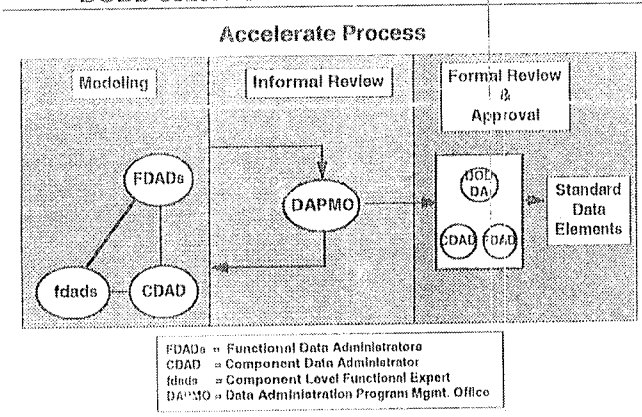
Approved Standard Data Elements (Attributes):	528
Approved Prime Words (Data Entities):	279
Candidate Standard Data Elements (Attributes):	410
Candidate Prime Words (Entities):	77

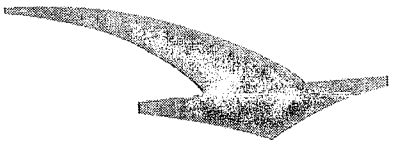
AS OF DECEMBER 7, 1994

Approved Standard Data Elements (Attributes):	1,153
Approved Prime Words (Data Entities):	362
TOTAL (Includes 19 Approved Generic Elements)	1,534
Candidate Standard Data Elements (Attributes):	715
Candidate Prime Words (Entities):	288
TOTAL	1,003

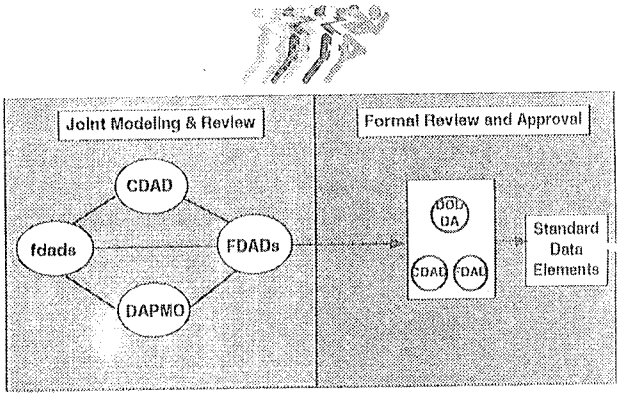
PROCESS CHANGE

DODD 8320.1 STANDARDIZATION PROCESS



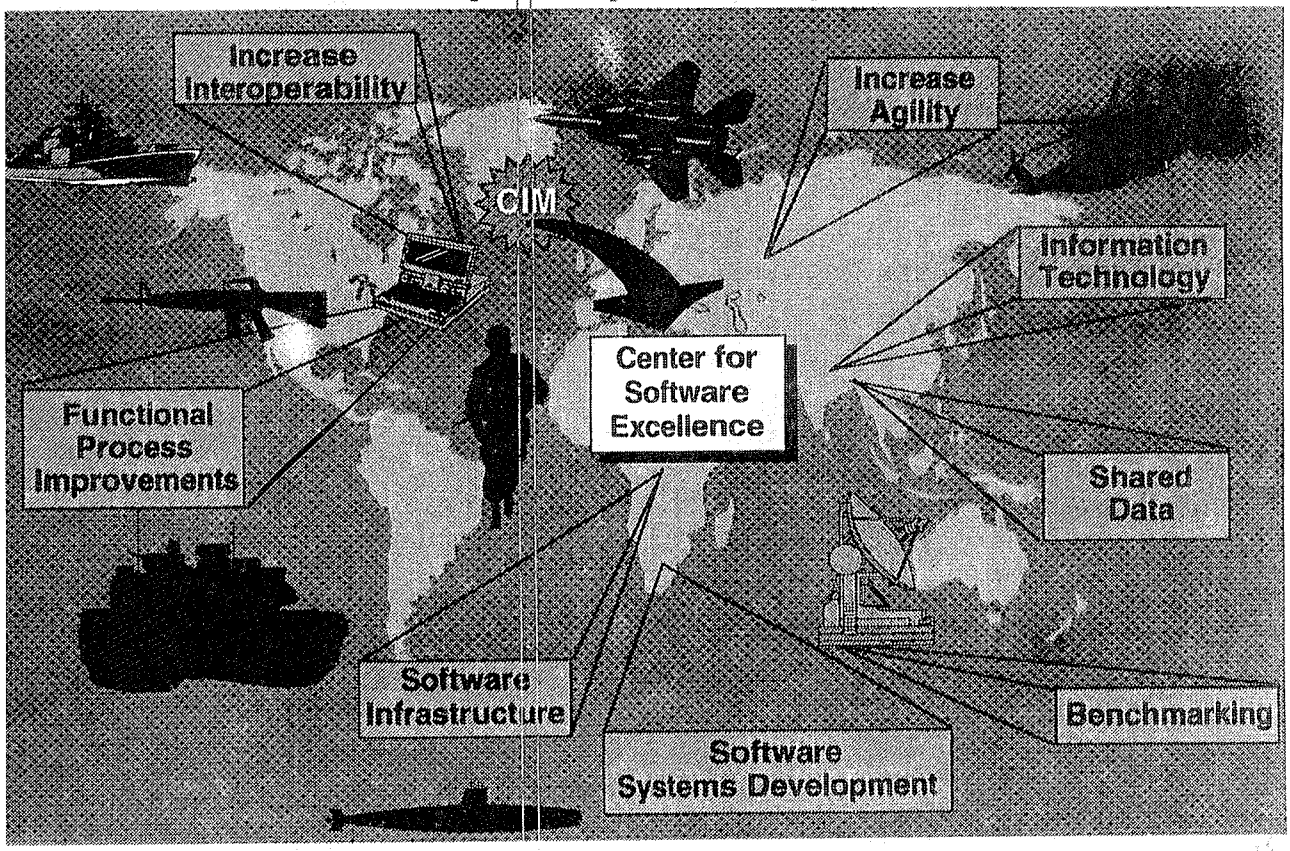


REVISED STANDARDIZATION PROCESS



Expected Acceleration to Solve "Oscillator" Problem.
A-Priori Fixed Time

Improve Interoperability, Flexibility, Agility, and Capability of C2 Systems



DRAFT REPORT RECOMMENDATIONS

Three Major Targets:

- Increased Integration Across Federal Agency Internetworking Activities
- Policy & Technology Assessments Refocused Toward More Integrated & Rapidly Evolving Technology
- Operational Support Better Defined & Formalized

BACKGROUND

Federal Internetworking Requirements Panel (FIRP)

- Origin
- Chartered Scope
- Expanded Focus

GOALS OF STANDARDS

- FULFILLING FEDERAL MISSION NEEDS
- ENABLING INTEROPERABILITY
- PROVIDING FOR SOFTWARE & HARDWARE PORTABILITY
- LOWERING COST

HIERARCHY OF STANDARDS

- INTERNATIONAL VOLUNTARY
- NATIONAL &/OR CONSORTIA
- DE FACTO/MARKETPLACE

SELECTION OF STANDARDS INFLUENCED BY:

- *TECHNICAL*
- *MARKETPLACE*
- *STATUS AS A STANDARD*

DOMINANT PRECEPTS

- **Rapid Evolution Of Technology**
- **Evolving Infrastructure**

  Bleeding ⟶ Leading ⟶ Core

- **Affinity Groups**

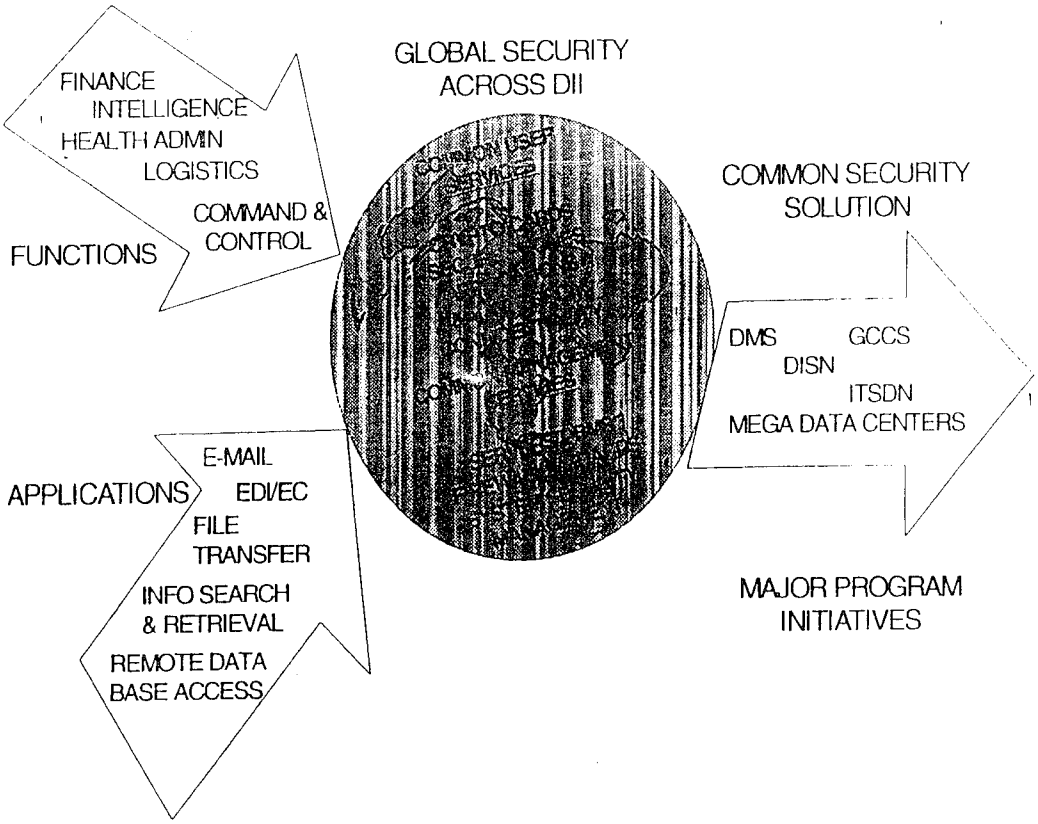
SECURITY CHALLENGES

- RAPID PACE OF TECHNOLOGY
- DEMAND FOR GLOBAL CONNECTIVITY AND INTEROPERABILITY
- INCREASED RELIANCE ON COMMERCIAL PRODUCTS AND SERVICES
- NEED FOR EXPANDED SET OF SECURITY SERVICES

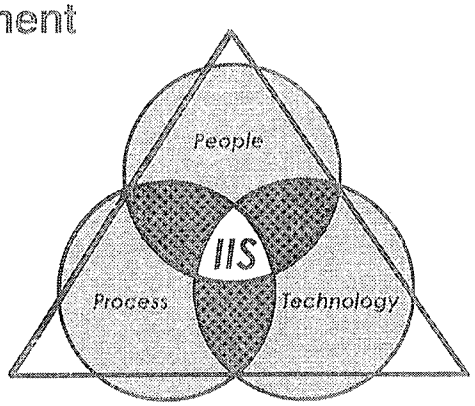
THE VISION - A SECURE DII

- ALL DOD ENTERPRISES CONNECTED TO, BUT PROTECTED FROM, THE GLOBAL INFORMATION NETWORK
- ALL DII TRANSACTIONS ACROSS THE GLOBAL INFORMATION NETWORK SECURED
- POSITIVE IDENTIFICATION AND AUTHENTICATION OF ALL INFORMATION ACCESS WITHIN THE DII
- GUARANTEED AVAILABILITY OF CONNECTIVITY TO SUPPORT CRITICAL FUNCTIONS VIA THE GLOBAL INFORMATION NETWORK

CONVERGENCE OF DII SECURITY



The Department of Defense Corporate Information Management and Enterprise Integration Symposium



Building a stronger team

J. R. Cleveland
December 14, 1994

Eicher/941214/1

Martin Marietta Corporation

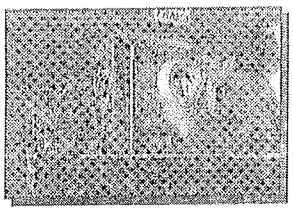
Largest Aerospace/Electronics Corporation in the World

- *Sales ~ $10 Billion, Employees ~ 96,000 ...Operations in 37 States in the U.S. and 17 Other Countries*
- *Designs, Develops and Manufactures Electronics, Software, and Provides Services for U.S. and Foreign Governments and Industry, Including Commercial Customers*
- *Operates Six Facilities for the U.S. Department of Energy in Addition to Sandia National Laboratories*
- *Third Largest Supplier of Aggregates in the U.S.*
- *Product Applications from Depths of the Oceans to the Far Reaches of Space*

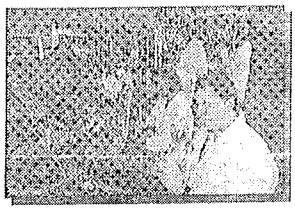
Number 51 on the 1993 Fortune 500 List of Largest Industrial Corporations in the United States

M94PHW00850/02

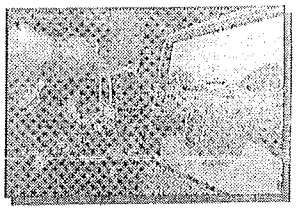
Martin Marietta Corporation



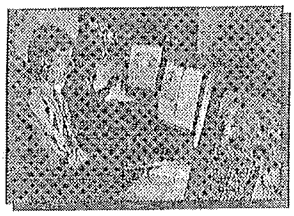
Electronics Group



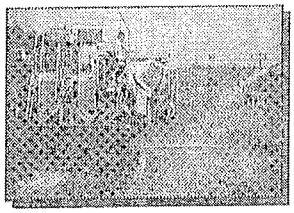
Space Group



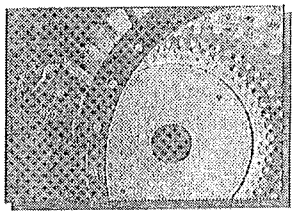
Information Group



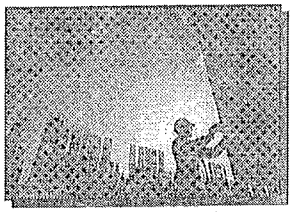
Services Group



Martin Marietta Materials, Inc.

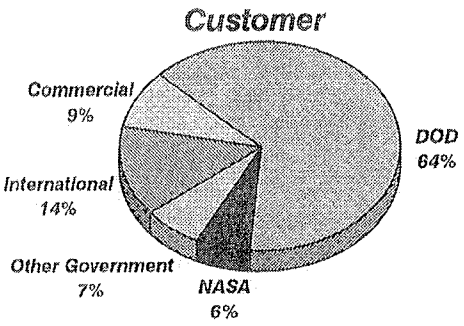


Energy Group

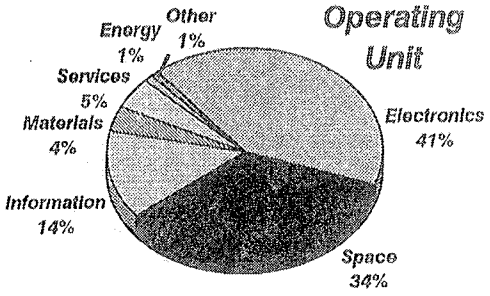


Sandia Corporation

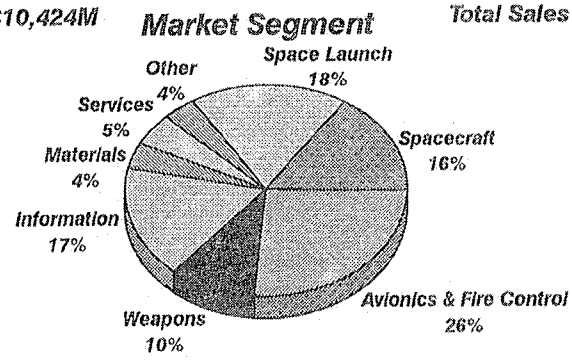
Martin Marietta 1993 Sales



Total Sales = $10,424M



Total Sales = $10,424M

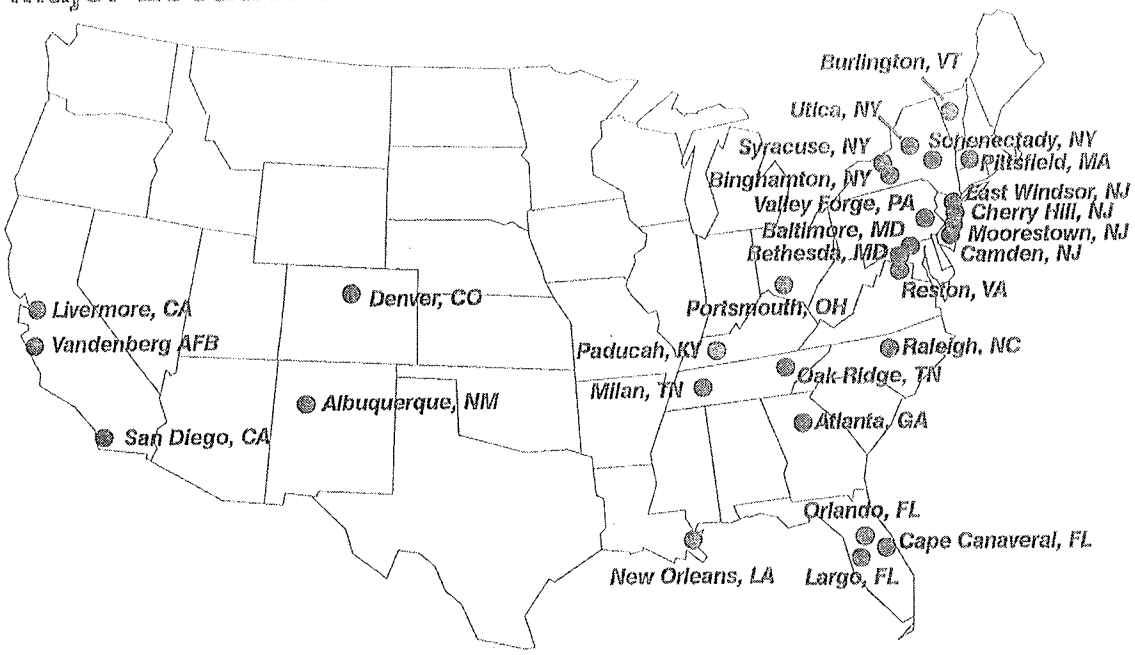


Total Sales = $10,424M

M94PHW00850/09

Martin Marietta Corporation

Major Locations in the U.S.



M94PHW00850A/02

The challenge for IIS

Internal Information Systems

External Business Drivers

- Shrinking defense market
- Industry consolidation
- Changing customer needs

Internal Business Drivers

- Merger activity
- Synergies:
  1+1=1-1/2 (cost)
  1+1=3 (sales)
- Adjacent markets

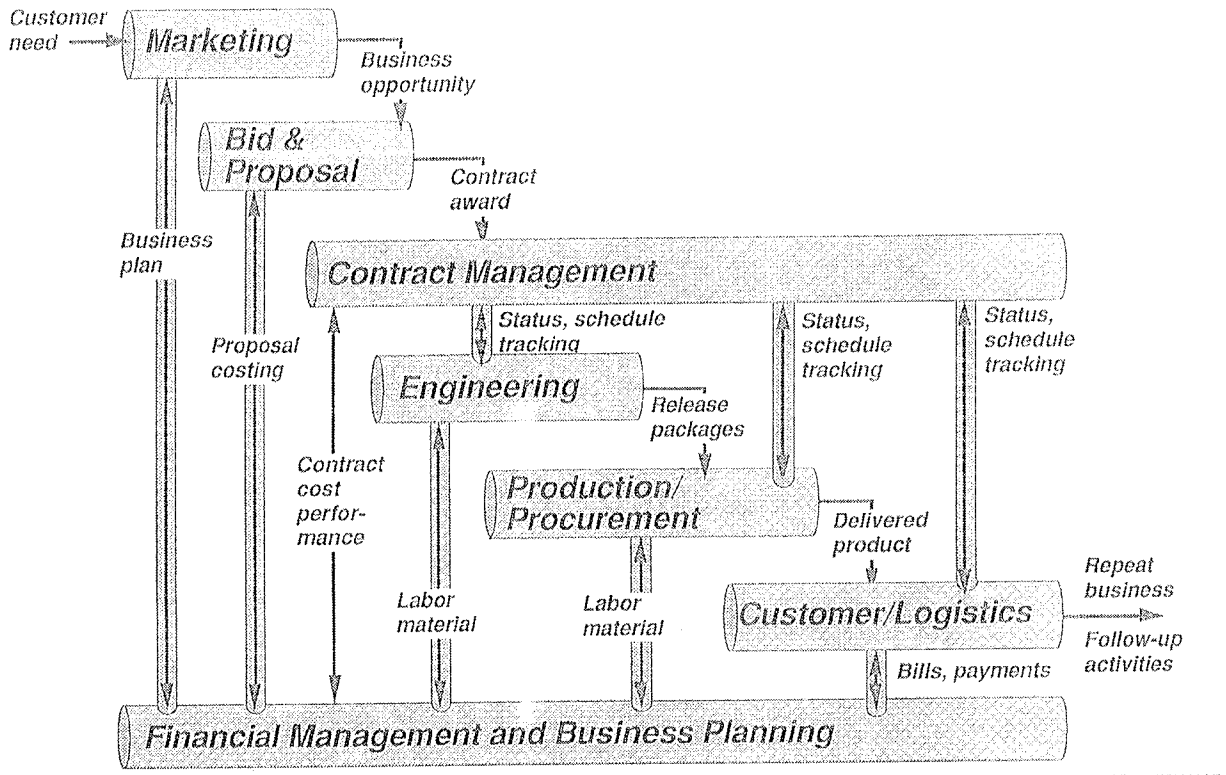
Demand systems with:

- ✓ Faster delivery
- ✓ Adaptability to meet changing business requirements
- ✓ Lower costs
- ✓ Reliability
- ✓ Security
- ✓ Enable business re-engineering and provide a strategic competitive advantage

Simple Driver: Make The Business Successful

Eicher/941214/^/1

Aerospace business process flow



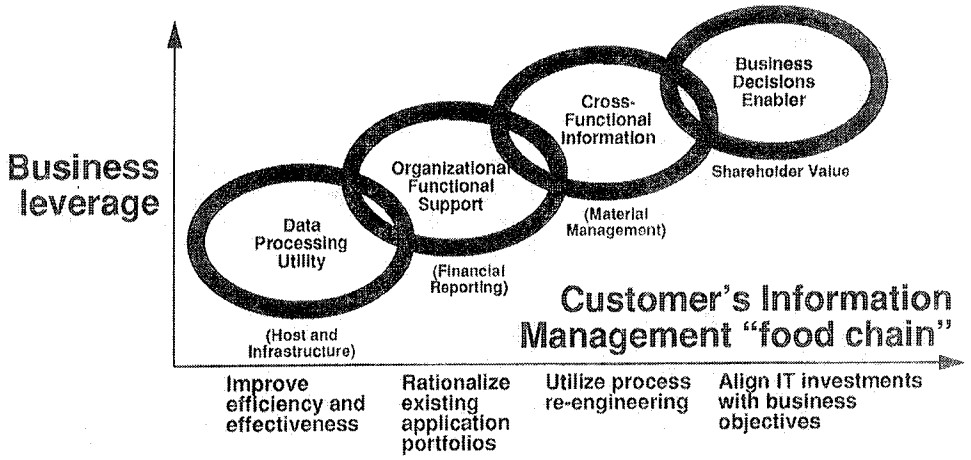
CEOForum/930921/7

Mission

Internal Information Systems

Provide low cost, high quality information services to the business groups we serve.

Leverage opportunities for common processes and systems with a focus on solving business problems and improving customer profitability.

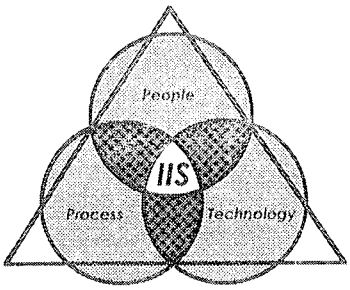


Critical Success Factors

LM-Cleveland/941129/7/12

Obstruction analysis

Internal information systems



Obstruction analysis:

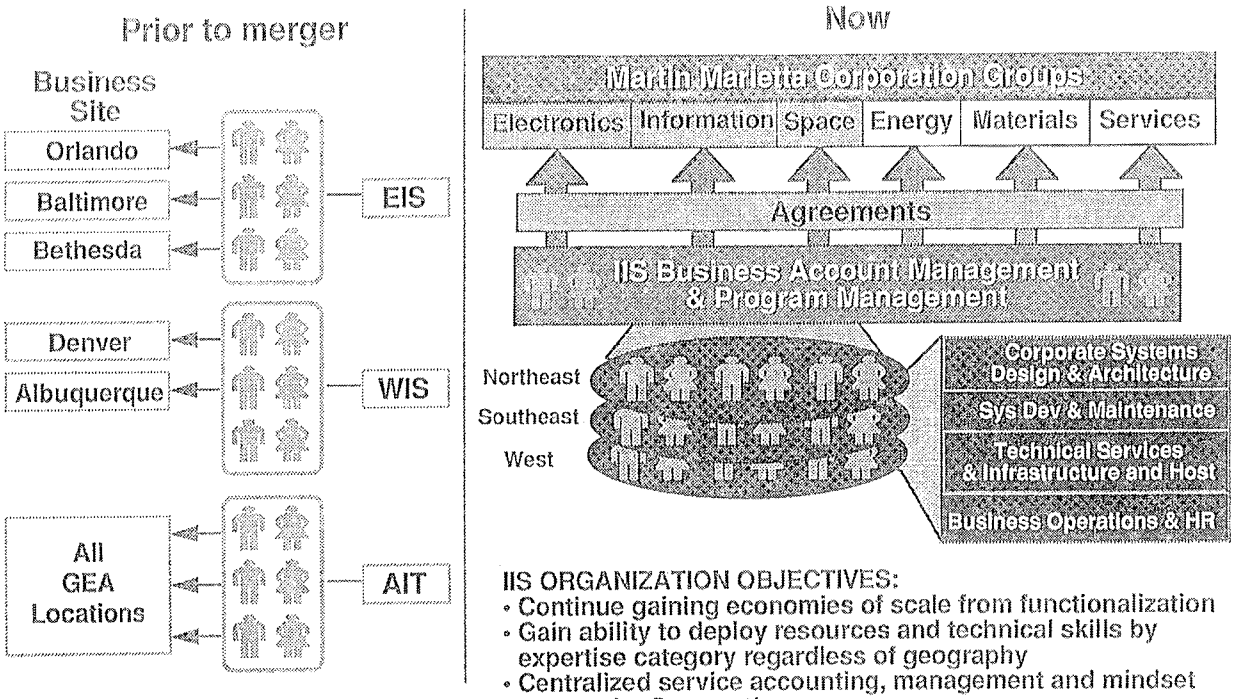
	User/Customer	IIS
People	• Change-adverse • Skeptical	• Lack of common vision • Focus on system vs. value-added information • Competition vs. corporation
Process	• Functional vs. process • Turf battles	• Strong geographic boundaries • Disparate mainframe legacy systems
Technology	• Mainframe Center moving to distributed Unix	• Multiple approaches to client/server and OO tools

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Operational Concept

Internal Information Systems



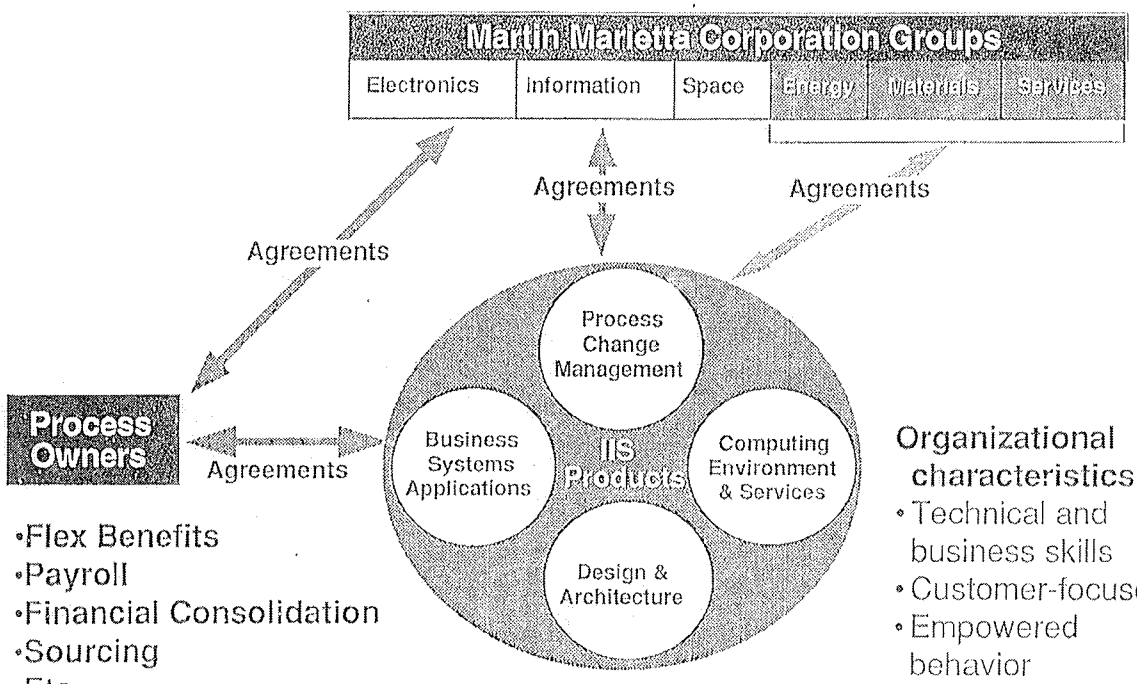
IIS ORGANIZATION OBJECTIVES:

- Continue gaining economies of scale from functionalization
- Gain ability to deploy resources and technical skills by expertise category regardless of geography
- Centralized service accounting, management and mindset across the Corporation

LM-Cleveland/941129/"/22

"Virtual Expertise" organizational concept

Internal Information Systems



- Flex Benefits
- Payroll
- Financial Consolidation
- Sourcing
- Etc.

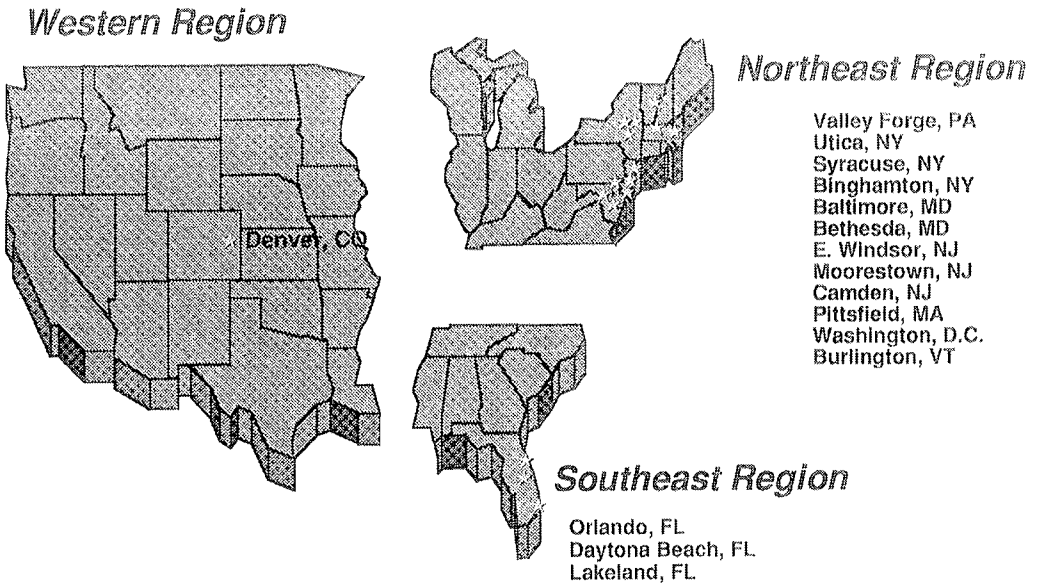
Organizational characteristics:

- Technical and business skills
- Customer-focused
- Empowered behavior
- Values diversity
- Teamwork

LM-Cleveland/941129/"/25

IIS — 1500 people in 3 regions

Internal Information Systems

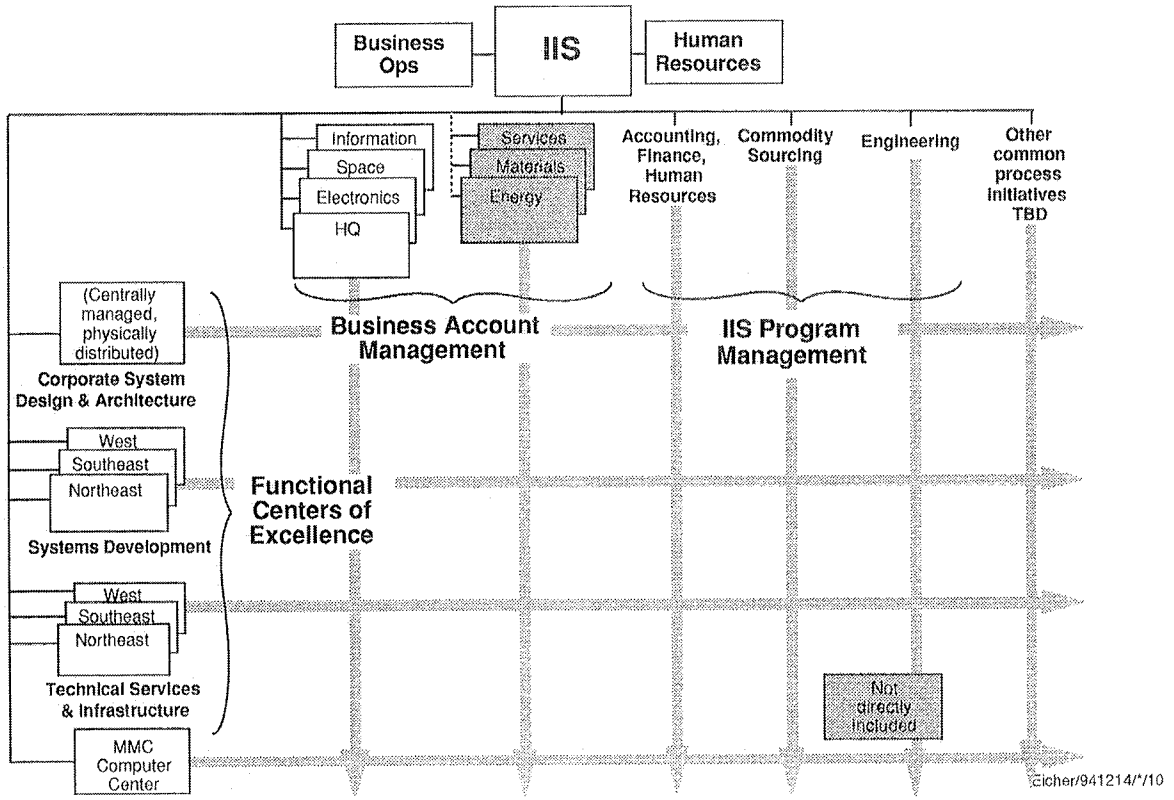


MISSION: Be the provider for internal information technology solutions

Eicher/941214/*/5

IIS organizational concept — customer focused, market driven

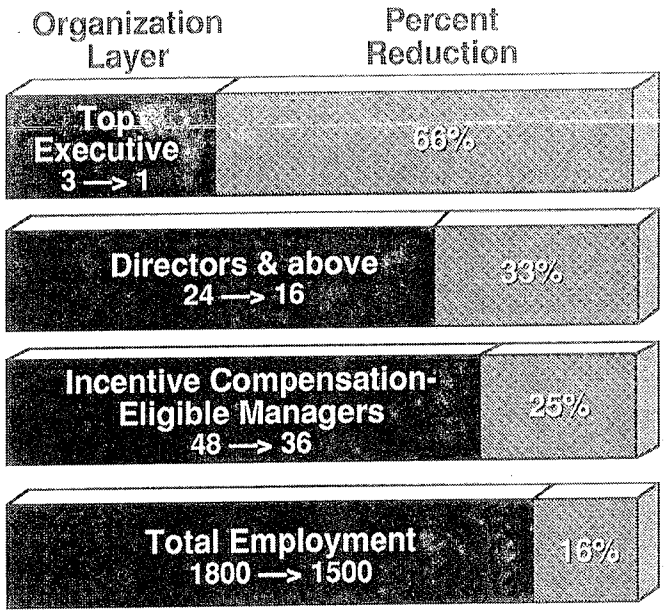
Internal Information Systems



Eicher/941214/*/10

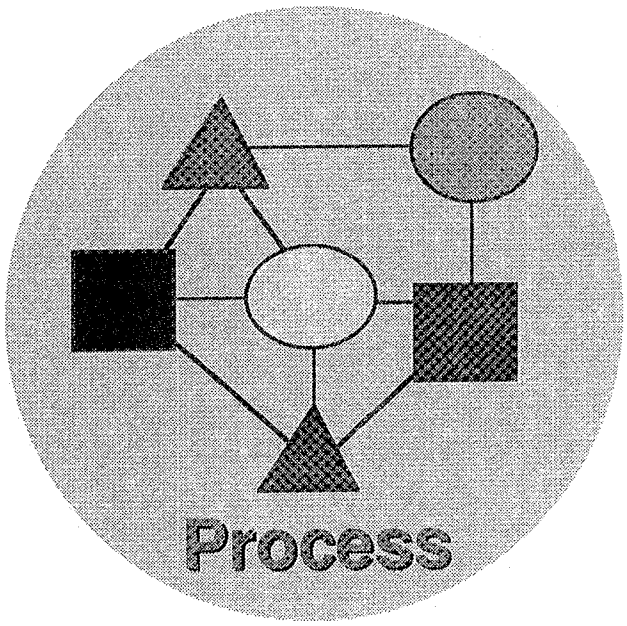
Impact of the new structure

Internal Information Systems



A flatter, more empowered organization

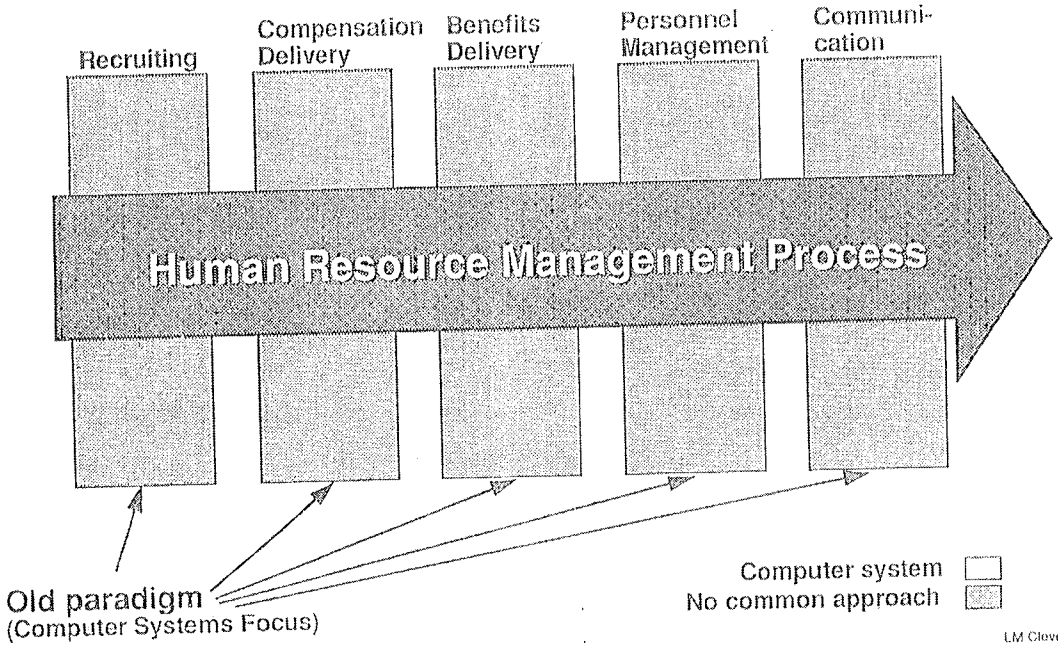
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The process is the real game ... new paradigm

Internal Information Systems

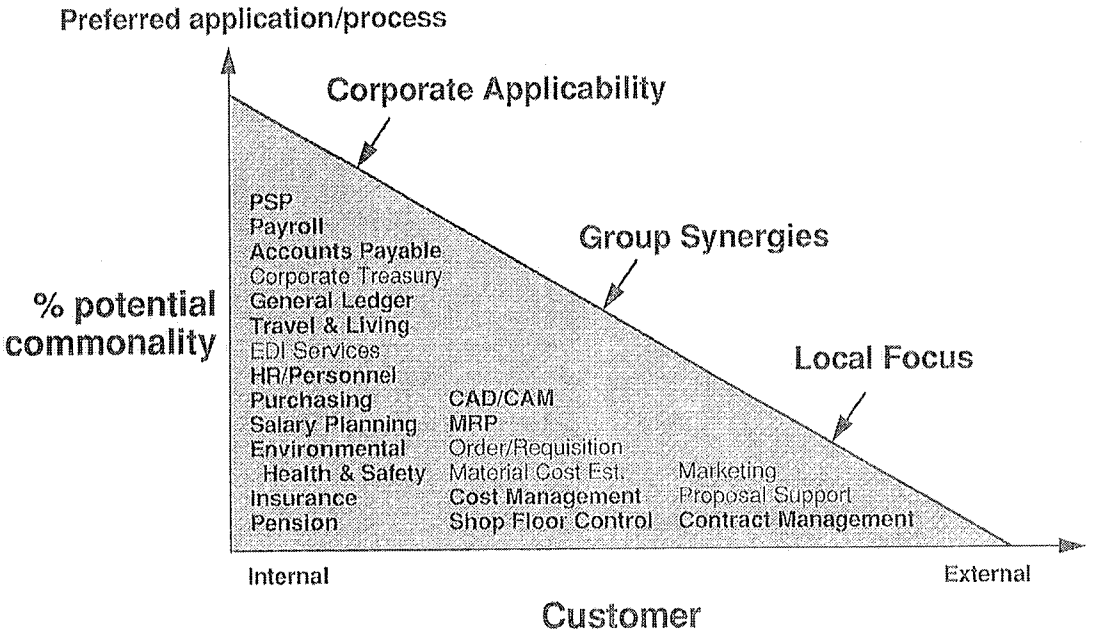
Example



LM Cleveland/941129/*/17

Generic Strategy for Enterprise Systems

Internal Information Systems



As process moves closer to external customer, opportunity for commonality decreases

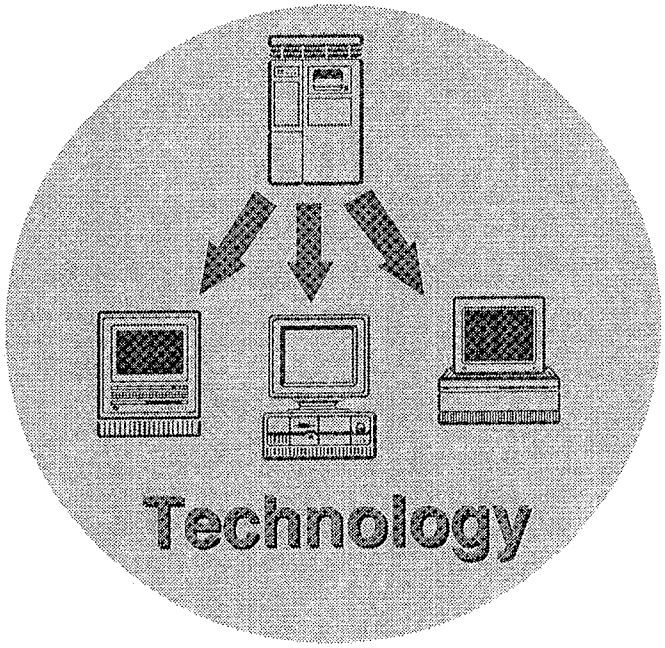
941214/*/12

Rationalizing the application portfolio

Internal Information Systems

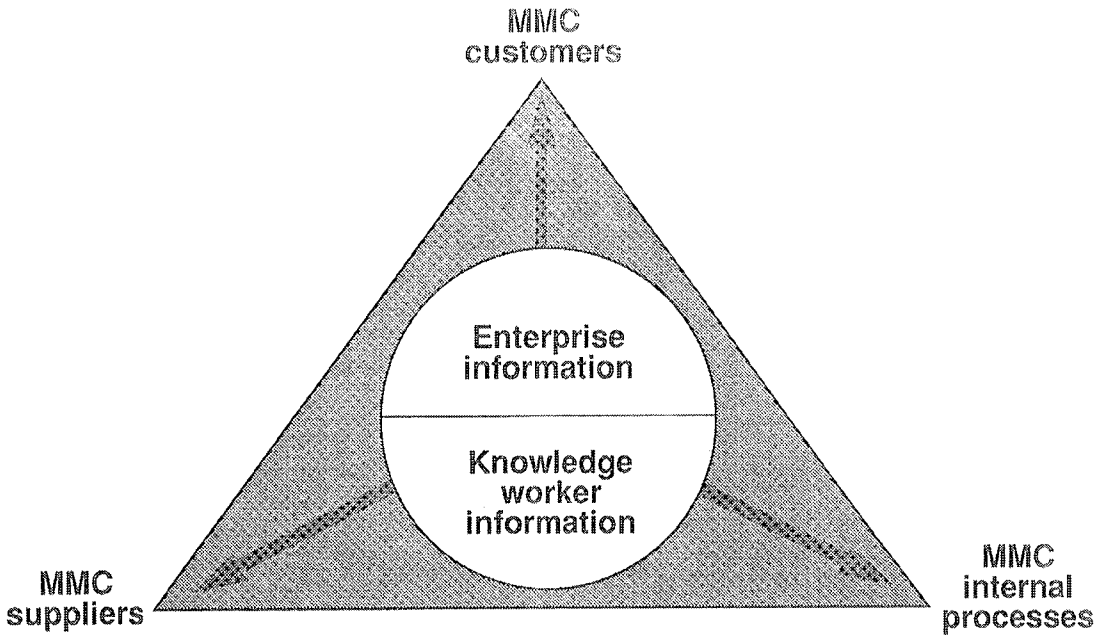
1) Meets standards, architecture, performance; candidate for preferred system	3) Integral to existing business process — candidate for technology insertion
2) Meets individual user requirements, but less than Category 1	4) Lacks standards — old technology, high cost, will be replaced

Eicher/941214/*/13



Strategy for MMC computing architecture

Internal information systems

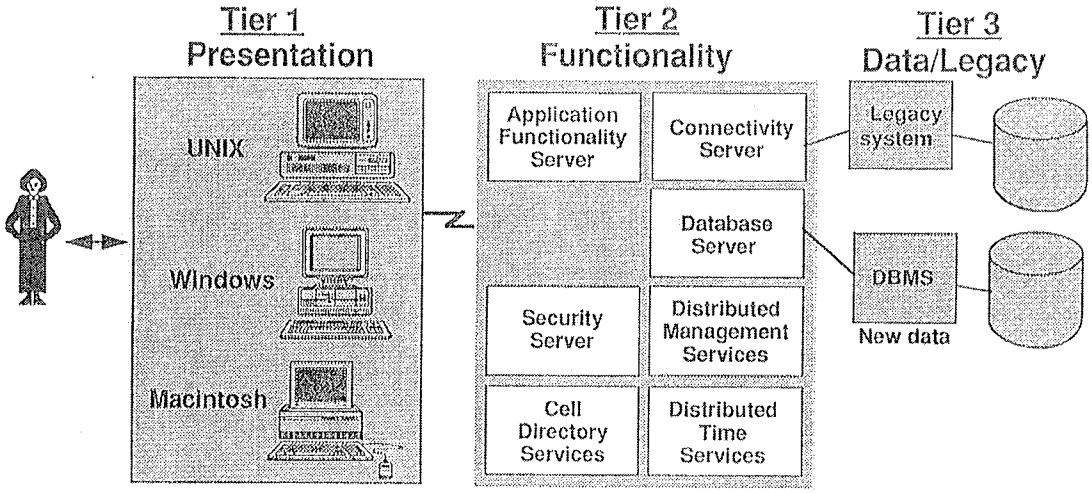


Information management will be the competitive advantage of the future

Eicher/941214/"/10

Technical architecture vision

Internal information systems



Advantages of client/server:

- Faster development
- Increasing availability of COTS products
- Platform independence
- Build on investment in legacy systems
- Moves data closer to user

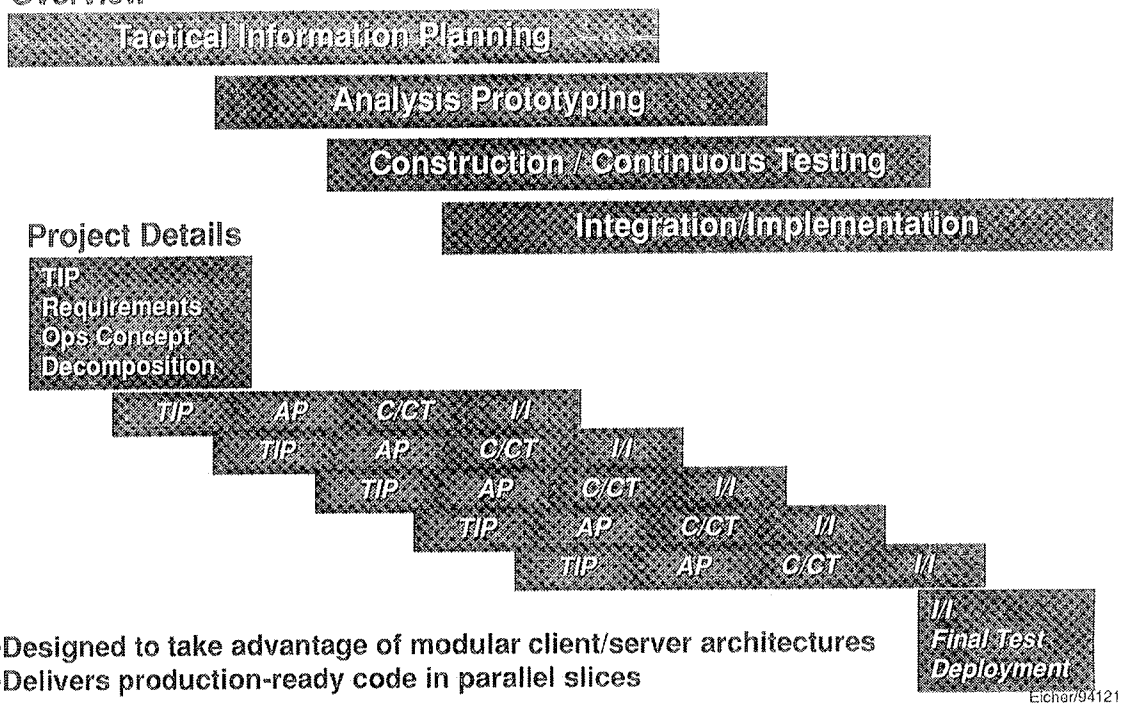
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An approach for developing application systems

Internal Information Systems

Accelerated Application Engineering Process

Overview

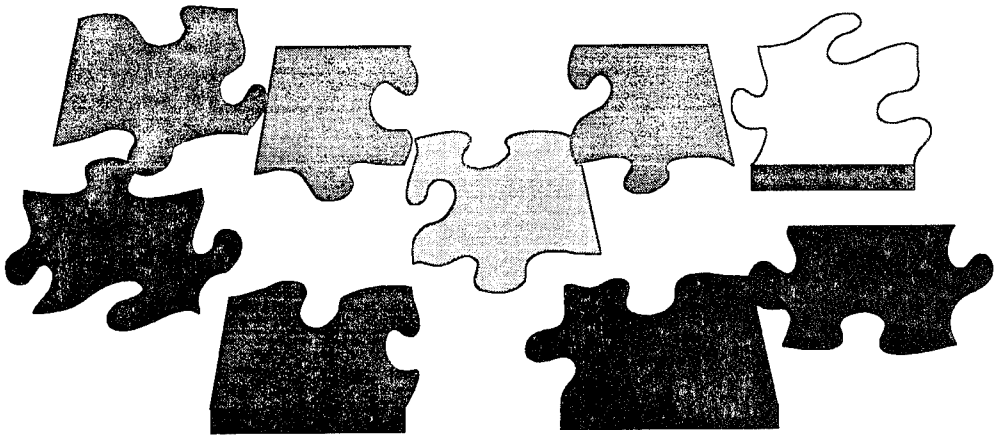


Project Details

- Designed to take advantage of modular client/server architectures
- Delivers production-ready code in parallel slices

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GTE Enterprise Integration

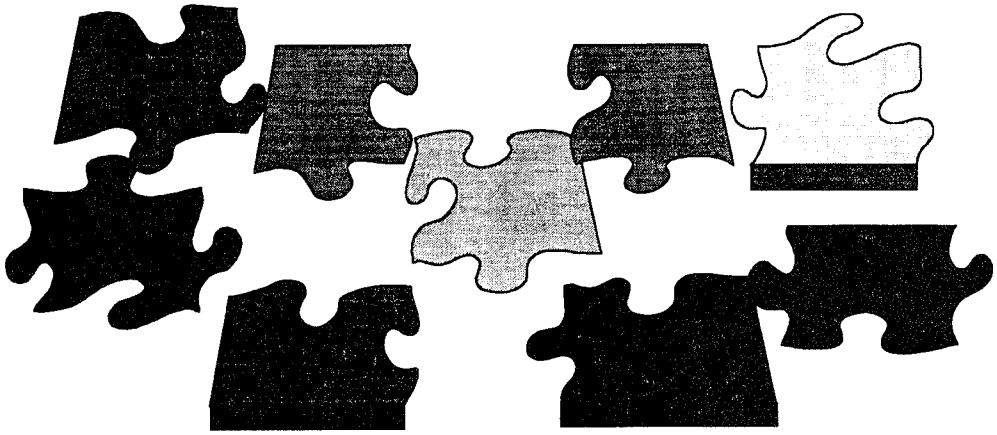


Putting the Pieces Together the Right Way!

Frank Gicca - GTE

DOD Corporate Information Management & Enterprise Integration Symposium Dec. 14, 1994

GTE Enterprise Integration



Putting the Pieces Together the Right Way!

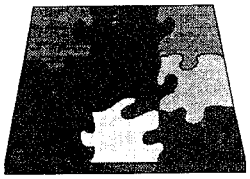
Frank Gicca - GTE

The Problems

- Revolution (client-server/common data) Difficult
  - Too expensive - Legacy and new systems must co-exist for awhile
- Any Change is Viewed Negatively
  - Some try to "wait it out", others fear it, few understand it
- Many Fail to Re-engineer the Process and Functions
  - Traditional efforts focus on applications and systems
- Data still not Universally Available
  - Political, ownership, definition, normalization, and access issues
- Network and Telcom Requirements Often Ignored
  - Results in poorly designed solutions
- Evolution *versus* Revolution
  - What alternatives are available?

What it takes to do it Right

- Know what the Puzzle is Supposed to Look Like
  - Create the new reality: a value-added environment
- Deal with Change Aggressively
  - Create the Crisis and make the changes happen fast
- Form the Right Implementation Team
  - Led by VP, but cross functional to enhance original thinking
- Chart the Course
  - Make a detailed plan and schedule - and follow it
- Implement, Don't Study to Death
  - Analysis paralysis is fatal
- Install the Information Technology Base First
  - Must have the base to help "force" the changes
- Migrate, Don't Leap *(Evolution)*
  - Take it small bites



GTE How We Implemented the Plan

- Established Exec. Group to shape Enterprise Goals
  - Commitment to customers was paramount
  - Long Range plan created
- Reward System Implemented



  - Incentivized business units by giving them percentage of savings
- Technical Infrastructure Needs Identified
  - Ensured that environment would be available to support changes
- Re-Engineered Applications with CASE Tool
  - To reduce development time and maintenance costs
- Created a Phased Approach
  - Each Phase monitored and "managed" by senior management

GTE Lessons Learned

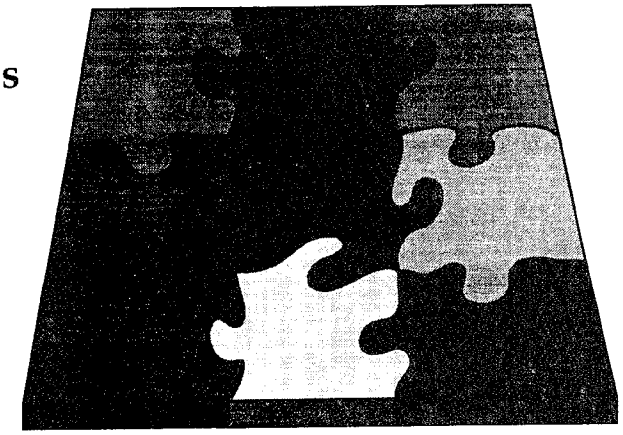
- Champions Must be Committed
  - Top level involvement essential
- Identify the Compelling Case for Action
  - Create a Crisis atmosphere...SELL IT!
- Use Outside Resources to Ensure Objectivity
  - Consultants can also help break logjams
- Choose the "Value-Added" Path
  - But attach no blame for the existing process
- Involve the Customer and Front-Line People
  - Shift to "Outside-In" thinking - Look at processes as a customer
- Install the New Information System First
  - Verify it works, then implement organizational changes
- Stimulate Innovation
  - Through rewards and "Best Practice" discovery

More Lessons Learned

- Maintain a Sense of Urgency
  - Change is essential for survival - be biased toward action
- Adherence to the Long Range Plan Essential
  - Define "architecture" early - follow the road map
- Centralize only where Necessary
  - Empowered employees is the key to success
- Watch out for Rice Bowls !
  - Use bottom up justification and force proof of value added
- Modeling and Metrics Essential
  - To ensure correct technology is used
- Accept Something Less than Perfection
  - Must continue forward momentum - EVOLVE
- Communicate!.... Communicate!.... Communicate!

Summary

- Enterprise Integration Can be done the Right Way!
- Significant savings are possible
  - Investment essential to success (Corporate "seed money")
  - GTE started 5 years ago - *there is no instant success*
- Requires:
  - Commitment at all levels
  - Detailed planning
  - Vision
  - A little bit of Luck



A Brief History of Data Resource Management at The Boeing Company

December 14, 1994

Dr. R. Peter Dube
Vice President, System Integration
Boeing Information Services

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Boeing Information Services
System Integration

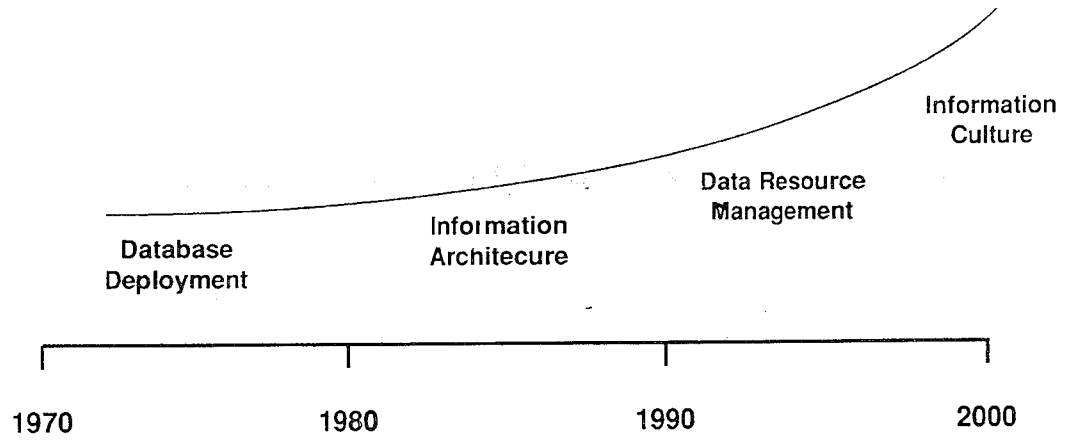
A Brief History of DRM at Boeing

- Circa 1982
- Circa 1990
- Circa 1994

DRM at Boeing - A view in the year 2000

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An Historical View of Data Management



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- **DRM at Boeing - Projected view in the year 2000**
  - Data viewed as a critical asset of the enterprise
  - Autonomy at the individual business units with a recognition that their future is tied to data interoperability with their partners, suppliers, and customers
  - Data Resource Management viewed as an integral business process within the enterprise
  - Emphasis on continued evolution of the process, technology, methodology, and standards; i.e., close marriage of basic CQI and DRM principles
  - <u>Bottom line: Recognize DRM as a cultural issue</u>

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- Architecture implications for the future
  - Decision support data should be separated from operational data for improved performance and functionality
  - Definition data should provide data models for a subject area
  - Product, process, and methods data should be managed together in a distributed subject area repository
  - Data replication services needed to reduce waste and increase quality of data
  - Data storage and archival hierarchy needed to reduce costs
  - Development of information systems need to include data to support
    - » Common multimedia user interface
    - » System specifications that drive flexible implementation
    - » System implementations that provide just-in-time functionality at reasonable cost and good performance
    - » System support features that reduce maintenance costs and improve quality

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Architecture, Technology & Standards

Boeing Information Services
System Integration

- Standards implications for the future
  - Data manipulation relational language are very mature (SQL)
  - Object data management standards very immature (OMG)
  - Data modeling language standards are emerging slowly (IDEF)
  - Data interchange standards are emerging slowly (SGML, PDES/STEP)
  - Data definition interchange emerging slowly (CDIF)
  - Data repository standards very slow in development (IRDS, PCTE)
  - Remote database access progressing rapidly (RDA)

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- Technology implications for the future
  - Client/server, distributed, multimedia data management will need a breakthrough in technical and administrative infrastructure
  - Object-oriented databases for advanced applications will require heavy pilot activity but payoff potential is large
  - Repository technology needs a great deal more work to support object-oriented and distributed requirements
  - Long-term product and process data retention is a major technological challenge
  - Data interchange and data modeling technologies are key to providing the required infrastructure

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