Overview Briefing

Assistant Secretary of Defense for Networks and Information Integration/
DoD Chief Information Officer
(ASD(NII/DoD CIO)

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13 April 06

Connecting People With Information

CIO/NII Responsibilities

- Networks and Net-Centric Policies and Concepts
- Enterprise-wide integration of DoD information matters

Principal Staff Assistant	Chief Information Officer
US Title 10 **Advise the Secretary**	**US Title 40** **Manage Information Resources**
- Command and Control - Communications and Information Networks - Information Assurance - RF Spectrum Management - Position, Navigation, Timing - Non-Intelligence Space	- Enterprise-level <u>strategist</u> from the information perspective - Enterprise-wide Information <u>policy</u> - Information <u>architect</u> for the DoD Enterprise - DoD-wide information <u>executive</u>

Authorities
- NII Charter (DoDD 5144.1 May 2, 2005)
- Section 113, Title 40, U.S.C., (formerly Clinger-Cohen Act of 1996 as amended)
- Responsibilities and Control Matrix

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CIO/NII Priorities

Lead the effort that will deliver the critical enabling capability required by the National Defense Strategy to **conduct Net-Centric Operations**

– Establish a true Information Age CIO

– Create a 21st century workforce of Information Pioneers

– Ensure information is a critical strategic asset

– Tell a clear and compelling story of where the Enterprise is headed and why

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DoD IT Budget

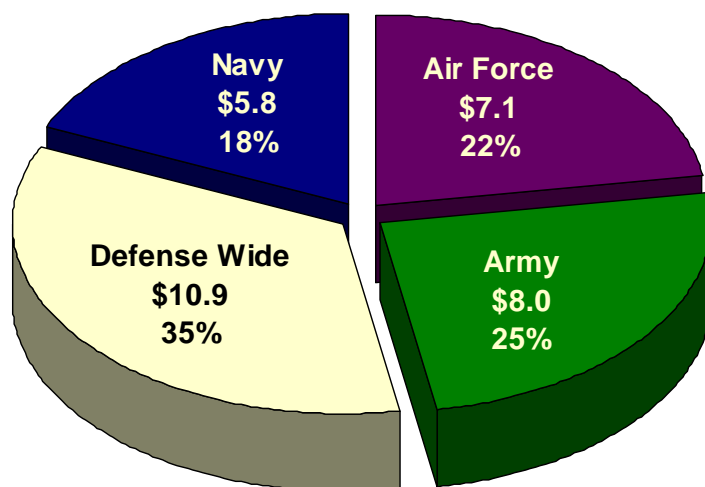| Mission Area:	FY06:	FY07:
Business Mission Area	$6.7B	$6.6B
Warfighting Mission Area	$9.2B	$8.1B
Enterprise Information Environment	$15.7B	$16.0B
TOTAL:	**$31.7B**	**$30.7B**

- Manage IT as an integral part of a total net-centric capability, aligned to the overall <u>needs of the warfighter</u> and the <u>activities that support the warfighter</u>.

- IT resources are acquired and managed consistent with:
  - Joint Capabilities Integration and Development (JCIDS)
  - Planning Programming, Budgeting and Execution (PPBE)
  - DoD Acquisition Management System (AMS)

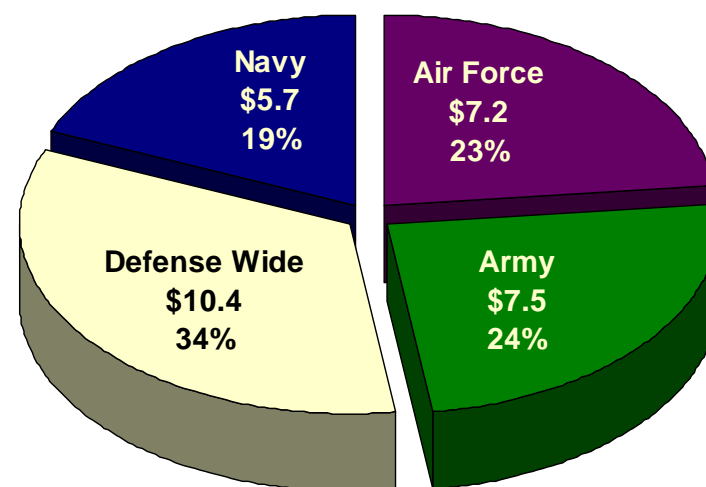*Connecting People With Information*

DoD IT Budget (FY07PB)

(dollars in billions)

FY 2006
$31.9

FY 2006 pie chart:
- Navy $5.8 — 18%
- Air Force $7.1 — 22%
- Army $8.0 — 25%
- Defense Wide $10.9 — 35%

FY 2007
$30.9

FY 2007 pie chart:
- Navy $5.7 — 19%
- Air Force $7.2 — 23%
- Army $7.5 — 24%
- Defense Wide $10.4 — 34%

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DoD IT Budget (FY07PB)

(dollars in billions)
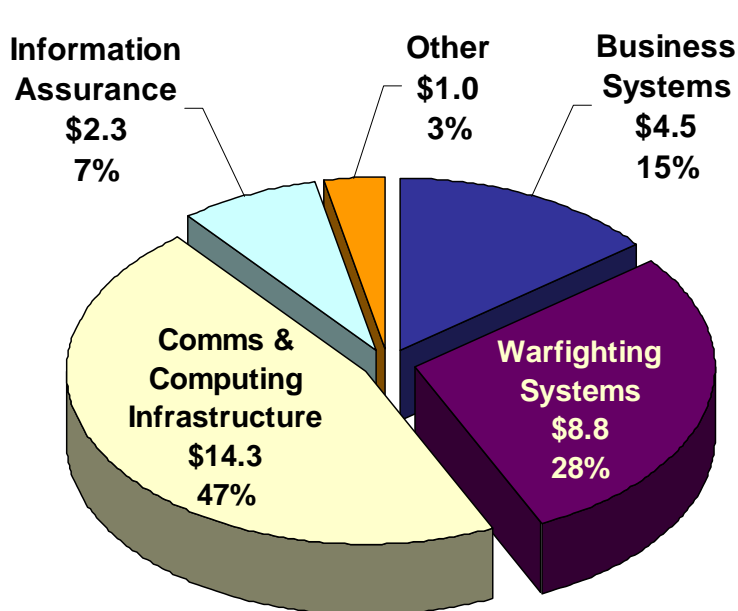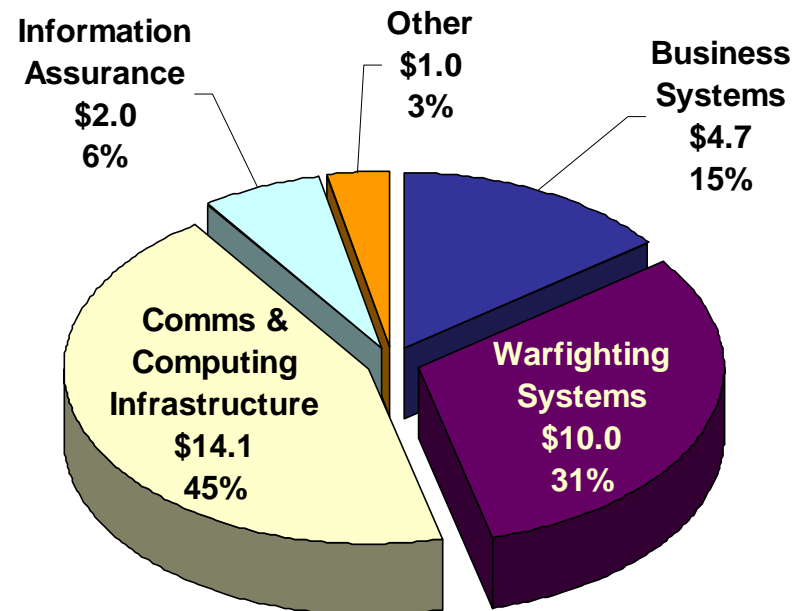
FY 2006
$31.9

FY 2007
$30.9

Challenges: Distributed Responsibility and Authority

Key GIG Initiative	Lead Agency	Milestone Decision Authority
GIG-BE	DISA	NII
JTRS	Army	AT&L
TSAT	AF	USecAF
NCES	DISA	NII
IA	NSA	NII

- Need for end-to-end systems engineering and architecture responsibility noted in multiple studies
  - DOD Inspector General
  - General Accounting Office

Key GIG elements are being built by four lead agencies under three Milestone Decision Authorities

Transforming National Defense -- Net-Centric

National Security Strategy

Transform America's national security institutions to meet the challenges and opportunities of the twenty-first century.

National Defense Strategy

We will conduct network-centric operations with compatible information and communications systems, usable data, and flexible operational constructs.

Beyond battlefield applications, a network-centric force can increase efficiency and effectiveness across defense operations, intelligence functions, and business processes...

Transforming to a network-centric force requires fundamental changes in process, policy, and culture.
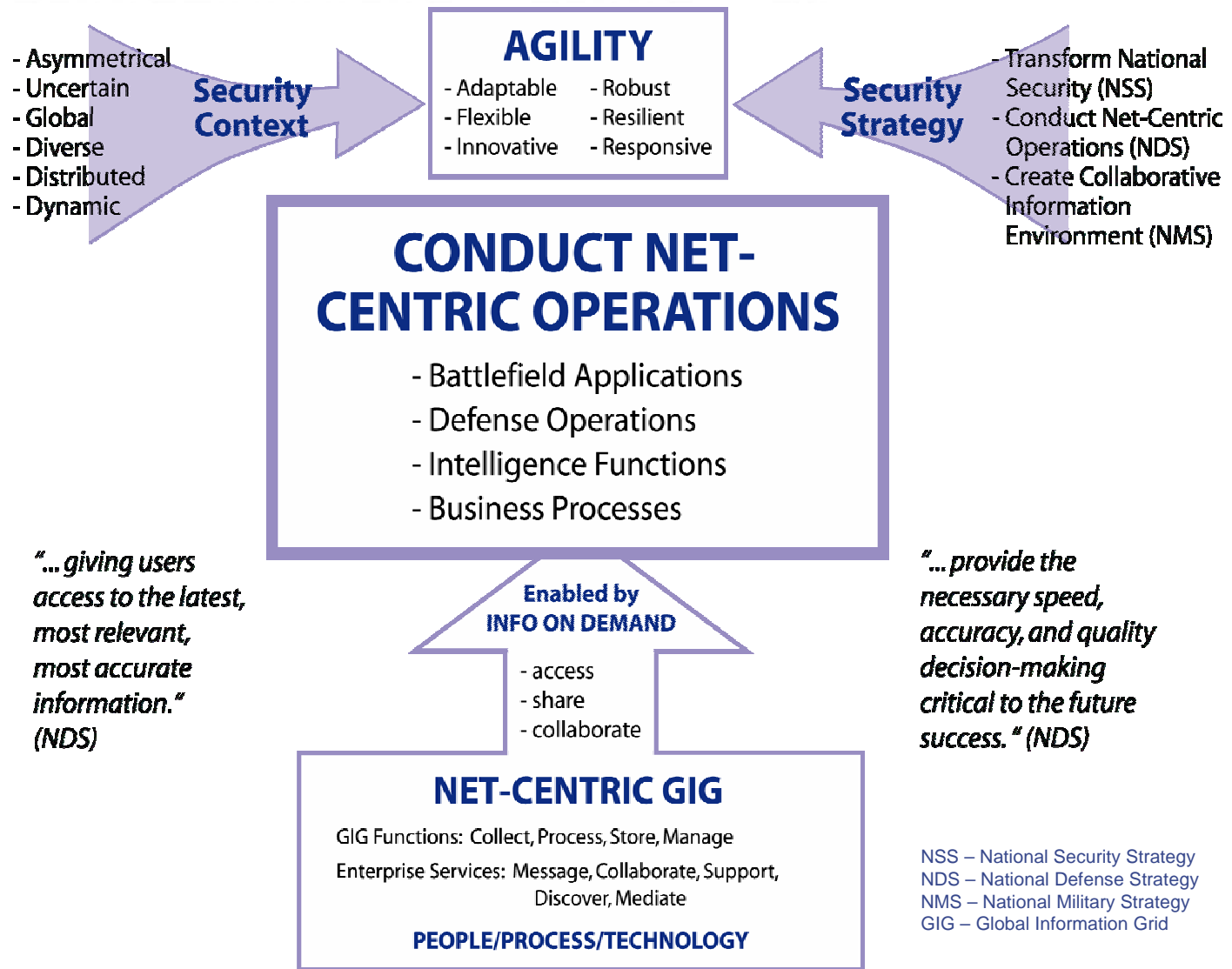
National Military Strategy

...creation of a collaborative information environment that facilitates information sharing, effective synergistic planning, and execution of simultaneous, overlapping operations... on demand to defense policymakers, warfighters and support personnel.

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Enabling Net-Centric Operations

- Asymmetrical
- Uncertain
- Global
- Diverse
- Distributed
- Dynamic

Security Context

AGILITY
- Adaptable   - Robust
- Flexible   - Resilient
- Innovative   - Responsive

Security Strategy

- Transform National Security (NSS)
- Conduct Net-Centric Operations (NDS)
- Create Collaborative Information Environment (NMS)

CONDUCT NET-CENTRIC OPERATIONS

- Battlefield Applications
- Defense Operations
- Intelligence Functions
- Business Processes

"...giving users access to the latest, most relevant, most accurate information." (NDS)

Enabled by INFO ON DEMAND
- access
- share
- collaborate

"...provide the necessary speed, accuracy, and quality decision-making critical to the future success." (NDS)

NET-CENTRIC GIG

GIG Functions: Collect, Process, Store, Manage

Enterprise Services: Message, Collaborate, Support, Discover, Mediate

PEOPLE/PROCESS/TECHNOLOGY

NSS – National Security Strategy
NDS – National Defense Strategy
NMS – National Military Strategy
GIG – Global Information Grid

CIO/NII
Enabling Network-Centric Operations

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Bottom Line

```
        ( Current )                    ( Net-Centric )


Information stovepipes  ──────▶  Shared information

"Welded" interfaces     ──────▶  Unconstrained

Predetermined needs     ──────▶  Accommodate uncertainty

Fixed display formats   ──────▶  User-Defined info and formats

Need to know            ──────▶  Need to share; right to know

        [ Rigid ]                      [ Agile ]
```
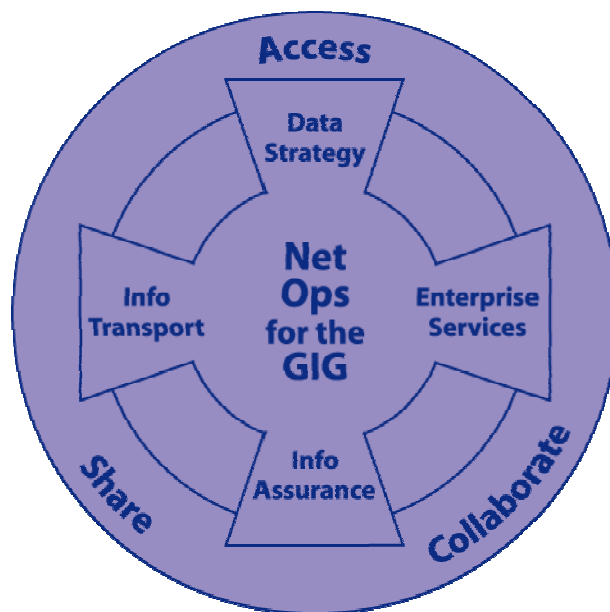
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Net-Centric Framework

- **Data Strategy:**
  - *How to "**share**" the data*

- **Information Assurance:**
  - *How to keep it "**dependable**"*

- **Enterprise Services:**
  - *How to "**access**" the data*

- **Information Transport:**
  - *How to "**move**" the data*

- **Net Ops:**
  - *How to "**manage**" the system*

Data: Discoverable, Accessible, Understandable

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Data Strategy

Data Strategy: Foundation

- Ensures data are **visible, accessible, and understandable**

- Accelerates decision making by having data where needed and when needed

- Accommodates known and unanticipated users

- "Tags" data (intelligence/non-intelligence; raw/processed) with metadata to enable discovery

- Requires data and services registries to describe, post and store

- Posts data to shared spaces for users to access based on identity and role

- Organizes around Communities of Interest (COIs) using a shared vocabulary to exchange information

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Information Assurance (IA)

Vision – Dynamic IA in support of Net-Centric Operations

Mission – Assure DoD's information, information systems, and information infrastructure

Information Assurance: Strategy

- **Protect Information**
  - Data protection requirements
  - Protection mechanisms
  - Robust mechanisms

- **Defend Systems and Networks**
  - Engineer defenses
  - React and respond
  - Assess and evaluate activity

- **Provide Situational Awareness/IA C2**
  - Integrated operational picture
  - Coordinate IA ops and decisions
  - Evaluate collaboration

- **Transform and Enable IA Capabilities**
  - Ensure IA integration into programs
  - Dynamic IA capabilities
  - Improve strategic decision-making
  - Information sharing

- **Create an IA Empowered Workforce**
  - Baseline skills
  - Enhance IA skill levels
  - Provide trained/skilled personnel
  - Infuse IA into other disciplines

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Enterprise Services

Enterprise Services: Overview

- **Messaging** – Ability to exchange information among users or applications
- **Discovery** – Processes to find information content or services
- **Mediation** – Software to help broker, translate, aggregate, fuse or integrate data/metadata
- **Collaboration** – Allows users to work together and jointly use selected capabilities on the network
- **User Assistant** – Automated "help" capabilities
- **Information Assurance** – Capabilities that provide confidentiality, integrity, availability, authorization, and assurance for information, users, applications, and networks
- **Storage** – Physical and virtual places to host data on the network
- **Application** – Infrastructure to host and organize distributed on-line processing
- **Enterprise Systems Management** (ESM) – End-to-end GIG performance monitoring, CM, and problem detection

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14

Information Transport

Objective - Provide access to and movement of information regardless of time, location, or disposition

Information Transport: Programs

- **Global Information Grid – Bandwidth Expansion** (GIG-BE):
    - Transforms Defense Information System Network (DISN) capabilities (capacity/availability)
    - Connects fixed locations to each other (but does not reach individual users at the tactical edge)
- **Transformational Satellite** (TSAT):
    - Connects mobile groups of users to each other and to fixed locations
    - Extends reach to individual users at the tactical edge
- **Joint Tactical Radio System** (JTRS):
    - Connects individual users within a group of mobile users
    - Provides network entry device for individual users at the tactical edge
- **Teleports**:
    - Provides a gateway between TSAT and GIG BE
- **Spectrum Management**
    - Ensures access to the airwaves

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Net Ops

Objective - Ensure the continuous ability to easily access/ manipulate/share any information, from any location, at any time

Network Operations: Functions

- **Manage and Assure Operations**
  - Monitor network conditions on a continuous basis
  - Assess network and make decisions based on conditions and events
  - Direct responses to incidents

- **Govern Enterprise**
  - Set policies, roles and responsibilities for managing operations
  - Determine priorities for operations (i.e., bandwidth allocation, routing, incident response)
  - Establish common processes and standards for operating, monitoring, and responding

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Critical Technology Enablers

IPv6

- Supports proliferation of IP-addressed applications/devices, and "comm on the move"
- DoD Transition Strategy:
  - Tech Refresh

VOIP

- Increases flexibility/capacity through broadband Internet connection; allows for converged voice and data on the same network
- DoD Initiatives:
  - Developing standards to end-to-end VOIP capability

Satellite Communications

- Enables real time connectivity, high data rate, ISR exfiltration, and comm on the move
- DoD TSAT Program Restructure:
  - IOC 2013; 4 on orbit 2017

Mobile Communications

- Provides network entry device for individual users at the tactical edge
- DoD JTRS Program:
  - Joint Program Office established
  - Form-factors being developed

Service-Oriented Architecture

- Establishes easy-to-use services to access, share and collaborate
- DoD Strategy:
  - Acquire commercially managed service (NCES goal)
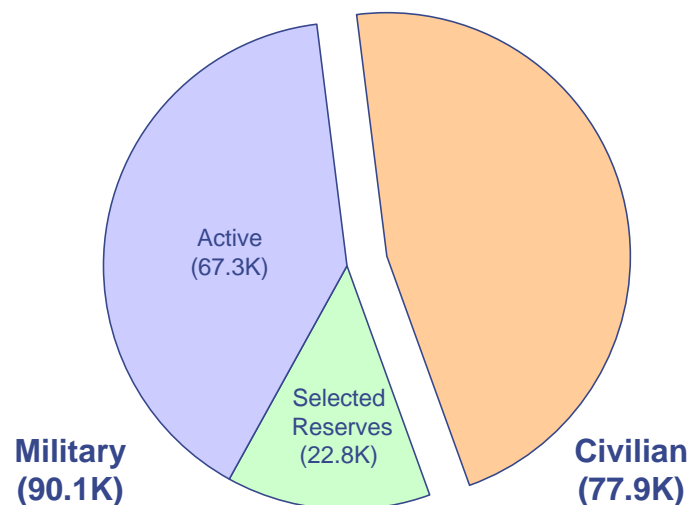
Information Assurance

- Assures DoD's information, information systems, and information infrastructure
- DoD Strategy:
  - Fundamental shift from "walls and patches" to "secure from the start"
- DoD Initiatives:
  - Build IA architecture
  - Expand partnership with industry for IA R&D

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Skilled IT Workforce

168 K DoD IT Workforce

Military (90.1K)
- Active (67.3K)
- Selected Reserves (22.8K)

Civilian (77.9K)

2/3 of Civilian IT Population in 3 Communities

Includes:
Computer Scientists (3,915)
Communications Mgmt (3,059)
Ops Research Analyst (2,864)
Computer Engineering (2,825)

- All Others 34% — 27,065
- Electronics Engineer 22% — 17,116
- Electronics Technician 8% — 5,851
- IT Management Specialist 36% — 27,826

81% of Military IT Workforce Is Enlisted

	SELRES	Active
Officer	4,924	11,039
Enlisted	17,855	56,243

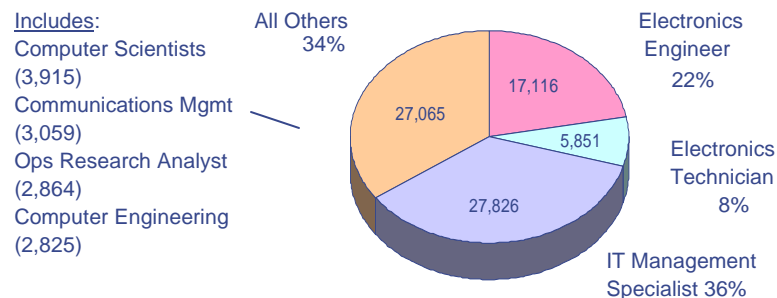### Information Assurance Workforce Training and Certification Program

- DoD lead in IA certification efforts in Federal Government
- Collaborating with Department of Homeland Security (DHS) to establish *national* IA standards

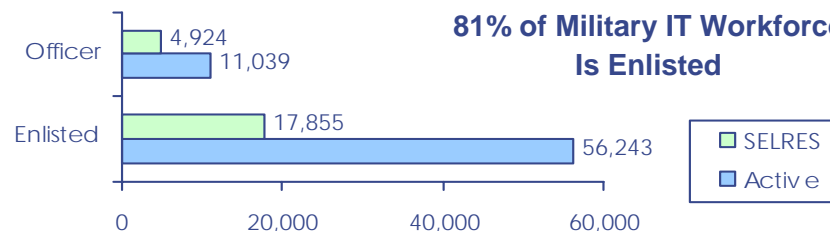### Information Assurance Scholarship Program (IASP)

- Recruit/retain top performers in IT disciplines (with IA focus) to fill critical military/civilian positions within DoD
- Bachelors/Masters/PhD students attend Centers of Academic Excellence in IA Education (e.g., Carnegie Mellon, Johns Hopkins, GW)

Information Technology Exchange Program (ITEP)

- Flexibility to access private sector experts to address critical, real world IT issues in a dynamic technological environment
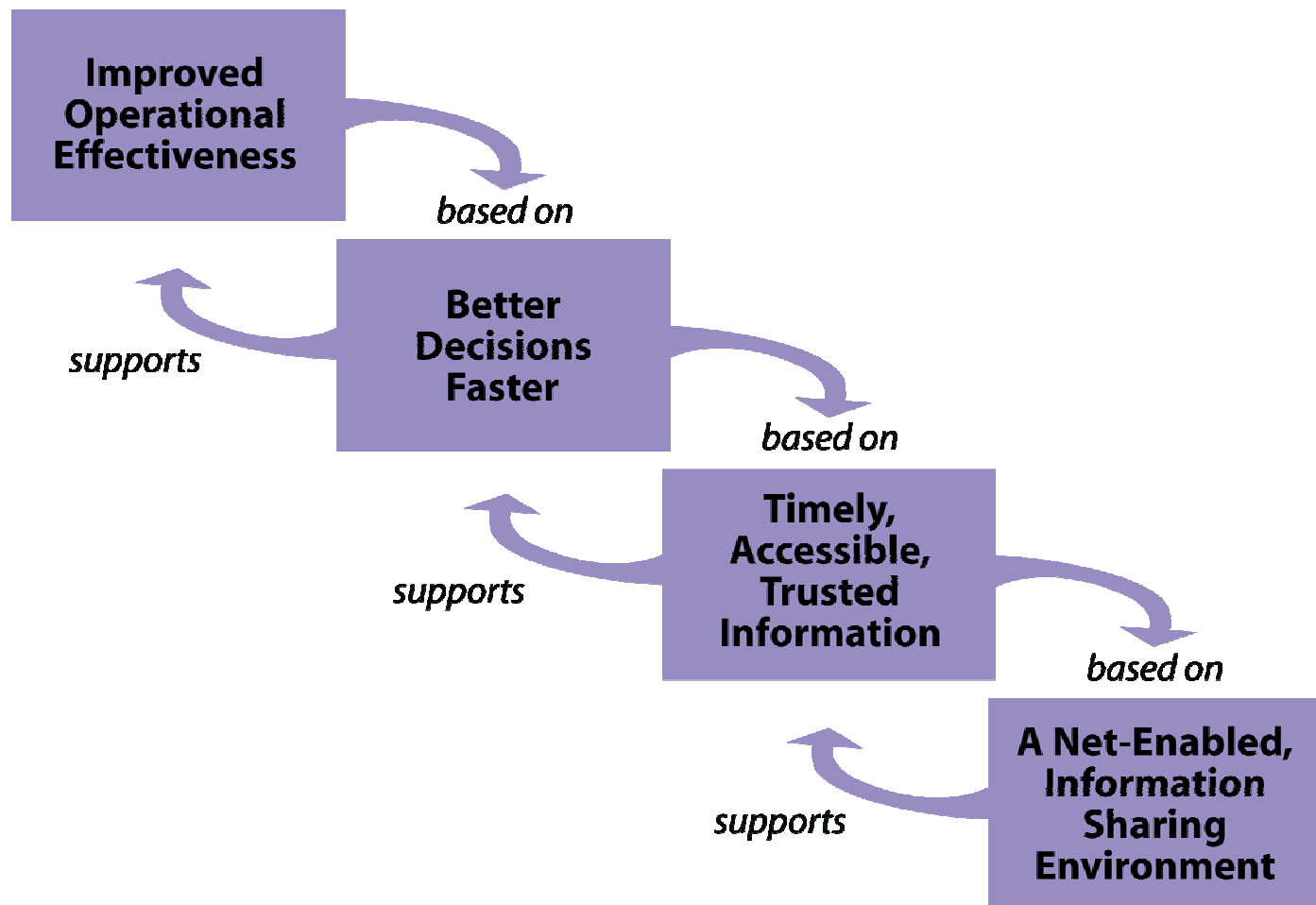- Improve critical IT Management competencies in DoD civilian IT workforce

IT Management Specialist (2210 Series) Identification

- Capability to rapidly identify personnel with critical skills for emergencies and/or emerging defense requirements
- Monitor workforce trends to develop targeted recruitment, retention, and compensation policies

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Our Nation's Security

Improved Operational Effectiveness

based on

supports

Better Decisions Faster

based on

supports

Timely, Accessible, Trusted Information

based on

supports

A Net-Enabled, Information Sharing Environment

BACKUP MATERIAL
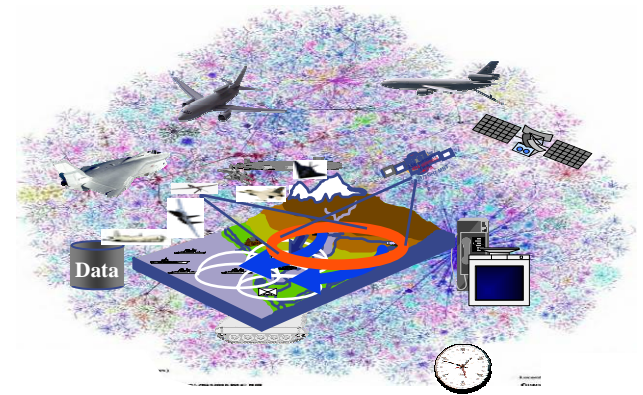
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Why IPv6 In The DoD?

Future Demands :

Ubiquity (IP Foundation)

Mobility (+ Ad-Hoc)

Operability (Security, QOS, NetOps)

21st Century Net-Centricity

IPv4 Cannot Support Future Required Capabilities

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IPv6 -- Critical Enabler for Net-Centric Vision

Drivers:

- Proliferation of IP-addressed applications/devices

- Robust networking

- Agility to form dynamic Communities of Interest

- Increasing requirements for wireless/communications on the move

- Collaboration with joint, allied, coalition, federal, non-governmental organizations

- Mission assurance

- Everything over IP

IPv6 Enables:

- Network ubiquity\scalability

- "Unlimited" address space

- Globally routable addresses

- Quality of Service

- Enhanced plug-n-play/mobility

- Auto-configuration

- Improved multicast

- Mandatory end-to-end security

- Improved header

- Network maintainability

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Rapid and agile IT infrastructures with the capability to "discover" adjacent network systems and plug-n-play enable quicker, more dynamic responses..

Ubiquitous, robust and scalable end-to-end networks enable integrated operations.

Proliferation of IP-addressed sensors, munitions, logistics tracking, applications, …will enhance situational assessments and information availability.

IPv6 Enabled Battlefield of the Future

Real time collaboration using integrated voice, video and data capabilities enabled by performance and QoS improvements.

End-to-end security, authentication and non-repudiation will enable new IA strategies that support mission assurance.

Dynamic formation of COIs supported by improved multicasting.

Increased OPTEMPO supported by **rapid reorganizational capabilities, shared situational awareness and improved wireless and mobility support**. Support for communications on the move.

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