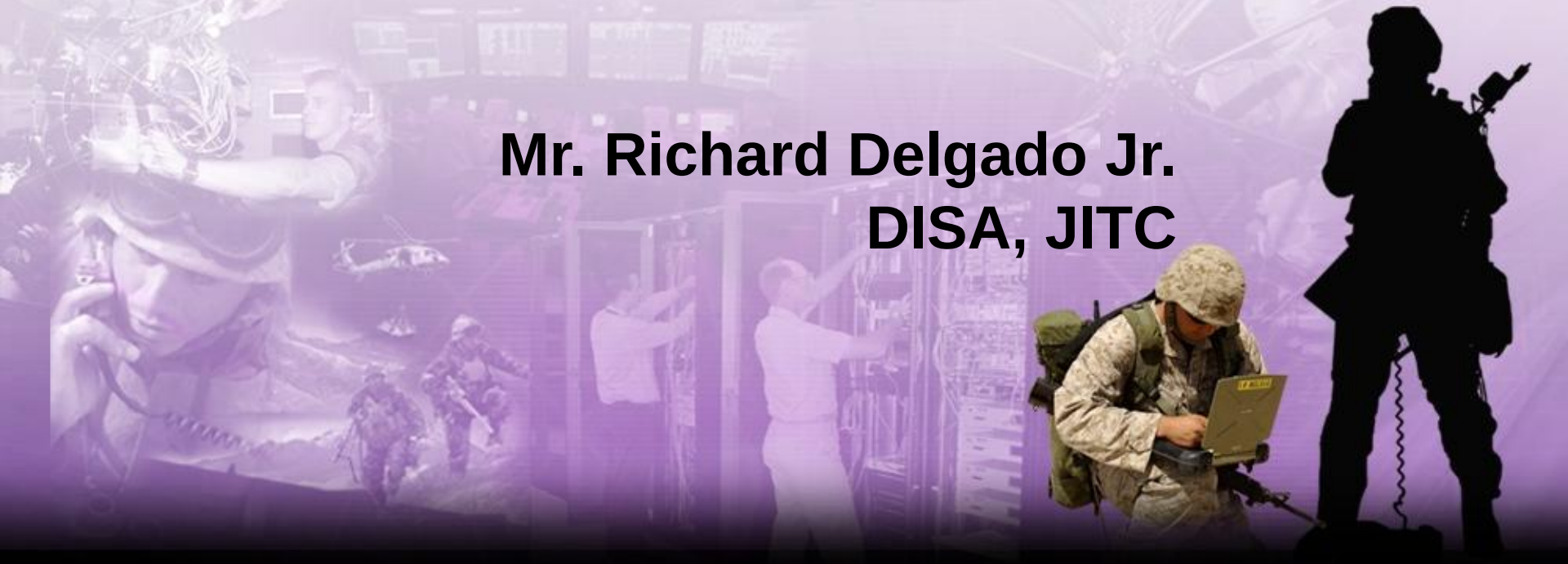
DISA

A Combat Support Agency

Agile Test and Evaluation (T&E) for converged network services

- Unified Capabilities -

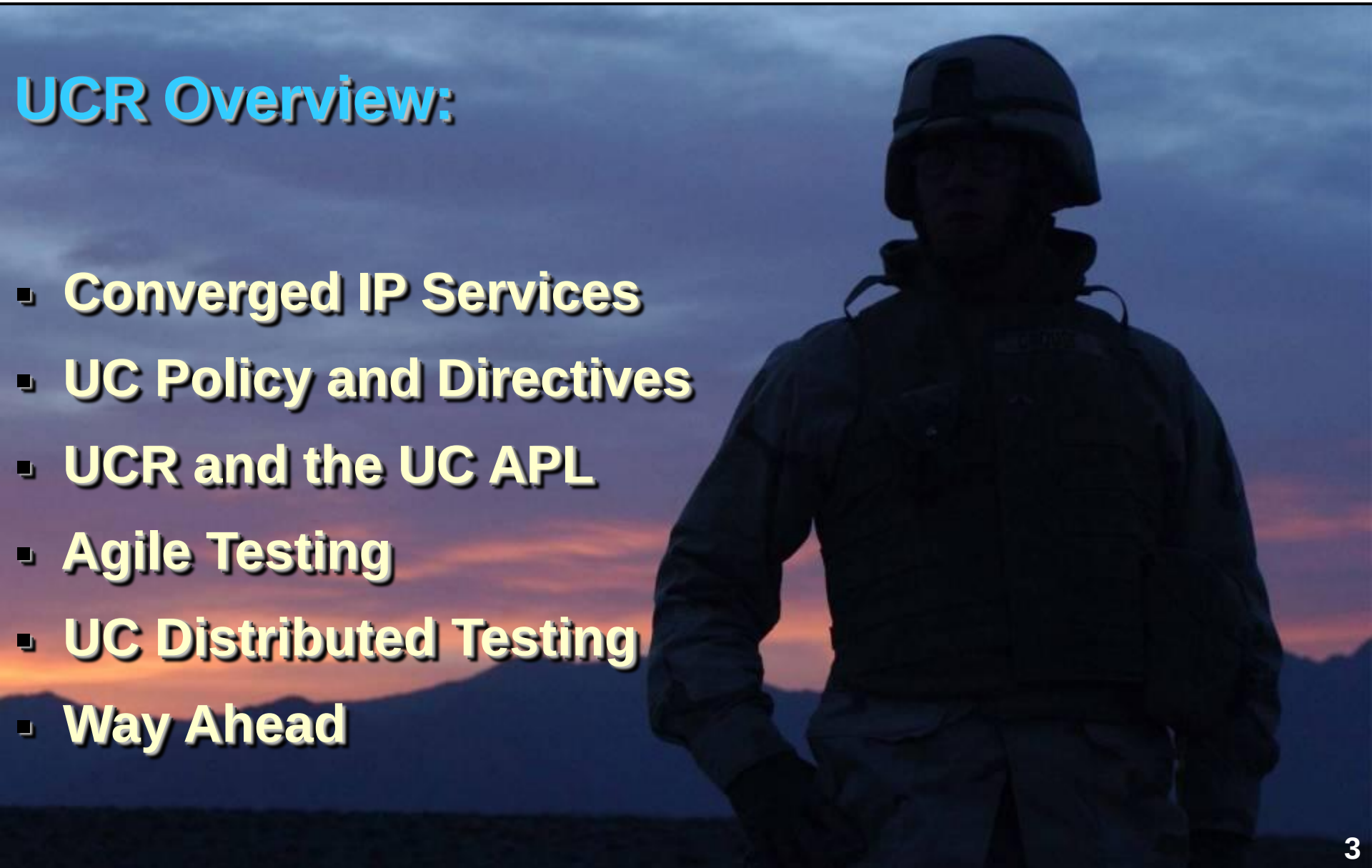
Mr. Richard Delgado Jr.
DISA, JITC



The information provided in this briefing is for general information purposes only. It does not constitute a commitment on behalf of the United States Government to provide any of the capabilities, systems or equipment presented and in no way obligates the United States Government to enter into any future agreements with regard to the same. The information presented may not be disseminated without the express consent of the United States Government.

DISA
A Combat Support Agency

Agenda

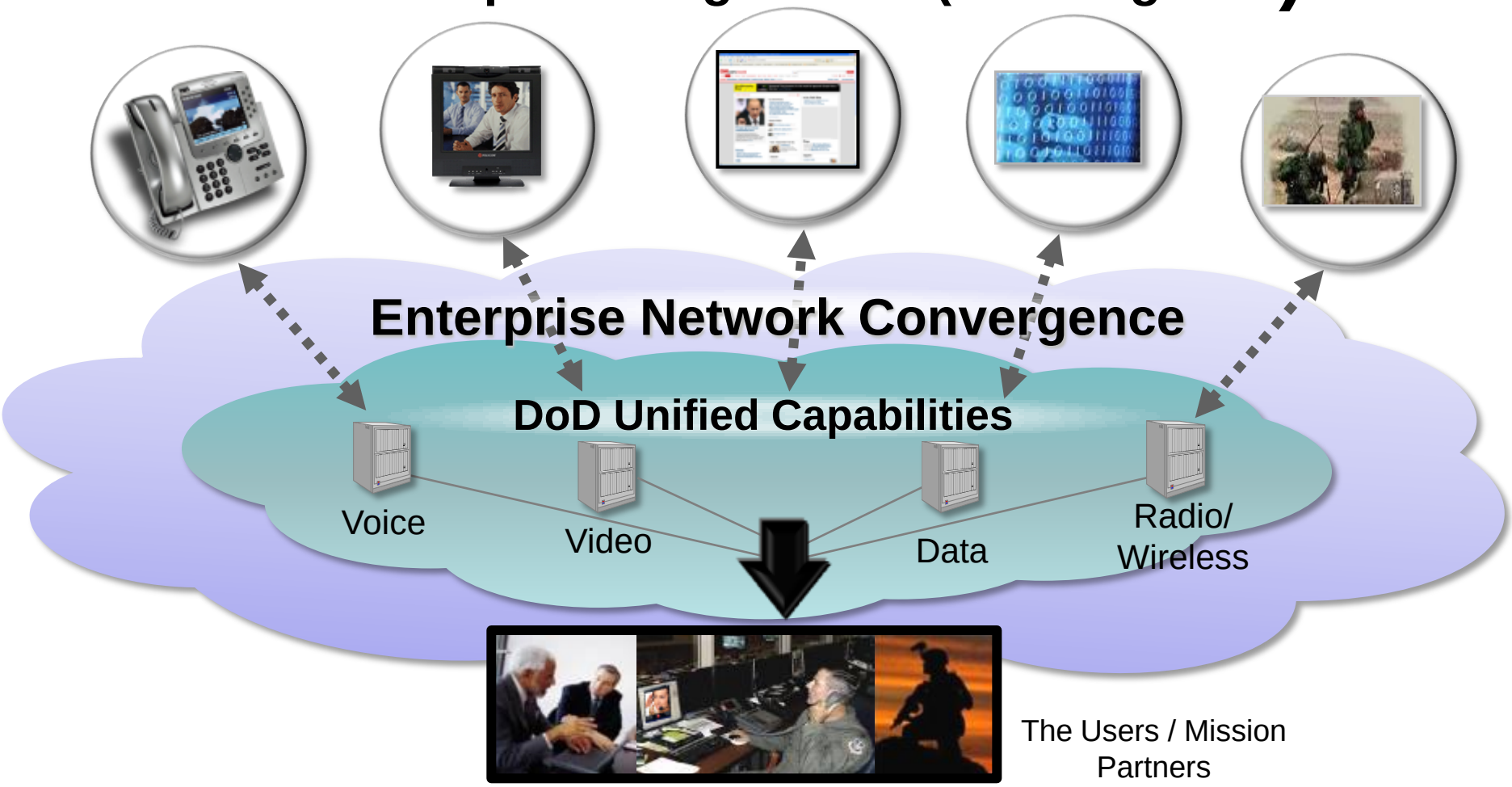


UCR Overview:

- Converged IP Services
- UC Policy and Directives
- UCR and the UC APL
- Agile Testing
- UC Distributed Testing
- Way Ahead

DISA Information Technology (IT)

Enterprise Target State (Convergence)



Interoperability → Information Assurance → Network Performance

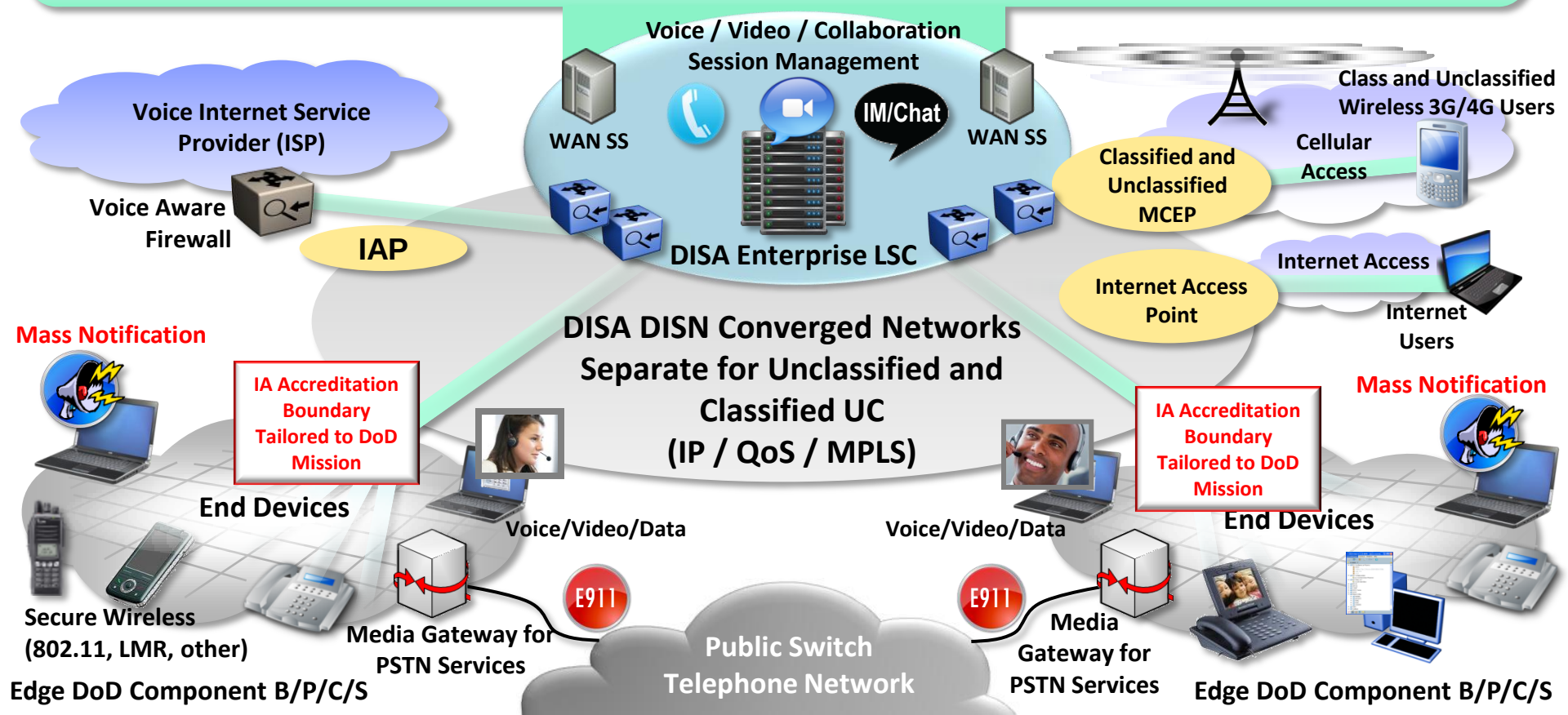
Leading the Migration to Almost Every Thing Over IP (EoIP)
Multi-vendor Environment, Enabling Net-Centric Operations

DISA
A Combat Support Agency

CAPABILITIES VIEW-1, VISION

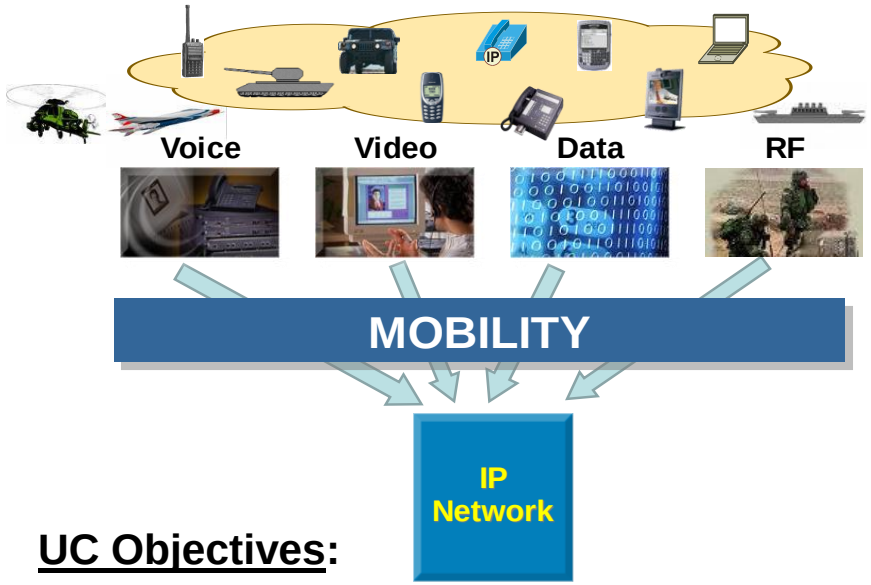
Non AS and AS Voice, Video, Data Session Management	Non AS and AS Voice & Video Conferencing	Collaboration	User Mobility (Wired and Wireless)	Voice ISP Access	Unified Messaging	UC Portability	Enterprise Directory Integration	UC Apps Integration

DISA Unclassified and Classified Enterprise Unified Capabilities (UC)



DISA
A Combat Support Agency

DoD Unified Capabilities (UC)



UC Objectives:

Migrate DoD to common, converged IP-based network services to achieve:

- integrated and interoperable operations
- end-to-end security
- shared situational awareness
- enhanced wireless and mobility support
- improved support for communications on the move
- real-time collaboration (integrated voice, video, and/or data services)

UC Definition:

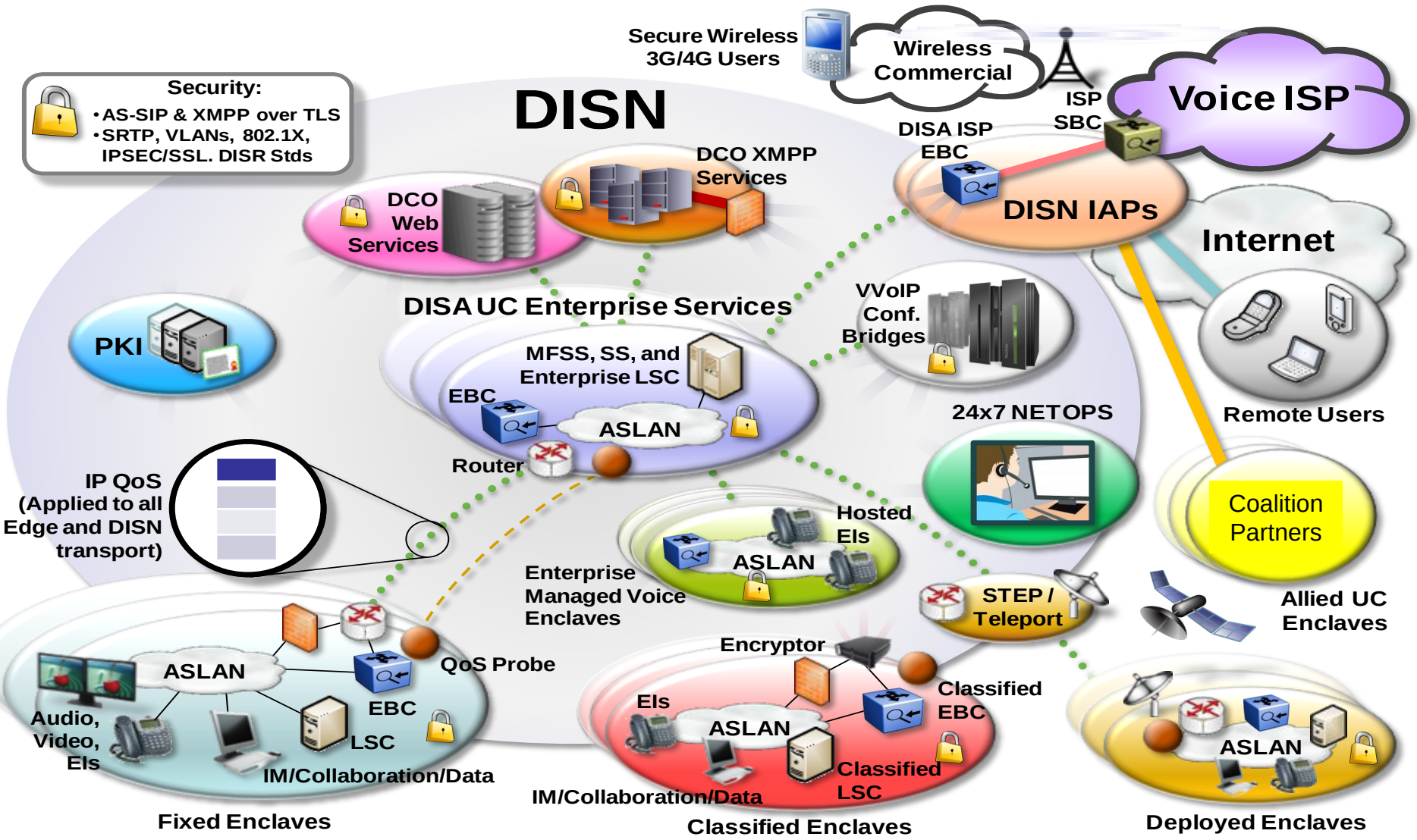
The integration of voice, video, and/or data services delivered ubiquitously across an interoperable, secure, and highly available IP network infrastructure, independent of technology, to provide increased mission effectiveness to the warfighter

UC Tenets:

- Leverage commercial off-the-shelf technology to meet DoD's mission requirements
- Accelerate migration of increasingly costly legacy circuit switch technologies to interoperable and secure IP-based net-centric services
- Standardize and consolidate Component IP convergence efforts across DoD to reduce telecommunications costs and streamline management
- Achieve savings by implementing enterprise requirements for interoperability, security, and network performance
- Implement competitive acquisitions of approved products, based on common user requirements

DISA
A Combat Support Agency

UC Reference Architecture



DISA
A Combat Support Agency

UC Governing Documents

DoD CIO

- DoD CIO IT Enterprise Strategy and Roadmap
- DoDI 8100.04
- Unified Capabilities Requirements (UCR)
- Unified Capabilities Master Plan (UC MP)

Joint Staff Implementation Guidance

- CJCSI's Implementing UC

DISA Planning

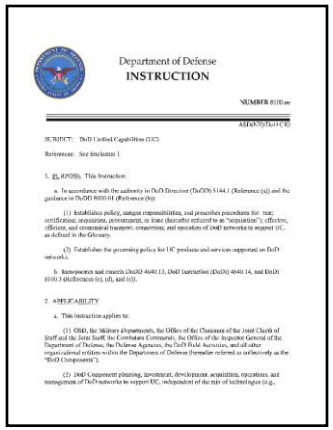
- DISA Campaign Plan
- DISA GIG Convergence Master Plan
- DISN Technical Evolution Plan

DoD Component Network Implementation

- UC Implementation Plans
- UC Network Cutover Plans

DISA
A Combat Support Agency

DoDI 8100.04 (7 Dec 2010)



Department of Defense
INSTRUCTION

NUMBER 8100.04

SUBJECT: DoD Unified Capabilities (UC)

References: See Enclosure 1

1. PURPOSE. This Instruction:

a. In accordance with the authority in DoD Directive (DoDD) 5144.1 (Reference (a)) and the guidance in DoDD 8000.01 (Reference (b)):

(1) Establishes policy, assigns responsibilities, and prescribes procedures for: test; certification; acquisition, procurement, or lease (hereafter referred to as "acquisition"); effective, efficient, and economical transport; connection; and operation of DoD networks to support UC, as defined in the Glossary.

(2) Establishes the governing policy for UC products and services supported on DoD networks.

b. Incorporates and cancels DoDD 4640.13, DoD Instruction (DoDI) 4640.14, and DoDI 8100.3 (References (c), (d), and (e)).

2. APPLICABILITY

a. This instruction applies to:

(1) OSD, the Military Departments, the Office of the Chairman of the Joint Chiefs of Staff and the Joint Staff, the Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities within the Department of Defense (hereafter referred to collectively as the "DoD Components").

(2) DoD Component planning, investment, development, acquisition, operations, and management of DoD networks to support UC, independent of the mix of technologies (e.g.,

Purpose:

Establishes policy, assigns responsibilities, and prescribes procedures for: test; certification; acquisition, procurement, or lease; effective, efficient, and economical transport; connection; and operation of DoD networks to support UC

Applicability:

- All DoD Components
- DoD Component planning, investment, development, acquisition, operations, and management of DoD networks to support UC, independent of the mix of technologies, and whether converged or non-converged
- UC support for authorized non-DoD users (e.g., combined or coalition partners and U.S. Government departments and agencies)
- Acquisition of services as described in DoDD 5000.01 and DoDI 5000.02

Policy:

- DoD Components integrate current network technologies with future network technologies to provide UC
- DoD Components comply with functional requirements, performance objectives, and technical specifications for DoD networks that support UC, as specified in the DoD Unified Capabilities Requirements (UCR)
- Products that provide or support UC, acquired or operated by the DoD Components, shall be certified for interoperability and Information Assurance (IA)
- DoD networks support UC during all phases of DoD operations
- DISA is the preferred UC transport provider for Internet and commercial satellite connections used for voice, video, and/or data services on DoD networks

DISA
A Combat Support Agency

UC Master Plan

- **Defines the implementation strategy to achieve IP Convergence**
  - **Guides DOD Components in planning, investments, acquisition, Operations and Maintenance, sustainment, and Program Objective Memorandum submissions**
  - **Identifies Reference Architectures for UC Implementation. Provides various AV, OV, CV, SV artifacts**
  - **Guides the resource planning, Business Case Analysis, and investment strategy for FY12-16**
- **Coordinated through the UC Steering Group with Senior Leadership (GS-15 equivalent) from Services and Agencies**
- **Final Draft coordination in July 2011**
- **DOD/CIO approval and signature on 3 Oct 11**

DISA
A Combat Support Agency

UC Requirements (UCR 2008 CH2)

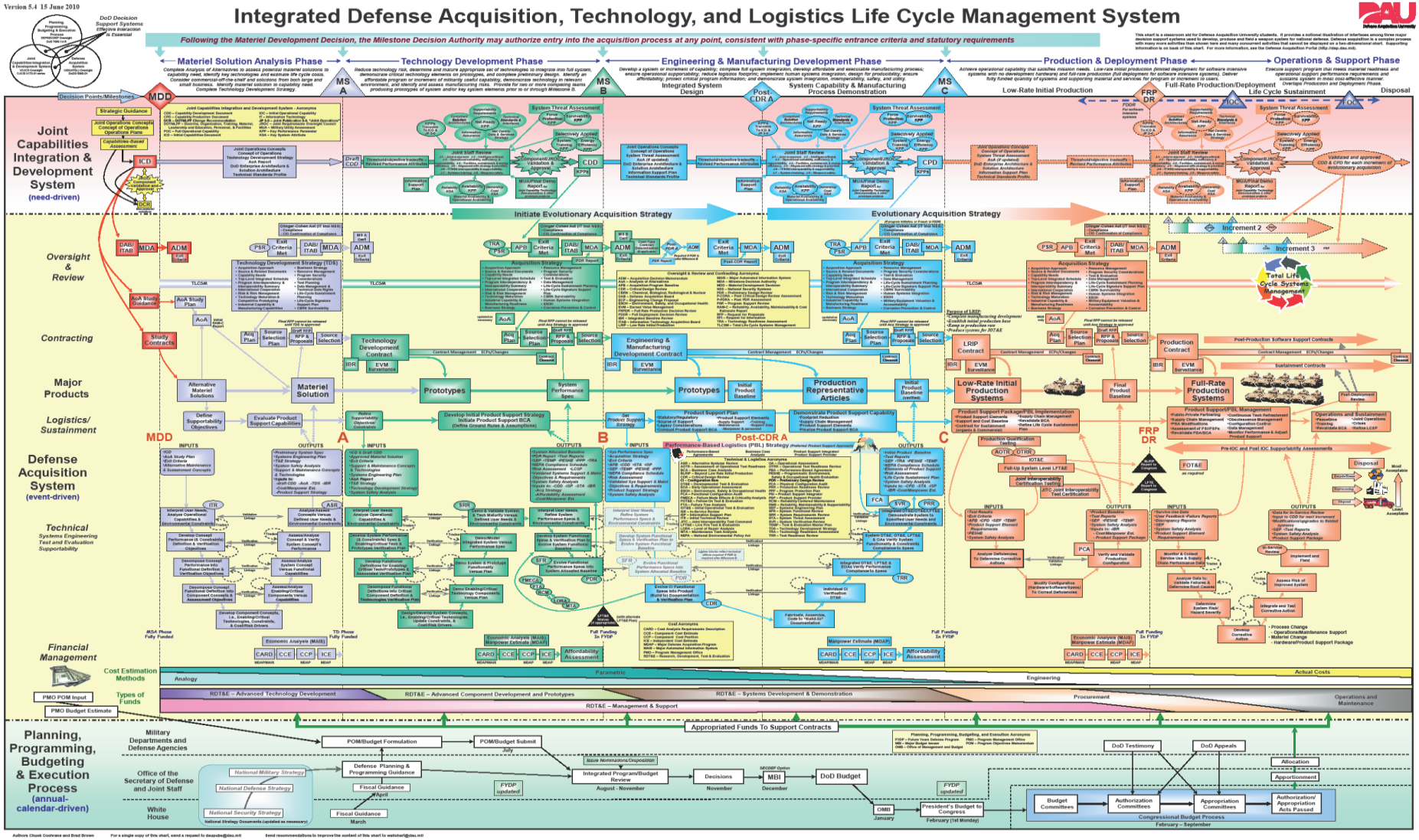
- **Establish standards to develop unified capability solutions.**
  - **Identifies only the MINIMUM requirements and features to support UC Reference Architecture**
  - **Does not contain a complete set of specifications for COTS features that do not affect assured services**
- **Allows for standardized Unified Capability Test Plans (UCTPs) for Interoperability (IO) and Information Assurance (IA) testing.**
- **Facilitates collaborative development of Information Support Plans (ISPs)**
  - **I.E., for programs under DoDI 4630.8 and CJCSI 6212.01E requirements.**

UC Requirements are Minimum Essential

DISA

A Combat Support Agency

Acquisition Today



DISA
A Combat Support Agency

Moving DoD IT Acquisition Forward

Provisioning integrated services across acquisition processes and life-cycle

Requirements

CJCSI 3170.01G – JCIDS

CBA → JMTs → ICD → MDD → CDD → Updates

CJCSI 6212.01E - I&S Process

Initial ISP → Updates

JMT / ICD Validation

CDD / ISP Helpdesk

Responsive Requirements Process

COCOMs

FCB

Acquisition

DoD 5000 Series – Defense Acquisition System

DISA T&E

Agile Test and Evaluation

Architecture Helpdesk

Business Analysis → MS → Architecture Development → Solution Architecture → MS → Requirements → Backlog → Sprint → Decision

Apps for DoD

Working Product

Infrastructure

DoDI 3200.11 - Major Range and Test Facility Base

Infrastructure Improvement and Provisioning

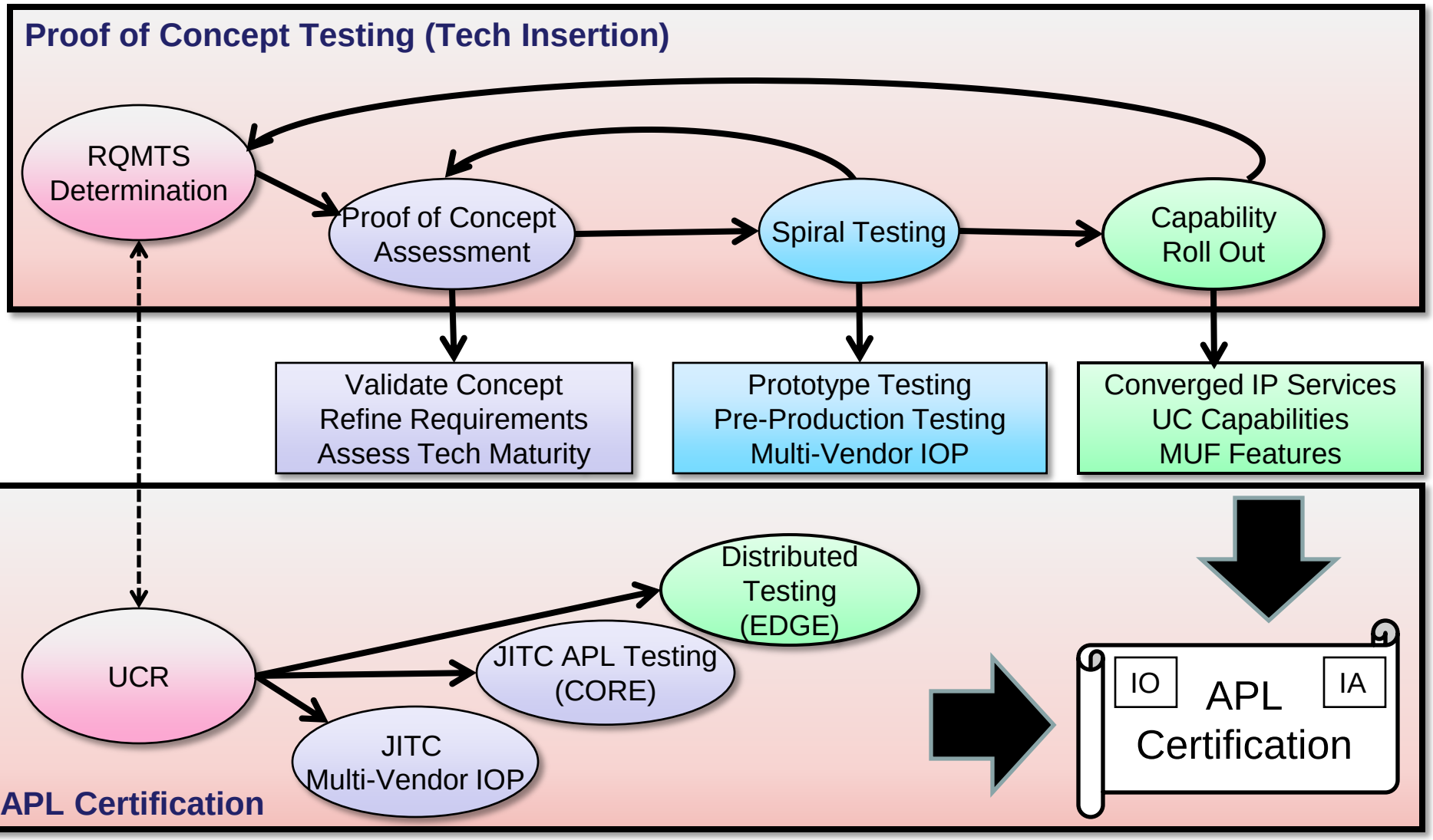
GIG Services, Networks, Instrumentation, M&S and other T&E Infrastructure

Responsive & Representative Infrastructure

Making Acquisition Processes and Infrastructure Responsive to the Warfighter

DISA
A Combat Support Agency

JITC
UC Certification Support



DISA
A Combat Support Agency

UC Distributed Testing "Test Once, For Many"

- Single UC APL for use by the OSD and DOD Components in acquisition and procurement
- Effectively integrates MILDEP labs and industry into the T&E Process
- There shall be a DoD Component sponsor for each vendor product
- JITC is sole Interoperability Certifier for UC APL
  - Distributed testing based on common requirements and common test plans (UCR 2008 and the JITC UC TP)
  - Leverage existing MILDEP capabilities and expertise for "Edge" devices
- "Test Once for Many"
  - Use all available test resources and data
  - Reciprocity among UC Community (IO/IA)

DISA
A Combat Support Agency

UC Distributed Testing Precepts

- UCCO manages the UC Distributed Testing and Certification Process
  - Scheduling, vendor interface, test status, test results, UC APL posting and maintenance, UCR coordination, IO/IA adjudication
- Established UC Rules of Engagement
  - Determine Lab Capabilities (infrastructure, procedures, etc.)
  - Develop Business Model for Fee For Service
  - Integrate MILDEP labs into UCCO/APL process

DISA
A Combat Support Agency

Distributed Testing ROEs
Where to Test?

- ✓ CAPABILITY
- ✓ AVAILABILITY
- ❑ FUNDING

Lab Capability Matrix

2010 DoD UC DISTRIBUTED TESTING CAPABILITIES MATRIX FOR DISA / COMPONENT LABS - PHASE I								
PRODUCT CATEGORY	PRODUCT NAME	ARMY ISEC TIC	AIR FORCE TSSAP	NAVY SPAWAR	MARINE CORPS	JITC FHU	JITC IH	SKY 7
SBU IP BASED UC PRODUCT	Multifunction Softswitch							
	WAN Softswitch							
	Dual Signaling Multipoint Control Unit							
	Local Session Controller							
	Customer Edge Router							
	Edge Boundary Controller							
	AS-SIP End Instrument							
	Secure End Instrument							
	Presence Client/Server							
	Collaboration Client/Server							
	Chat Client/Server							
	Instant Messaging Client/Server							
LAN PRODUCT	LAN Access Switch							
	LAN Distribution Switch							
	LAN Core Switch							
WIRELESS LAN PRODUCT	Wireless LAN Access Switch							
	Wireless LAN Access Bridge							
	Wireless End Instrument							
PERIPHERAL PRODUCT	Echo Canceller							
	Customer Premise Equipment							
	Video Teleconferencing							
	DoD Secure Communications Device							
	Integrated Access Switch							
NETWORK INFRASTRUCTURE	M13							
	Multiservice Provisioning Platform							
	Aggregation Router							

DISA
A Combat Support Agency

Distributed Testing
What to Test?

Technical Maturity Matrix

Services Complexity	Prototype	Pre-Production	APL Ready	Post APL
ASFs	• Full test • Or incremental test and/or desk-top review (DTR) if based on previously tested product	• Full test • Or incremental test and/or DTR if based on previously tested product	• Full test • Or incremental test and/or DTR if based on previously tested product	• Full test for new software versions or significant IA-affecting hardware changes • Or incremental test and/or DTR if based on previously tested product
Non ASFs Affecting ASFs	• Partial test • Full test of interaction of features • Or incremental test and/or DTR if based on previously tested product • No test. Vendor letter of compliance (LOC) of vendor tests of non assured services features meeting brochure claims	• Partial test • Full test of interaction of features • Or incremental test and/or DTR if based on previously tested product • No test. Vendor LOC of vendor tests of non ASFs meeting brochure claims	• Partial test • Full test of interaction of features • Or incremental test and/or DTR if based on previously tested product • No test. Vendor LOC of vendor tests of non ASFs meeting brochure claims	• Partial test • Full test of interaction of features for new software versions or significant IA-affecting hardware changes • Or incremental test and/or DTR if based on previously tested product • No test. Vendor LOC of vendor tests of non ASFs meeting brochure claims
Non ASFs Not Affecting ASFs	• Random test of potential interactions	• Random test of potential interactions	• No test • Vendor LOC of vendor tests of features meeting brochure claims	• No test • Vendor LOC of vendor tests of features meeting brochure claims

DISA
A Combat Support Agency

Distributed Testing Phase Definitions

- **Phase I: Stand-Alone Testing**
  - Defined as each Distributed Testing Lab will have the ability to conduct IA and IO testing at their own testing facility with initial guidance from JITC FHU. DoD UC APL Stand-Alone Testing will be based on the following triple constraints:
    - Capability – DoD UC Distributed Testing Labs Capability Matrix
    - Funding – DoD Component Lab Business Process Package
    - Availability – DoD UC Distributed Testing Rules of Engagement / Scheduling Process Document
    - Initial Operational Capability (IOC) Achieved
    - Target Date: June 2010

- **Phase II: Network Connectivity to JITC FHU**
  - Defined as all DISA and DoD Component Labs having established network connectivity to JITC FHU for the purpose of testing from edge device(s) located at DoD Component Labs / DISA Labs through core test network located at JITC FHU. DoD UC APL Network Testing will be based on the following constraints:
    - Connectivity between labs.
    - Exportable IATPs / IOTPs that are agreed upon by DoD UC DT Community
    - Minimum architecture of Network Test Tools available at all labs.
    - Full Operational Capability (FOC) Achieved
    - Target Date: December 2011

DISA
A Combat Support Agency

Distributed Testing Phase 1 Accomplishments

- **US Air Force TSSAP (26 Collaborative efforts). Highlights:**
  - Lifesize Communications Video Teleconferencing (VTC) System
  - Radvision VTC
  - Polycom VTC
  - Polycom Gateway (GW)
  - K&R Custom Software Customer premise Equipment (CPE)
  - XOP Networks Conference Bridge (CB)
  - AMCOM PSAP CPE
  - Cisco IP/VC Multipoint Conferencing Unit (MCU)
  - AMTELCO CPE
  - Tandberg VTC
  - HDT Engineered Technologies CPE

DISA
A Combat Support Agency

Distributed Testing
Phase 1 Accomplishments

- **US Army ISEC-TIC (69 collaborative efforts). Highlights:**
  - Cisco Customer Edge Routers (CERs)
  - Cisco Virtual Private Network (VPN) products
  - Cisco Firewall (FW) products
  - Aruba Wireless products
  - Cisco Wireless products
  - Fortress Wireless products
  - Cisco Assured Services Local Area Network (ASLAN) products
  - Motorola Wireless products
  - Juniper ASLAN products

DISA
A Combat Support Agency

UCR
Way Ahead

- **UCR Updates (Change 4 and UCR 2012)**
  - Impacts UC Test Plans and Procedures
  - Brings new technology and products into the process
- **Continue Deployment of Assured Services**
  - Migration off of TDM/Circuit Switched technologies to AS-SIP and Converged IP services
  - Deployment of WAN SS, LSCs, and Enterprise Voice, Video, and Data Services
  - NETOPS integration into DISN OSS Model
- **Maturation of Distributed Testing Capabilities**
  - Phase 2 lab capabilities
  - Integration of new technologies into test architectures

JITC
Unparalleled Value-Added
to the WARFIGHTER
DEFENSE INFORMATION SYSTEMS AGENCY
JOINT INTEROPERABILITY TEST COMMAND
The BATTLEGROUND
should never be the
TESTING GROUND

BACKUP SLIDES

DISA
A Combat Support Agency

UC Requirements (Cont.)

- Current Version is UCR 2008 Change 2
  - Posted on www.disa.mil/ucco
  - Publication date 15 December 2010
- Next update is Change 3 (TBP-Summer of 2011)
  - Address Change 2 errors, omissions, and clarifying requirements
  - Does not assign new functionality requirements for existing APL products
- Address requirements for new APL products
  - As determined by the UC Steering Group (DOD CIO, DISA, Components)
  - Currently developing Public Safety (APCO 25), DSL, Radio over IP, Gigabit Passive Optical Network (GPON), and IP Modem/WOC requirements
- Next version will be UCR 2012 (TBP December 2012)

DISA
A Combat Support Agency

UC Requirements/ Products (cont'd)

2011 DoD UC Distributed Testing capabilities Matrix for DISA/Component labs - Phase I								
PRODUCT CATEGORY	PRODUCT NAME	ARMY ISEC TIC	AIR FORCE TSSAP	NAVY SPAWAR	JITC FHU	JITC IH	SKY 7	JOIN
SBU IP BASED UC PRODUCT	MFSS				X			
	WAN SS				X			
	Master LSC (MLSC)				X			
	Subtended LSC (SLSC)				X			
	Standalone LSC				X			
	Deployable LSC				X			
	CER	X			X			
	EBC				X			
	AEI				X			
	SEI				X			
	AS-SIP TDM GW				X			
	AS-SIP IP GW				X			
	RTS Routing Database				X			
	UC Tool Suite				X		X	
	Smartphone				X			
	Smartphone Backend Support System (SBSS)				X			
	UC Conference System (UCCS)				X			

DISA
A Combat Support Agency

UC Requirements/ Products (cont'd)

2011 DoD UC Distributed Testing capabilities Matrix for DISA/Component labs - Phase I								
PRODUCT CATEGORY	PRODUCT NAME	ARMY ISEC TIC	AIR FORCE TSSAP	NAVY SPAWAR	JITC FHU	JITC IH	SKY 7	JOIN
ASLAN PRODUCT	Access IP Switch	X			X			
	Distribution IP Switch	X			X			
	Core IP Switch	X			X			
WIRELESS LAN PRODUCT	Wireless LAN Access Switch (WLAS)	X				X		
	Wireless Accesbridge (WAB)	X				X		
	Wireless End Instrument (WEI)	X				X		
PERIPHERAL PRODUCT	CPE							
	AS-SIP H.323 Video GW				X			
	Multi-signaling MCU (classified)		X					
	DSCD		X	X	X	X		
NETWORK INFRASTRUCTURE PRODUCT	Optical Transport system (OTS)					X		
	Transport switch Function (TSF)					X		
	Aggregation Grooming Function (AGF)					X		
	Access Aggregation (AAG) Function					X		
	DISN Router (Aggregation, Provider, Provider Edge)					X		
	Timing and Synchronization System				X	X		

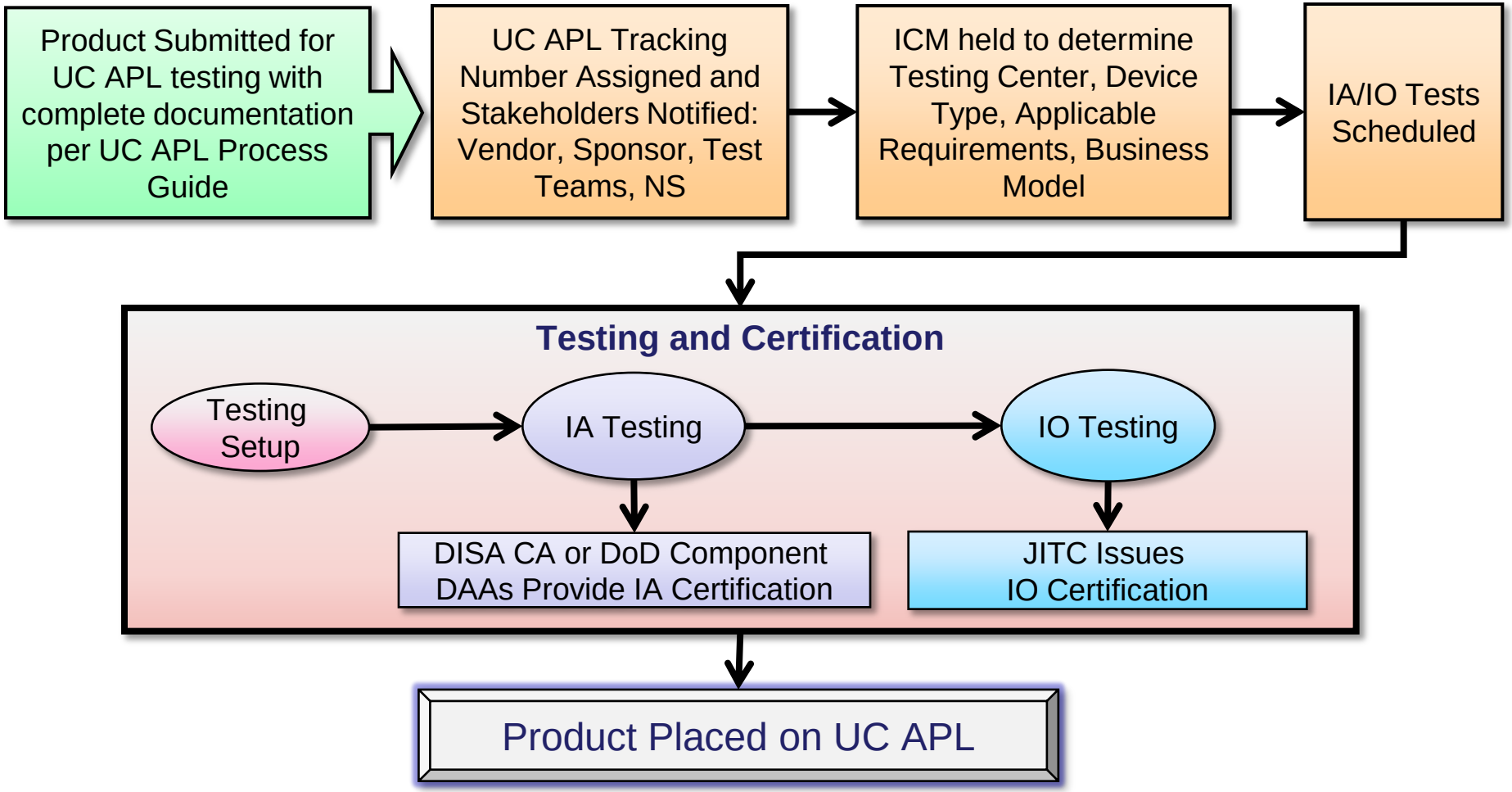
DISA
A Combat Support Agency

UC Requirements/ Products (cont'd)

2011 DoD UC Distributed Testing capabilities Matrix for DISA/Component labs - Phase I								
PRODUCT CATEGORY	PRODUCT NAME	ARMY ISEC TIC	AIR FORCE TSSAP	NAVY SPAWAR	JITC FHU	JITC IH	SKY 7	JOIN
TACTICAL UC PRODUCT	D-NE							X
	DLAN Infrastructure	X			X			X
	DTRS							
	DCVX					X		
END CRYPTOGRAPHIC UNIT PRODUCTS	HAIPE	X	X	X	X	X	X	X
	LEF	X	X	X	X	X	X	X
SECURITY DEVICE PRODUCTS	FW	X	X		X	X		
	IPS	X	X		X	X		
	VPN Concentrator (VPN)	X	X		X	X		
	Integrated Security Solution (ISS)	X	X		X	X		
	IA Tools (IAT)	X	X		X	X		
	Network Access Control (NAC)	X	X		X	X		
	RTS Stateful Firewall (RSF)	X	X		X	X		
NETWORK ELEMENTS PRODUCTS	F-NE	X	X		X			
	D-NE	X	X		X			
CLASSIFIED PRODUCTS	DSSS				X			
	DSMCU				X			
GATEWAY PRODUCTS	AS-SIP TDM GW				X			
	AS-SIP IP GW				X			
NETWORK MANAGEMENT PRODUCT	EMS				X			
DATA PRODUCTS	Data Storage Controller (DSC)	X	X	X	X	X	X	X
	XMPP Client/Server				X		X	

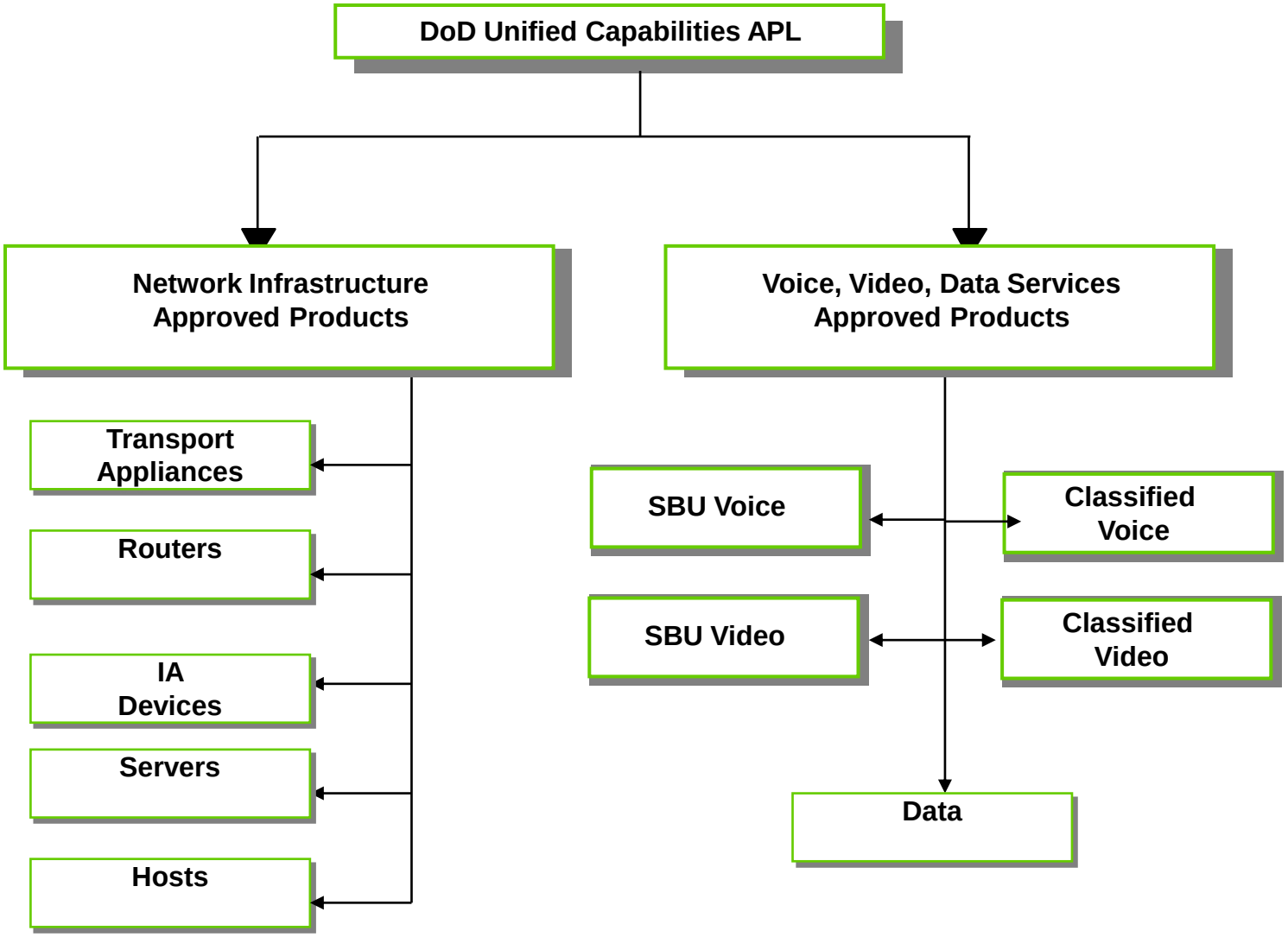
DISA
A Combat Support Agency

APL Definition Per 8100.04 and Process



The UC APL is the single authoritative source for certified UC products intended for use on DoD networks.

UC APL Categories



DISA
A Combat Support Agency

CJCSI 6212.01E and the UC APL

	6212.01E	UCR APL
Requirements	NR-KPP from, for example, Information Support Plan (ISP) or Tailored Information Support Plan (TISP)	UCR 2008
Scope	All Information Technology (IT) and National Security Systems (NSS)	Equipment and software, whether systems or services, which provide or support UC voice, video or data services
Environment	Specific implementation, tested in an operationally realistic environment	Basic configuration, tested against baseline IO and IA requirements.
Certification	NR-KPP based interoperability certification of system	Special Interoperability Certification of IO and IA requirements in the UCR 2008. Placement of product on UC APL.

Mutually supporting

UC APL products can be used as building blocks on major programs reducing test times

UCR requirements can support the development of ISPs and TISPs for major programs