



DCGS-A

Mar 2007

DCGS A

PURPOSE



- Discuss Challenges with Multiple SOA Approaches



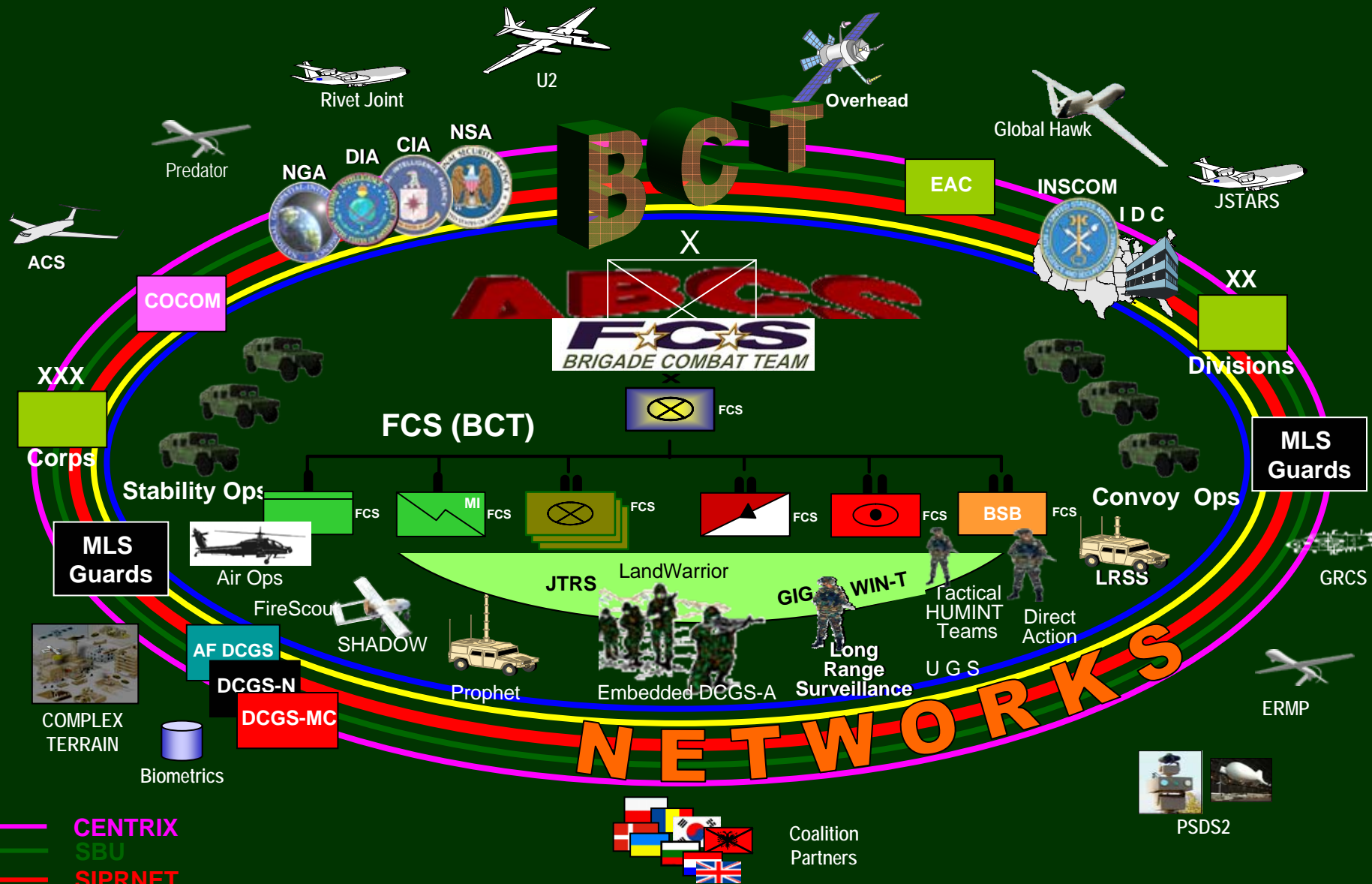
AGENDA



- Intro & Background
- SOA Approach
- Lessons Learned



Enterprise Support to the BCT

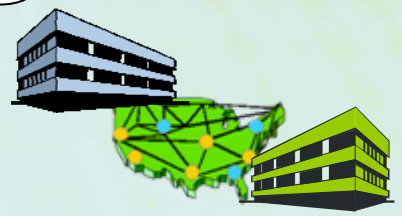


Support to the BCT is the central focus of DCGS-A

DCGS-A Comes in Three Variants: Fixed, Mobile and Embedded

Fixed:

- Regional Focus
- Continuous Collection & Analysis
- Dedicated Support (Overwatch) to Operationally Engaged Units
- Ensures Information Superiority
- TIBs Only



DCGS-A SW Foundation will be DIB, SOSCOE and NCES compliant

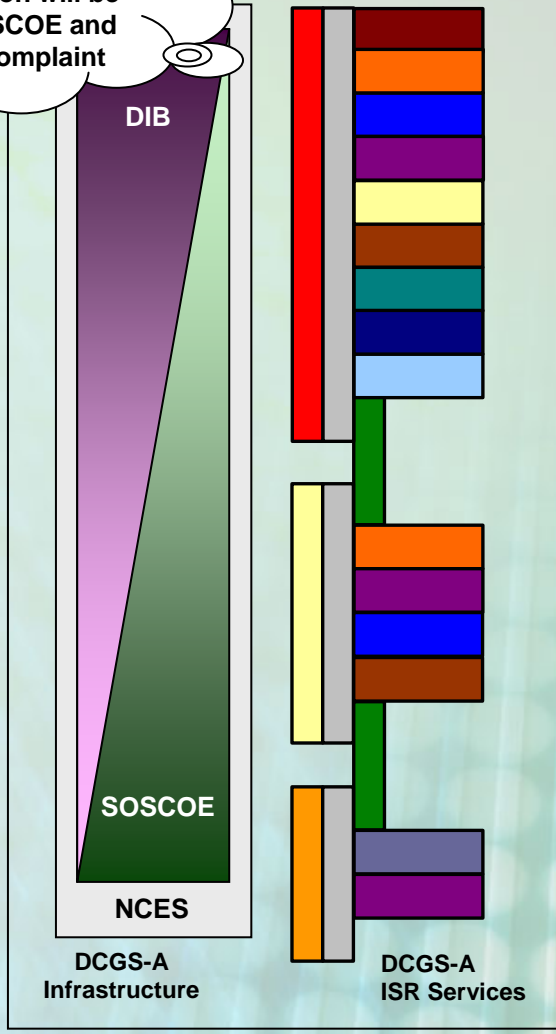
Mobile:

- Deployable and Modular
- Scalable to Meet Mission Needs
- Operations on the Move
- All Echelons



Embedded:

- Software Capability
- Spiral-out Common ISR Mission Tools
- Integrated into Complimentary Systems – ACS, FCS, NECC, etc.
- Integrated into DCGS-A at All Echelons



V4 Initiates Interoperability and Interdependencies with Transformational Systems

DCGS
FoS
Joint ISR

JTRS/
WIN-T

2005-06



V2

- Access to over 120 databases in OIF/OEF
- Improved SA
- Enhanced analyst Tools
- SCI to Bde/Bn
- Successfully fielded to Iraq in Dec 05;
- Primary Intel System
- Transitioned to DCGS-A
- V2 TPE and training sets supported by supplementals

2006-07



V3

- Two-way Battle Command Interoperability
- Joint Interoperability
- Displace ASAS Light
- Builds upon, improves on V2 in OIF/OEF
- Adds other capability as prioritized by the TCM
- Failover & COOP Site
- Upgrade to Fixed Sites

V3 made available to other Services

2007-08



V4

- Provides on the move
- Full spectrum BCT solution
- Enhance common tools
- Semi-automated Fusion
- Start POR Migration
- Builds on V3 SW
- Designed to meet threshold CDD requirements
 - Net-ready & Automated fusion KPPs
 - FCS interface/interoperability
 - NCES/NECC interoperable
- Completes steps skipped during QRC process
- Upgrade to Fixed Sites

NCES
DOD Enterprise

NECC
Battle Command

2009+



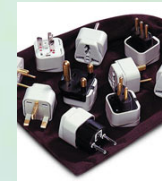
V5

Completes Capabilities:

- Automated Fusion
- Fully Integrates PORs
- Ground Stations and ACS
- Enterprise Network
- Integrated ISR Component to FCS
- Embedded Battle Command
- Interoperability with future sensors
- Battle Command integration (FCS & NECC)
- Integrates IPV6, JTRS, WIN-T

FCS

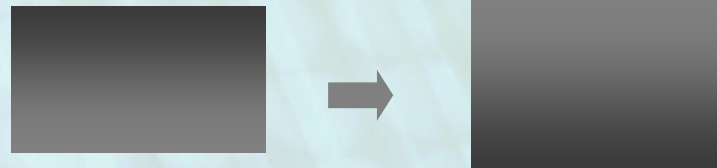
1 Leave Legacy Systems In Place, but Put them In the SOA Framework Via Adaptors

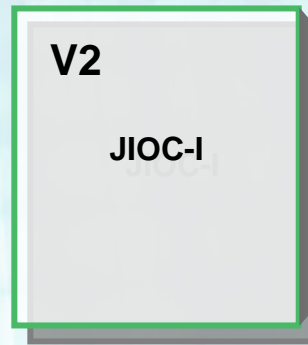
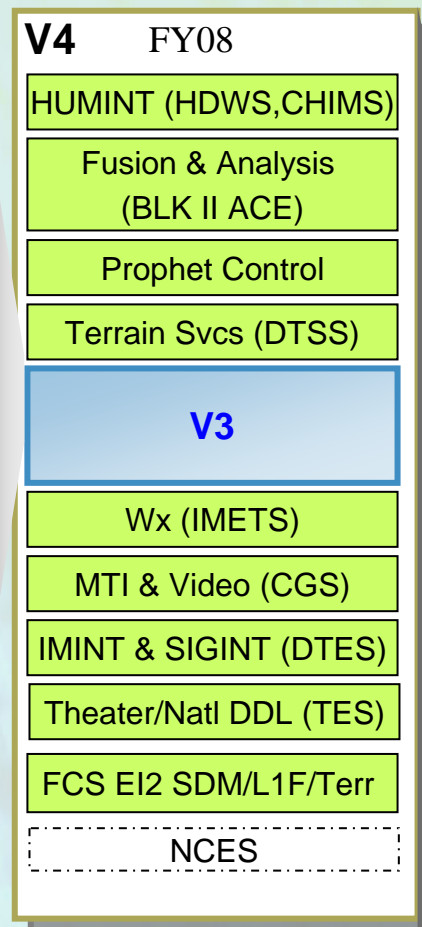
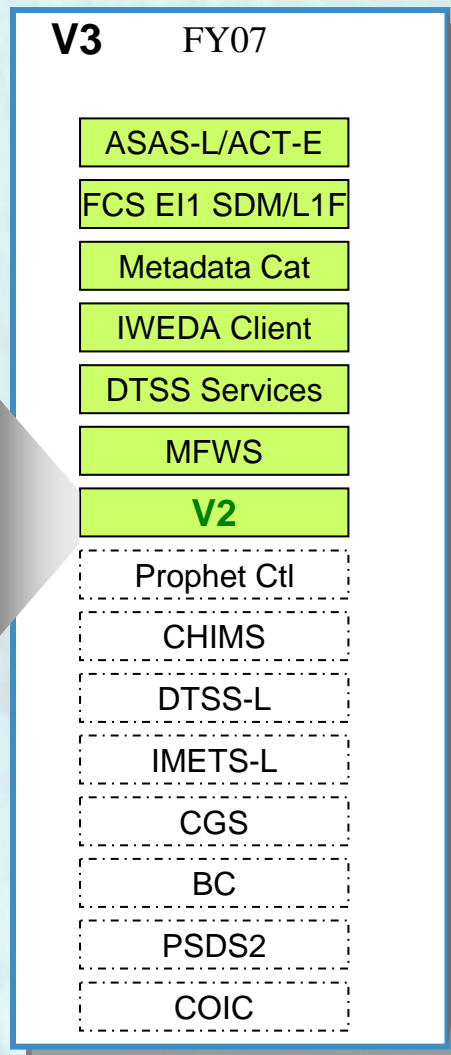


2 Pull Key Functions From Legacy and Convert to Services



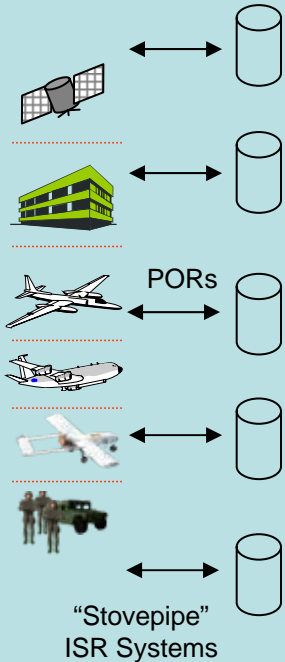
3 Phase In SOA While Legacy Systems Are Phased Out



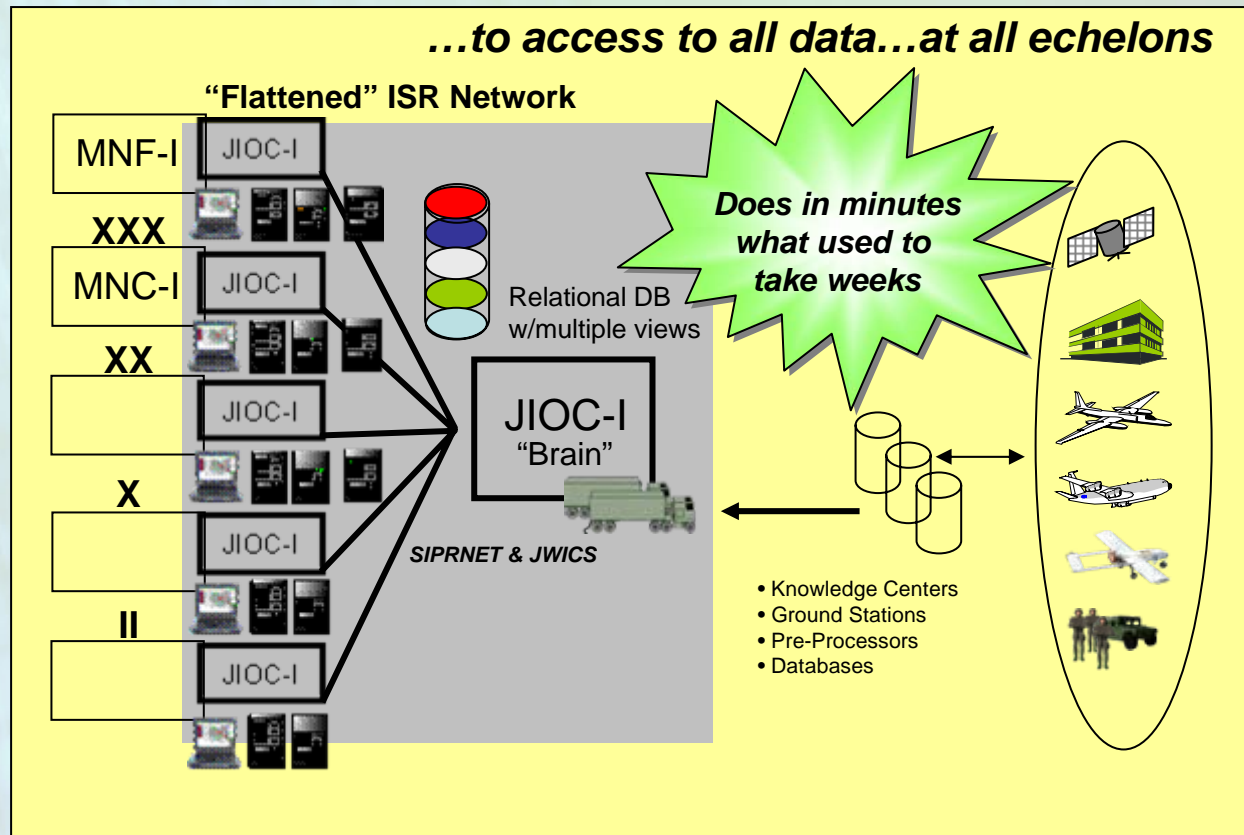


Capability Planned Leveraging of Developments

Limited access to stovepipe data...



...to access to all data...at all echelons



DCGS-A builds on the V2 success...

Warfighter View – DCGS-A v2 Provides

- Provides access to over 120 databases throughout OIF/OEF
- Improved SA
- Enhanced Analyst Tools
- SCI to Bde/Bn
- Successfully fielded to Iraq in Dec 05;
- Primary Intel System

DCGS-A v2 is not ...

- Replacement for any POR
- Full-spectrum capable
- Single source processor
- Automated fusion
- Ground station

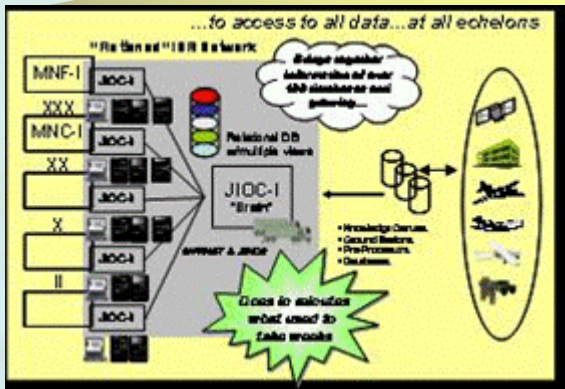
Fielded Equipment (V2)

	WSS	VIZ	BAL	MB
OIF	42	3	448	0
OEF	5	1	110	2
Trning Sets	66	31	507	11
Totals	113	35	1065	13

• V3 Provides:

- Ease of use via MFWS Functionality to Include: Visualization; Mapping Services; Tools to Support Data Mining, Correlation, Alerting, Analysis and Presentation
- A Common Framework Leveraging the Advanced Analytical Capabilities of JIOC-I and Incorporates them into a DCGS-A Enterprise
- ABCS Interoperability
- Includes Portal Access to DCGS-A Data / Products via Existing Networks

• Providing a Means to Support Rehosting on/Displacement of ASAS-Light



MFWS

Analyst's Tools Integrated CJMTK Map

V2

Basic Analyst Laptop Workstation Suite

ABCS

ABCS ATCGS

DIB

Architecture

Tools Standards

DIB

Documentation

Warfighter View:

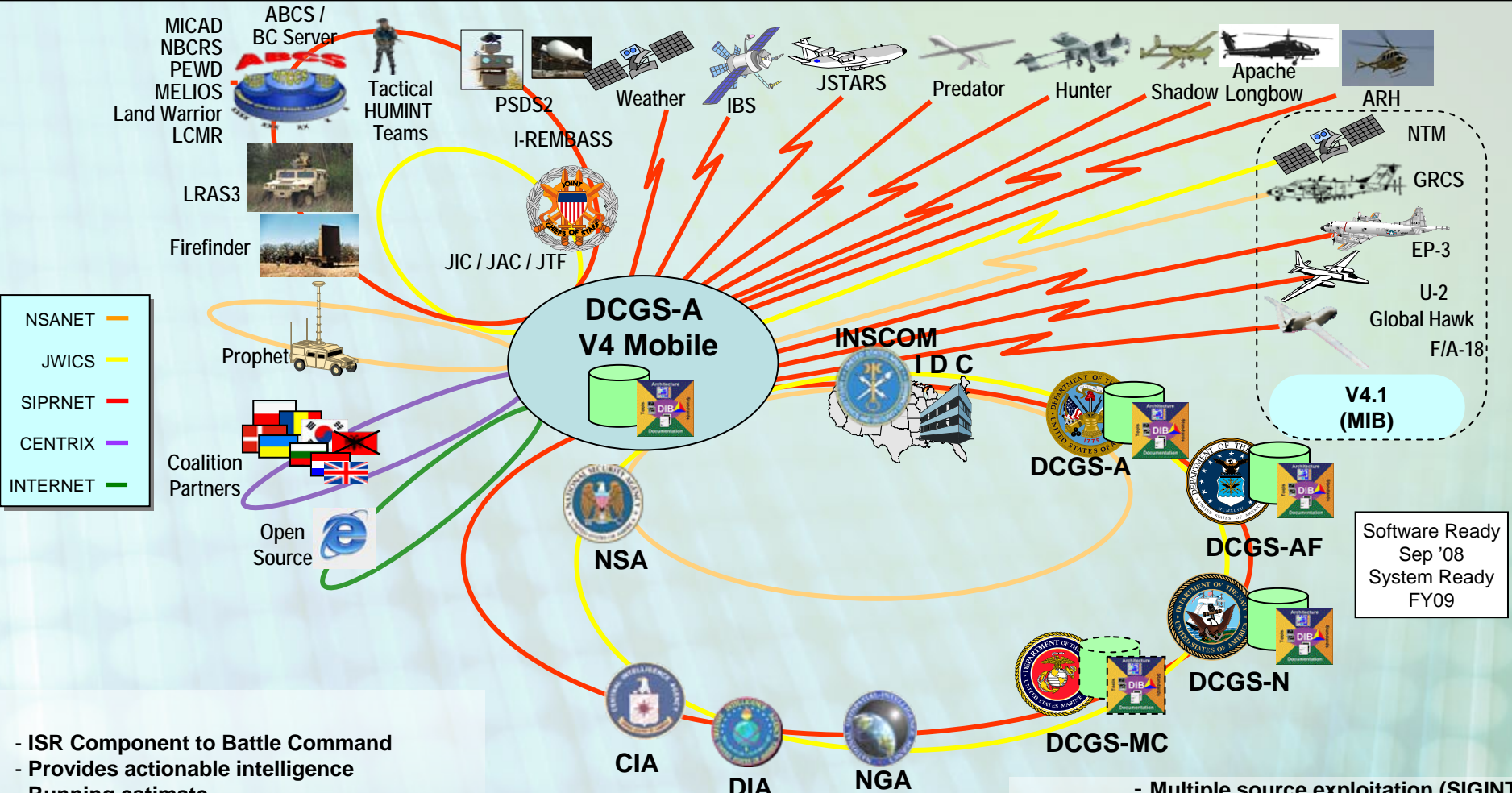
- Battle Command Interoperability
- Joint Interoperability – DCGS Integrated Backbone (DIB) enabled
- Displace ASAS Light

V3 is a Software Only Build to OIF/OEF

V3.1 begins migration of ASAS FoS (ASAS-L and ACT-E) into DCGS-A

DCGS-A ENTERPRISE ENABLED

Joint Interoperability



- ISR Component to Battle Command
- Provides actionable intelligence
- Running estimate
- Planning and collaboration
- Modular and scalable
- Mobile and Transportable
- Enables distributed operation
- V4 supports EBCT

- Multiple source exploitation (SIGINT, GEOINT, HUMINT, MASINT, All-Sources, Open Source)
 - Intel Fusion
- Access to Data (including BCT Sensors)
 - centric compliant (NECC interoperable)

Completes POR Capability

- **Integrated Portal**
 - Create an integrated Portal available to both internal and external users
 - Portal presents both domain-specific and multi-domain JSR 168 compliant portlets
 - JSR 168 promotes capability of using portlets in different Portal frameworks
- **Integrated Data Access**
 - Develop single multi-domain search interface compliant with NCEC Content Discovery and DDMS
 - Establishes architecture for integration of NCEC compliant data sources and integration of DCGS-A nodes into larger enterprise searches
- **Introduction of SOA Infrastructure Toolset**
 - Commercial Enterprise Service Bus (ESB) used to realize Multi-INT objectives through content-based routing and orchestration of domain services using BPEL 1.1 compliant workflow
 - BPEL compliance promotes capability of porting workflow to different workflow engines
 - Use of UDDI compliant service repository
 - UDDI Repository wrapped in NCEC defined services to abstract complexities of UDDI and promote portability to different repository implementations
- **Establishment of SOA Governance Procedures**
 - Government and industry jointly own process for specification and validation of service interface standards
- **Implementation of a Layered DIB Compliant Architecture**
 - User Facing Layer – Portal and Desktop Visualization Framework (MFWS/VIPER)
 - Processing Layer – Service Orchestration
 - Data Layer – Publication of Metadata to DIB MDC for inter-service DCGS interoperability
 - Core Layer – SOA security model based on NCEC Security Services

Governance Activity	Design Time	Run Time
Specify Service Interface Standards <ul style="list-style-type: none"> • Industry standard for interoperability / syntax (WS-I Profile, WSDL, XML Schema) • Domain Specific Services / Data Types <ul style="list-style-type: none"> –WSDL (ports, operations, parameters), Schema (data types) 		
Validate Service Interfaces Adhere to Standards		
Catalog Services <ul style="list-style-type: none"> • Store Service Interface Artifacts (WSDL, Schema, Usage Documentation) in Service Spec Catalog • Maintain version control / version identification for services during lifecycle 		
Publish Service Interfaces To Registry <ul style="list-style-type: none"> • Service metadata for discovery <ul style="list-style-type: none"> –Descriptive data for query, Version Identification • Service execution/binding information • Service availability/Quality of Service information 		
Monitor Service Interfaces <ul style="list-style-type: none"> • Collect service statistics <ul style="list-style-type: none"> –Usage, Availability, Performance / Quality of Service • Update service statistics in registry • Monitor SLA contracts 		

SOA governance manages and controls complexity by specifying, validating, cataloging, publishing, and monitoring service interfaces



== Tools, Architecture, Standards, Documentation

Name	Sponsor	Tools*	Architecture	Standards	Documentation	Delivery	Enhancements to DIB 1.0	Availability/Licensing
DIB 1.0	Air Force	<ul style="list-style-type: none"> •WebLogic 8.1 sp3 •Oracle 9i •MDC (WebLogic / Oracle) •Supports Solaris 8 	Documented in AF 10.2 design reviews	Listed in DIB delivery document	Delivery, install, and programmer guides/docs	Boxed CD Set	N/A	<ul style="list-style-type: none"> •80 CPU licenses of WebLogic owned by Army and available to DCGS-A (second purchase of 200 licenses ongoing) •Oracle Army enterprise licensing available •Installable MDC delivered on DIB CDs
RDE 1.5	Raytheon DCGS-A V3	<ul style="list-style-type: none"> •MDC (JBoss 4.0.3 / Oracle10g) •Win 2003/RHEL 	Documented in DCGS-A V3 CDR slides	No changes documented	“Reconfiguration of the MDC after a Clone”	Installed on V3 hard drives	<ul style="list-style-type: none"> •MDC Query Enhancement •MDC Events •MDC Results Folder 	•JBoss open source licensing available
DIB 1.2 Beta1	DIB Mgmt Office (DMO)	<ul style="list-style-type: none"> •WebLogic 8.1 sp5 •Oracle 10g •MDC (WebLogic / Oracle) •Supports Solaris 8, Win 2003, RHEL 4.2 	No changes expected	No changes expected	Documentation updates expected	Installable CDs expected	<ul style="list-style-type: none"> •MDC Enterprise Bridge •MDC Events •MDC Results Folder •MDC OpenMap •MDC Runtime XSDs 	<ul style="list-style-type: none"> •Army purchased WebLogic licensing (listed above) is upgradeable at no cost •March 2007 beta availability •Fielding at DCGS-A Fixed Ft. Gordon
DIB 1.2	DMO	<ul style="list-style-type: none"> •WebLogic 8.1 sp6 •Oracle 10g •MDC (WebLogic / Oracle) •Supports Solaris 10, Win 2003, RHEL 4.2 	No changes expected	No changes expected	Documentation updates expected	Installable CDs expected	<ul style="list-style-type: none"> •1.2 Beta1 Updates •MDC Radial Search Fixes •MDC Search Limit Fixes •NSA guided install fixes 	<ul style="list-style-type: none"> •Army purchased WebLogic licensing (listed above) is upgradeable at no cost •December 2007 availability
DIB 2.x	DMO released RFI for evolution of DIB late 2006	“Emphasize DIB standards and architecture, not product implementation”	TBD	“Validation methodology / framework allows DIB implementation developers to verify DIB interoperability & standards compliance”	“Software, documentation, configuration / install procedures available to DCGS COI as open source”	TBD	TBD	TBD

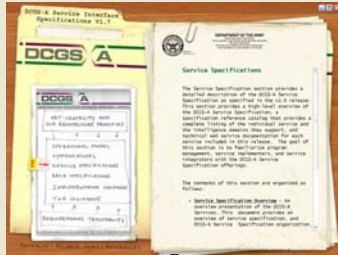
Use of DIB 1.2 Beta1 lines DCGS-A up with DMO plans and makes use of existing Army WebLogic purchases

* Only primary tools are shown

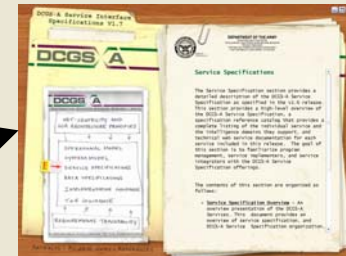
Use of Service Interface Spec help maintain open system

Government

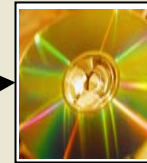
DCGS-A Service Interface Specification v1.7



DCGS-A Service Interface Specification vX.X



DCGS-A Consolidated Baseline CM



Government and Industry jointly own Governance Process for Service Interface Standards

Draft WSDLs retrieved from 1.7 Spec

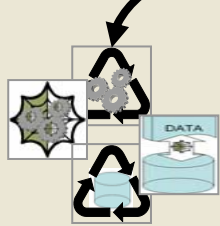


Draft XSDs retrieved from 1.7 Spec



Subject Matter Experts

WSDLs mapped to services



DCGS-A V4 Services

XSDs mapped to data model



DCGS-A V4 Data Model

Refined WSDLs/XSDs used in DCGS-A system



Service Implementers

UDDI Registry



Deployed System

Industry

- FCS SoSCOE
 - IDL Based SOA
 - Optimized for the tactical radio net environment

- Leveraging each others developments

- Interoperability
 - Both have legacy messaging interfaces
 - USMTF, JVMF
 - Web-services to OMG IDL
 - Use of Proxies
 - Discovery
 - UDDI, JXTA

- Leverage systems that you have
- Start with most pressing mission critical functions
- Use proof of concepts and demos
- Use right technology for right tasks
- Collaborate

Questions

DCGS  **A**





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