

# Challenges in Intelligence Information Acquisition and Infrastructure

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Foundational Learning



Workflow Learning



Performance Learning

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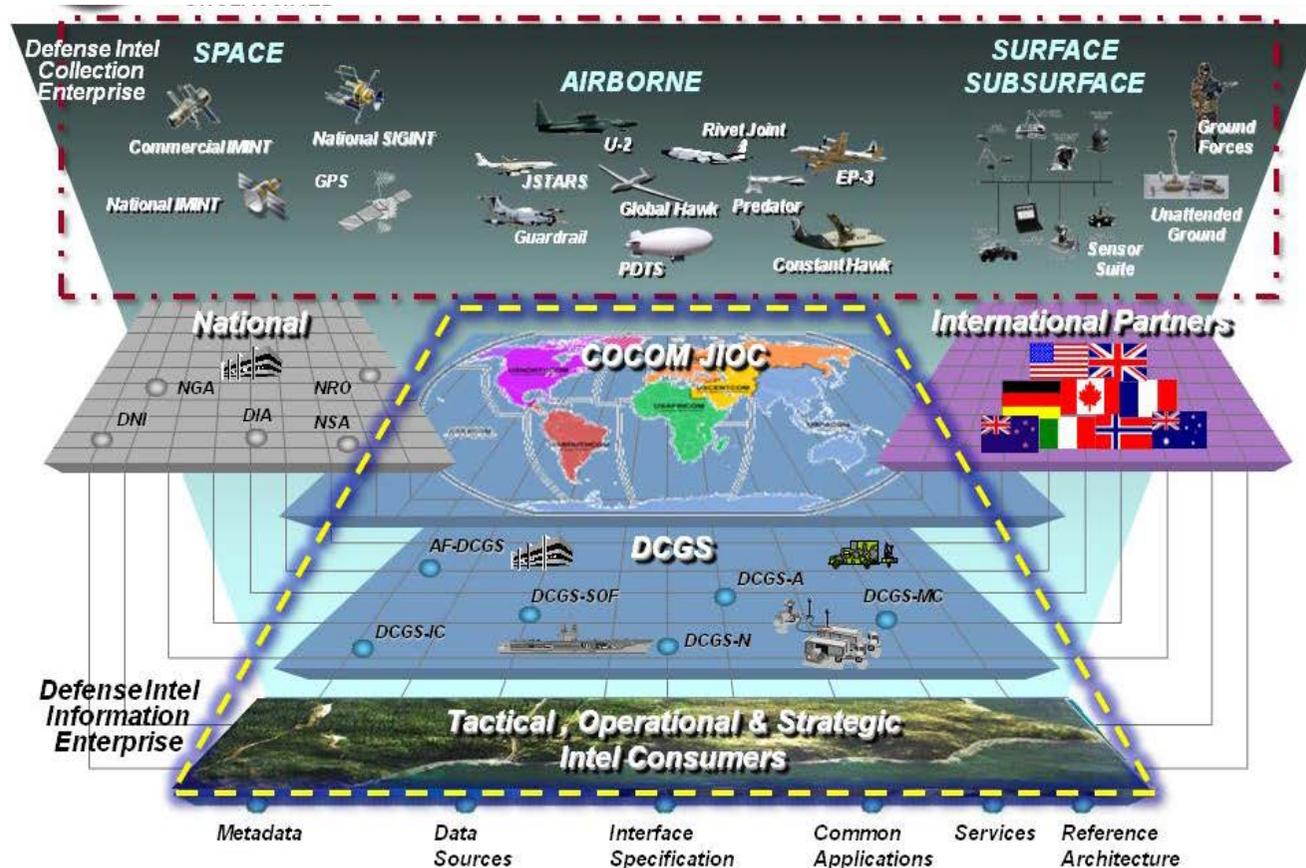
## Setting the stage – The Way it Was

- In 2005, soldiers in Iraq reported spending most of their time fighting for data rather than in combat.
- Army Deputy Chief of Staff for Intelligence (DCS G2) was asked to synchronize intelligence and operational data.
  - Stovepipes and unshared intelligence data caused 48-72 hour data latency issues, “useless” information to commanders.
- Result: Joint Intelligence Operations Center (JIOC)-Iraq
  - Funded and fielded in six months

The Defense Intelligence Enterprise (DIE) consists of two components – the Defense Intelligence Collection Enterprise (DICE) and the Defense Intelligence Information Enterprise (DI2E)

➤ DICE: Collect intelligence information data

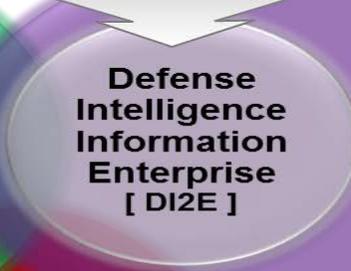
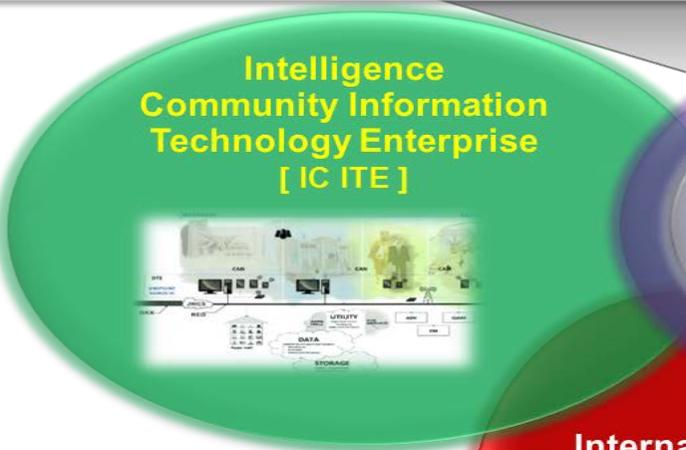
➤ DI2E: Transforms collected intel data to intelligence information for further analysis



# DI2E Interrelationships



- DIA
- NSA
- NGA
- NRO
- CIA



- USA
- USN
- USAF
- USMC
- DIA
- NSA
- NGA
- NRO
- DISA
- DLA
- CCMD



- 5 Eyes
- Coalition
- BiLats



# Intelligence Community Information Technology Enterprise (IC ITE)

- **What:** A strategy to further the Director of National Intelligence's vision of intelligence integration by changing the IC's IT operating model.
- **Led by:** The Office of the Director of National Intelligence (ODNI) with intelligence agencies taking the lead on various IC ITE services, such as:
  - *The Intelligence Community (IC) Common Desktop: The National Geospatial- Intelligence Agency (NGA) and the Defense Intelligence Agency (DIA)*
  - *The IC Cloud: The Central Intelligence Agency (CIA) and the National Security Agency (NSA)*
  - *The IC Applications Mall: NSA*
  - Network Requirement and Engineering Service: The National Reconnaissance Office (NRO)
  - Information Transport Service: NSA
  - Identity Authorization and Authentication: CIA and NSA
  - Security Coordination Center: ODNI
  - Enterprise Management: DIA
- **Who it affects:** All analysts, intelligence officers, and operators in the U.S. Intelligence Community.
  - By the numbers - More than 56,000 new IC Desktops deployed at NGA and DIA; 235 apps and 3,165 unique monthly users in the IC Applications Mall; 6,500 users in the IC Applications Development community.



# The IC Common Desktop

- Phase one: Delivered more than 56,000 new desktops across NGA and DIA.
- Phase two: Deploy the common desktop to the rest of the IC.
  - Provides a uniform interface and enables analysts at any agency to communicate and exchange information.



# The IC Cloud

- Central Intelligence Agency has established IC Commercial Cloud Services (C2S) through Amazon.
- National Security Agency has stood up an early implementation of the IC's classified Government Cloud, or GovCloud.



# IC Applications Mall

- NSA launched the next generation IC apps mall in June 2015
  - Component 1: Hosting environment where agencies can upload and download apps.
  - Component 2: Development environment that allows the IC developer community to swap code.
- Allows software reuse
  - One organization develops software and makes available to the rest of the IC community.
  - Reuse efficiencies also extend to security
    - NSA Deputy CIO Sally Holcomb: “If an agency has worked through software assurance, having someone else be able to use [that same software] to save on time and security is also a win.”



# The DoD Joint Information Environment (JIE)

- **What:** A framework to align and modernize the Department of Defense's (DoD) IT networks.
- **Led by:** The Office of the DoD Chief Information Officer
- **Who it affects:** The entire DoD, which includes more than 1.4 million active-duty men and women, 718,000 civilians, and 1.1 million National Guard and Reserve members using more than 7 million computers and IT devices.
- **Priority modernization areas:**
  - The optical carrier transport (fiber optics)
  - Multiprotocol Label Switching (MPLS) routers
  - The Joint Regional Security Stacks (JRSS)
  - The Joint Management System for the JRSS
  - Cyber situational analytic capability for the JRSS
- **Some key accomplishments to date:**
  - One JRSS is up and functional at Joint Base San Antonio.
  - A number of MPLS router installations have been completed.
  - Several industry members have provisional authorizations in place to compete to provide cloud services.
  - The NIPRNET Cloud Access Point became operational in December 2015 when the East Coast capability came online to complement the existing West Coast capability.
- **Looking ahead:** The No. 1 priority of the DoD CIO is to continue the installation and activation of JRSS and MPLS routers as well as to put optical transport upgrades in place to meet modernization goals by the end of FY 2019.



# Modernization priorities

- MPLS
  - Routers will reduce the chances of data being stalled or lost as a result of high volume or congestion.
- JRSS
  - Cornerstone of JIE
  - JRSS will improve network security and increase the DoD's capacity for collecting, storing, and sharing Big Data\* among services and with the IC.
  - Increases operational capabilities for the COCOMs & IC.

***'Big Data': Extremely large data sets that may be analyzed computationally to reveal patterns, trends, and associations, especially relating to human behavior and interactions.***



# The Defense Intelligence Information Enterprise (DI2E)

- **What:** The unifying construct that bridges IC ITE and JIE.
- **Led by:** The Office of the Under Secretary of Defense for Intelligence
- **Programs and systems under the DI2E umbrella include:**
  - The Distributed Common Ground/ Surface System (DCGS) for the U.S. Air Force, Army, Navy, Marine Corps, Special Operations Forces, and Intelligence Community
  - U.S. Battlefield Intelligence Collection & Exploitation System – Extended (US BICES-X)
  - Combatant Command Intelligence Information Technology (CCMD Intel IT)
- **Ten focus areas:**
  - Identity and access management
  - Data tagging
  - Content discovery and retrieval
  - Cross domain
  - Domain name services
  - Time synchronization
  - Collaboration tools
  - Visualization capabilities
  - Service Directory
  - Cybersecurity
- **Key Accomplishments to date:**
  - Established the DI2E Developers Environment, an open development environment for the DI2E community that provides the ability to provision virtual machines to support development, integration, and testing. The environment currently hosts 280 collaborative projects across 60 programs and supports more than 3,100 users.
  - Established the DI2E Storefront to enable smarter acquisition that promotes interoperability, software component ease of use, and cost savings. The storefront provides a catalog of DI2E architecture artifacts, DI2E technical profiles, reusable software components, and more.

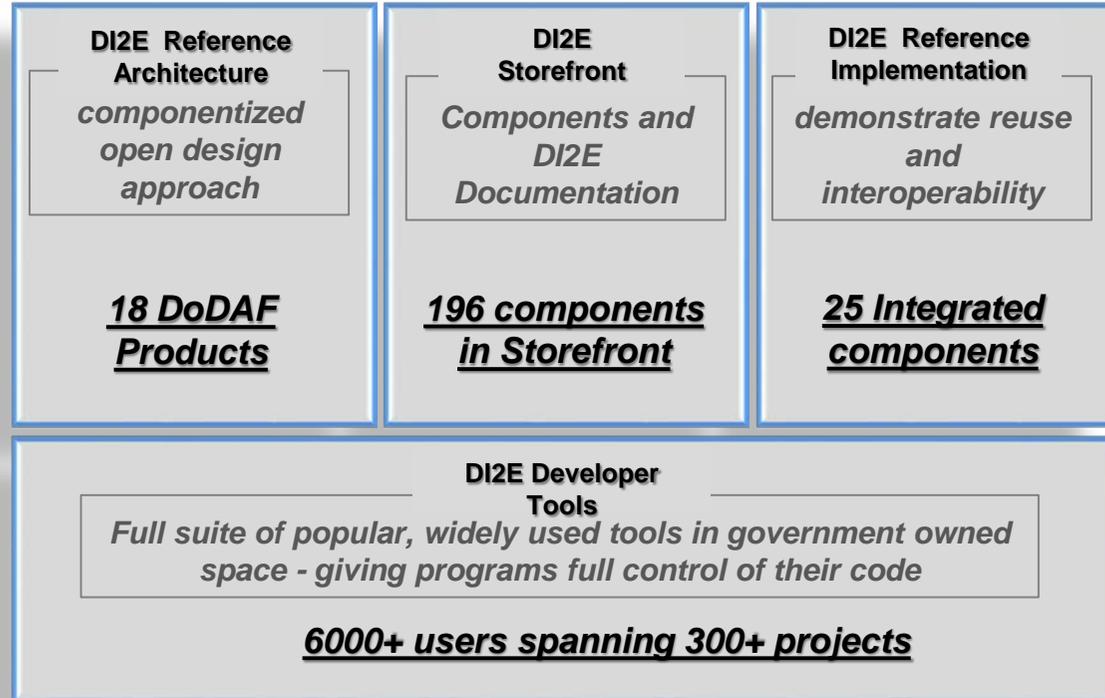


# International Partners

- What: Foreign partners & allies
  - 5 Eyes: The term for the post-WW2 agreement between the US, United Kingdom, Canada, Australia and New Zealand which “permitted the division of effort in sharing signals intelligence”
  - NATO: Traditional European allies via NATO’s Special Committee.
- Led by: Leadership shared among alliance members
- Who it affects: Five Eyes nations plus:
  - “9 Eyes”: Five Eyes plus Denmark, France, the Netherlands, and Norway
  - “14 Eyes”: 9 Eyes plus Germany, Belgium, Italy, Spain, and Sweden
  - “41 Eyes”: Includes all the countries of the 14 Eyes plus
    - The allied coalition in Afghanistan
    - Tier B countries with which the Five Eyes have “focused cooperation” on computer network exploitation, including Austria, Belgium, Czech Republic, Denmark, Germany, Greece, Hungary, Iceland, Italy, Japan, Luxembourg, the Netherlands, Norway, Poland, Portugal, South Korea, Spain, Sweden, Switzerland, and Turkey
    - Club of Berne: 17 members including primarily European States; the US is not a member
    - The Counterterrorist Group: a wider membership than the 17 European States that make up the Club of Berne, and includes the US
    - NATO Special Committee: made up of the heads of the security services of NATO member countries
    - Singapore has also partnered with the Five Eyes



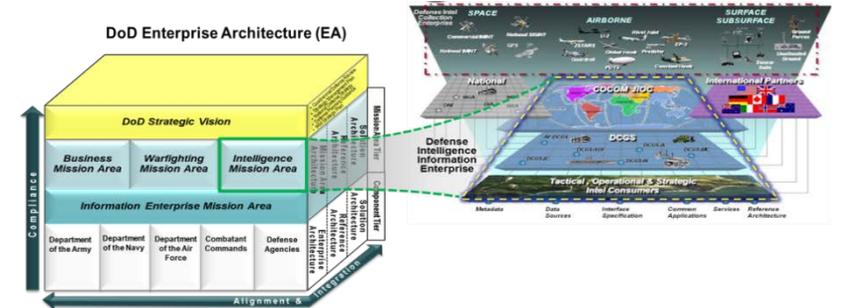
# DI2E Framework Building Blocks



***The DI2E Framework consists of the DI2E Reference Architecture, DI2E Storefront, Reference Implementation, and DI2E Developer Tools***

# DI2E Framework Objectives

- Establish the DI2E Clearinghouse to promote interoperable and reusable components
- Promote new software development practices to remove stove-piped development and vendor lock in
- Identify and publish components that support both JIE and IC ITE



The DI2E Framework goal of enterprise consolidation directly aligns with the Government-wide initiative to move towards a more efficient, effective, and cost-conscious methodology of doing business.

- Services Functionality Description (SvcV-4)
  - Catalogues the web services specs needed for the DI2E
  - Includes the mission services, common services, and infrastructure services
  - Incorporates process management, portfolio management, and compliance protocols
  - Aligns IC stakeholder needs and synchronizes investment strategies



The image shows a screenshot of a web services catalog table. The table is divided into three horizontal sections, each with a colored background and a label:
 

- Mission** (pink background): The top section of the table.
- Common** (green background): The middle section of the table.
- Infrastructure** (blue background): The bottom section of the table.

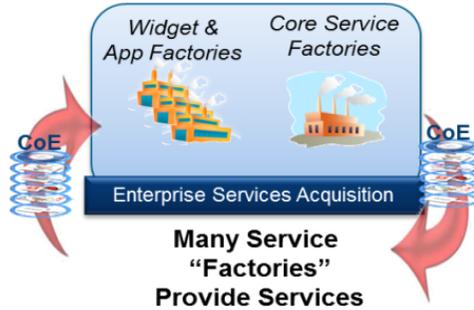
 The table contains multiple columns of text, likely representing service specifications, but the individual entries are too small to read. The labels 'Mission', 'Common', and 'Infrastructure' are centered within their respective colored sections.



## Framework: How to Build the Services

- Architecture, Guidebook, Standards, Specifications, etc.
  - Assets from which Services are built
  - Leverage existing capabilities selected by DoD and the IC
  - Ensure defense intelligence information can flow seamlessly across enterprise boundaries
  - Framework specification will have a Reference Implementation (RI)
    - Demonstrate the proper operation of the specification
    - Other implementations must match the functionality of the Reference Implementation in order to show that they are compatible and interoperable
  - All Reference Implementations are integrated into the DI2E Reference Implementation to demonstrate that the assembled components can deliver the required capabilities.

# Service “Factories” Provide Services



## DI2E Framework PMO



Widget &  
App  
Factories



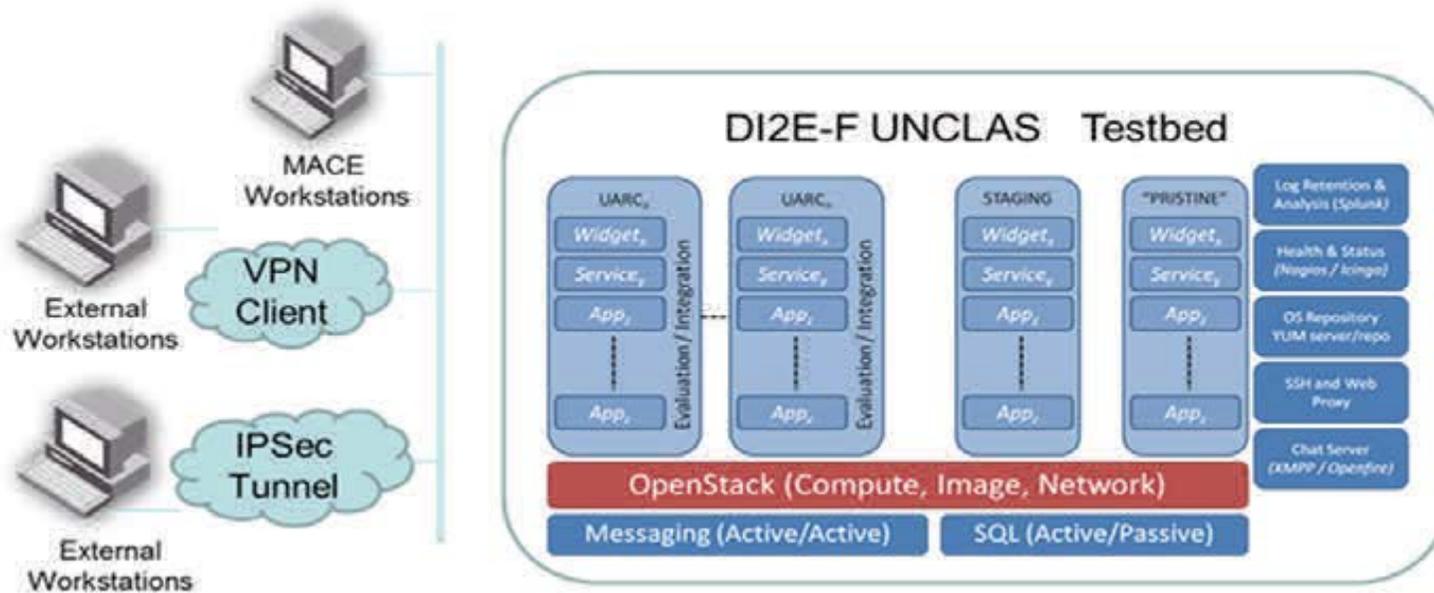
Core  
Service  
Factories



- DI2E Framework Program Office Coordinates with Service Factories to understand, recommend, coordinate, document, enterprise, and publish for reuse.
- Widget & App and Core Service Factories: Government Program Offices, Industry, Academia, and other partners that develop apps, interfaces, implementation guides, and other software services

## Centers of Excellence (COE)

- National Reconnaissance Office, DI2E Framework Group
- DI2E Programs participating through OUSD(I) governed processes
- Carnegie Mellon University, Software Engineering Institute
- Massachusetts Institute of Technology, Lincoln Laboratory
- Sierra Nevada Corporation
- Northrup Grumman
- BAE Systems
- Raytheon
- G2, Inc.
- George Mason University, C4I Center
- University Southern California, Information Sciences Institute
- Utah State University, Space Dynamics Laboratories
- Air Force Research Laboratory



- DI2E Testbed – Hosts the Reference Implementation and will test new components to make sure they work well within the DI2E Framework.
  - Test results will determine which components are “enterprise grade”

- **DI2E Storefront**

- Access to DI2E components and guidebooks; available service offerings
- Knowledge base for developers, system integrators, and operational end users
- Includes commercial, open source, and government components
- Publicizes DI2E Clearinghouse “Consumer Reports” on reuse and interoperability



- *“Adopt before Buy, Buy before Create”*
  - Emphasis is not on creating new technologies
    - Upgrade existing technologies and implementations to provide enterprise grade components for fielding and use where needed across the DI2E
  - Ensure consistency of services, interoperability and reuse, process efficiency
  - Users may rate services and review service ratings
- DI2E Developers Environment
  - Full suite of popular, widely used development tools
  - Government developed code on government resources
  - Funded as part of DI2E Framework
    - No costs to DI2E programs





## The Bottom Line...

- The DI2E Framework goal of enterprise consolidation directly aligns with the Government-wide initiative to move towards a more efficient, effective, and cost-conscious methodology of doing business.
  - Provides intelligence analysts to ability to integrate, evaluate, interpret and predict the operational/physical environment
  - Enables better situational awareness to military and national decision makers



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# *Questions?*