

### Achieving Information Dominance: Unleashing the Ozone Widget Framework

#### 19<sup>th</sup> International Command and Control Research Symposium "C2 Agility: Lessons Learned from Research and Operations" Track: 3

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SPAWAR Systems Center Pacific



"My view is that technology sets the parameters of the possible; it creates the potential for a military revolution."

> Max Boot War Made New







- ▼ Information as a Weapon
- Data Flow Issues
- ▼ SWIF Design
- ▼ SWIF Governance Process
- SWIF Widgets Demonstration
- ▼ Way Forward



## Information as a Weapon



"The JIE is essential to bringing to bear the power of the Enterprise across the strategic, operational, and tactical levels. A standard, unified information environment is necessary to meet the operational and security requirements of modern joint military operations."

> Enabling the Joint Information Environment (JIE) Defense Information Systems Agency March 6, 2014



# The Importance of the Joint Information Environment

- ▼ From GIG...to....to the Joint Information Environment (JIE)
- ▼ DISA is the lead agency for JIE development
- The JCS chairman and each of the service chiefs have endorsed JIE as a military imperative
- In execution, there are three lines of operation: governance, operations, and technical synchronization
- The first increment of JIE is being implemented in Europe, the next increment to be deployed will be in the Pacific region



# "Information Dominance is about warfighting. It is about warfighting in the information age."

Vice Admiral Ted Branch Deputy Chief of Naval Operations for Information Dominance March 6, 2014



# The U.S. Navy's Strategy for Information Dominance

- As the 1990's concept of Network Centric Warfare expanded and as technology advanced, we now have a ubiquitous network and EM spectrum from which to launch information as a weapon
- In 2009 the Navy consolidated information-related programs, resources, and manpower in order to organize, unify and concentrate its information capabilities
- Information Dominance is the operational advantage gained from integrating the Navy's information functions, capabilities & resources to optimize decision making and maximize warfighting effects
- The strategy focuses on the three fundamental Information Dominance capabilities of Assured Command and Control, Battlespace Awareness, and Integrated Fires



#### Navy Strategy for Achieving Information Dominance

2013-2017

Optimizing Navy's Primacy in the Maritime and Information Domains





# This all Sounds Great in Theory – but What Warfighting Challenge Does it Help Me Solve?



"In reality, the key to the pivot strategy will <u>not</u> be found in the redeployment of U.S. forces in the region or the acquisition of any particular weapons system....The heart of a successful defense strategy for the Asia-Pacific will be in the <u>network</u>."

Dr. Daniel Goure "The Asia-Pacific Pivot Must Be About the Networks" Lexington Institute April 10, 2013



"Commanders at all levels <u>will require the ability to rapidly</u> <u>discover and access key relevant intelligence and</u> <u>operational data</u> to maintain decision superiority in contested or denied C2 environments. Such advanced capabilities involve <u>advanced decision support aids</u> that can provide real-time sharing and collaboration of authoritative intelligence and operational data across <u>all levels of wars</u>."

> U.S. Navy Information Dominance Roadmap United States Navy, Information Dominance Corps March 2013



### **Data Flow Issues**



#### **Data Flow Issues – Disparate Networks**





### Data Flow Issues – What if...





## Secure Web Integration Framework (SWIF) Design



### **Secure Web Integration Framework**



Provide essential information residing in multiple classification enclaves discoverable, accessible, widely shared, and understandable by the DoD community and ultimately the interagency community on both the high and low side.

#### Scope:

Space and Naval Warfare Systems Center Pacific (SSC Pacific) was tasked by the Joint Staff to design an open architecture framework that allows for rapid deployment of analytical, collaborative applications in a secure and protected multi-level security environment to support a planning community.



### **System Design Considerations**

- Enforcement of Mandatory Access Control (MAC)
- Data sharing via Common Data Model (CDM)
- Common User Interface (UI)
- Short application deployment time
- Web-based and lightweight client applications
- ▼ Using open source COTS/GOTS
- Application Programming Interface (API) to create MAC-enabled widgets



### **SWIF Components**

- Presentation Framework Ozone Widget Framework by NSA
- ▼ Custom Widgets by SSC Pacific
- ▼ SWIF Security Service by SSC Pacific
- ▼ Common Data Model by SSC Pacific
- ▼ Data Source NoSQL MongoDB



### **SWIF System**





### Secure Web Integration Framework (SWIF) Governance Process



### **System Governance Process**

- ▼ Complete Certification & Accreditation review of SWIF Infrastructure
- Streamline the deployment process of widgets
- Accreditation criteria based upon capabilities, complexity, and security boundaries and whether it is characterized as Simple or Medium
- ▼ Simple Widget:
  - Displays data, saves data to database, but does not communicate with other widgets
  - Limited functional & integration testing required
- ▼ Medium Widget:
  - Displays data, saves data to database, and communicates with other widgets
  - Full functional & integration testing required



## Secure Web Integration Framework (SWIF) Widgets Demonstration



## Secure Web Integration Framework (SWIF) Way Forward



### **Way Forward**

- Integration of SWIF on high and low networks
- Certify & Accredit SWIF
- ▼ Increase functionality
- ▼ Increase data access by retrieving row- and cell-level data
- Increase data sources (e.g., file system, SQL databases)
- Explore other networks to share MAC-enabled data



### **Contact Information**

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### **Back Up Slides**











### **SWIF Widgets Demonstration**

- ▼ Planning Widgets
  - Plan
  - Target Search
  - Capability Search
  - Match targets to capabilities
- Conceptual Model Visualization Widget
  - Model Search
  - Model Card
  - Data Card



### Launching SWIF (in case demo doesn't work)





### Plan Edit Widget (in case demo doesn't work)

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Allows analysts to diagram relationships between Megacity infrastructures, as links and nodes, annotate nodes, attach supporting documents, and provide a security label on data saved to repository.





### Model Card Widget – 2 Views

▼ View model's supporting information & configure display

- Forwards, backwards, bidirectional, depth

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### Model & Model Card Widgets





### Data Card Widget – 2 Views

#### ▼ Configuring Node Properties

#### ▼ Adding Name-Value Pairs

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### **Security Label**





### **Security Label**

