“DoD Application Store: Enabling C2 Agility?”

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“C2 Agility: Lessons Learned from Research and Operations”
Track: 3

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SPAWAR Systems Center Pacific
Outline

▼ Information: Key Warfighting Domain

▼ Defense Acquisition System Challenges

▼ Overview of Recommended Solution

▼ Conclusion
Information: A Key Warfighting Domain
“[T]he Navy will create a fully integrated C2, information, intelligence, cyberspace, environmental awareness, and networks operations capability and wield it as a weapon and instrument of influence.”

U.S. Navy Information Dominance Vision
United States Navy, Information Dominance Corps
May 2010
Warfare Domains

Land

Sea

Air

Space

Information
“The Navy is pursuing improved information-based capabilities that will enable it to prevail in the higher-threat, information-intensive combat environments of the 21st Century.”

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

In a world of information overload, how do we ensure we get the right information to right warfighter at the right time?

In a world of budget constraints, how can we agilely shift our mission, and the C2 capabilities needed, to respond to a new demand?
Defense Acquisition Challenges
Challenge

- Industry has already fine-tuned its use of widgets and mobile applications
  - Rapidly evolving software development paradigm
  - A driving force in delivery of web-based dynamic content
- Using standard acquisition processes in DOD, by the time new solutions are deployed to the warfighter, the technology is obsolete
- Several programs within the DOD have started similar initiatives that hold the promise of reducing the “heavy lifting” required as part of the current acquisition process
Defense Acquisition System was designed to purchase “big ticket” items like aircraft carriers and fighter planes.

- Excessive development and update cycles
  - Private sector cycles are 12-18 months
  - Defense IT systems routinely require 48-60 months

Average Build Time: 7+ years

Average Build Time: 18 mos.
The Current Process

Joint Capabilities Integration and Development System (JCIDS) Process Flow Chart

Capability Requirement Identification (including planning, studies, and other activities)

- **START**
- **Enclosure A:** Capability Requirement Identification (Operational Planning or Other Studies/Activities)
- **Enclosure B:** Document Generation (ICDs, IS ICDs, CDDs, CPDs, Joint DCRs, UO/Ns/UCWGs/OECWs)
- **Enclosure C:** Document Submission, Gatekeeping, and Process Metrics
- **Enclosure D:** Deliberate Requirements Validation Process (ICDs, IS ICDs, CDDs, CPDs, Joint DCRs)
- **Enclosure E:** Urgent Requirements Validation Process (UO/Ns/UCWGs/OECWs)

- **Enclosure F, Para 1:** Joint DCR Implementation
- **Enclosure F, Para 2 (Nominal Process):** Interaction with Deliberate Acquisition Process
- **Enclosure F, Para 2 (Process Variation):** Interaction with Rapid Acquisition Process

- **Need successor documents? (CDD/CPD/Joint DCR)?**
  - **Yes**
  - **No**

- **Transition ending requirement?**
  - **Yes**
  - **No**

- **Resubmit as deliberate requirement?**
  - **Yes**
  - **No**

Related Guidance Information:

- Enclosure F, Para 3: Interaction of Requirements in Other Processes
- Enclosure G: Joint Prioritization
- Enclosure H: Requirements Management Certification Training
Overview of Recommended Solution
Overview of Recommended Solution

- A lightweight web application test and integration (T&I) environment
  - Needed to model, test, exercise, and perform certification and accreditation of widget capabilities

- A Widget T&I environment is required for widget technology development throughout the DOD

- A widget T&I environment is needed that incorporates the unique and common aspects of Navy widget environments
Increased Speed to Capability

- **CAPABILITY DEVELOPMENT**
  - Current: 12 – 18 Months
  - Proposed: 6 Months

- **TESTING (OT & IA)**
  - Current: 6 – 8 Months
  - Proposed: 2 – 3 Weeks

- **FIELDING**
  - Current: 2 Weeks
  - Proposed: Days

Reduced Total Ownership Costs

- Cost per app rather than per platform
- Fielding cost down
  - Upload once; available for all approved platforms
  - Automate delivery of widgets, applications, and services
  - No tech visit necessary for installation
- Sustainment cost down
  - Automate distribution of updates / patches
- The Storefront T&I environment provides:
  - Automated submission of new warfighter capabilities
  - Manual and automated integration, functional, and IA testing of widgets and applications
  - Rapid approval process to push new warfighter capabilities to the operational environment

- The PEO C4I Storefront provides:
  - PEO C4I capabilities to ashore users
  - Distribution of PEO C4I capabilities from ashore to the tactical environment

- The Navy Tactical Cloud Marketplace provides:
  - Afloat users the ability to discover, access, and use PEO C4I capabilities
  - Provides feedback on capabilities received, updated, and installed back to the PEO
Navy App Store Enterprise

PoR Developer
Submit Widget / Application

SSC-Pacific
OWF  OMP
Repository
Governance
Distribution
Update Manager

PEO C4I Storefront
PRNOC
OWF  OMP
Repository
UARNOC
Distribution Service
Update Manager

CANES/ACS
Tactical Cloud Marketplace

OMP MetaData
OWF Widgets

Repository
Widget Binaries
Application Bundles
Storefront Metadata
Zipped Data

Update Manager

Distribution Service

Widget / Application Install Manager

PaaS
Widget / Application Install Agent

Installation Environment

Apps  Data  Services

Automatically Updates CDMDOA, SPIDER, NDE, ILS, etc.

PoR View, Access & Query Widget / Application Configuration on Each Ship

T&I Environment

Ashore Environment

Afloat Environment
Rapid IT Process & Agile Widget Process

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Continuous Data Collection & Validation for Test Report

Test Report

COTF

Field Decision

PORs Widgets

StFNT T&I Trusted Environment

Acceptance

Integration Tests

IA Tests

OPS Testing

AWA IPT Board

PEO C4I STFNT Trusted Environment

War Fighter Deployment

Agile Widget Approval Process
Proposed Widget Governance Process

Development
- Developers
- POR Sponsored Widgets
  - Entrance Criteria
  - Prerequisites
  - Source Code Documentation
- Development Repository
  - SDK
  - API
  - Source Code

OPTEV / ODAA Approved Processes
- Integration Testing
- Functional Testing
- Approval Board

Operational Repository Widget/Service Warehouse
- Approved Widgets
- Trusted Environment
- Widget A

Storefront
- Metrics Collection
- Exposure
  - Configuration Management
- Discovery
- Metrics Collection

Test & Integration Processes
- Exit Criteria Met: Widget Approved
- Trusted Environment
- Widget A

Warfighter Deployment
- Approved Widgets
- Trusted Environment
- Widget A
Conclusion
Conclusion

- Rapid IT acquisition is a way to provide the warfighter with composeable C2

- Composeable C2 capabilities enable our warfighters to innovate in theater to provide the right information, to the right people, at the right time

“The only response to change is innovation.”  
– John Kao
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BACKUPS
Industry Approach

- Current acquisition rules required for POR systems have caused a major gap between the technology available to the warfighter and that which is available commercially
  - Exacerbated by capabilities of smartphones and tablet computers
  - Greater gap for younger service members raised on commercial technologies and then forced to use outdated systems

- Apple and Google are both known for their mobile operating systems and the applications (or “apps”) that run on them
  - Both companies have “app” stores that allow developers to rapidly deploy applications, but they do so in very different ways
Ozone Widget Framework

▼ A platform that offers infrastructure services to simplify the development of workflows and presentation-tier application integration

▼ It is also a layout manager for the operation of widgets on a single web page
Warfighters access all C4I capabilities via a single, browser-based C4I Storefront
- Widgets
- Applications
- Updates / Patches

Common PoR processes and a standard mechanism for deployment

Positive control and visibility into the C4I systems and version available on the network
PEO C4I Storefront & Navy Cloud

Accelerating Acquisition To Enable Rapid Fielding of New Capabilities

PEO C4I Storefront
Missions Support Modules: Widgets, Application, Services
- MTC2
- DCGS-N
- NITES Next

Widget & Apps T&I Environment
- Agile Widget/App Approval
- C2RPC

User Access
- Desktop
- Tablet
- Smartphone

Utility Cloud
- Agile Widget/App Approval
- Test widget

Enterprise Cloud
- Analytics
- Data

Storage Cloud
- Audio
- Text
- Imagery
- Video

MTC2
DCGS-N
NITES Next

CANES
Utility Cloud
Data Cloud
Storage Cloud

PEO C4I Storefront
Missions Support Modules: Widgets, Application, Services
- MTC2
- DCGS-N
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Afloat
Widget Governance Process Overview

1. Developers
   - Development Repository
   - SDK
   - API
   - Source Code

2. Entrance
   - Criteria
   - Prerequisites
   - Source code documentation

3. Trusted Environment
   - OPTEV / ODAA Approved Processes
   - POR Sponsored Widgets

4. Exit
   - Criteria Met: Widget Approved

5. Storefront
   - Approved Widgets
   - Widget A

Warfighter Deployment

Operational Repository
- Widget/Service Warehouse
Storefront Operational Concept

Operational User

T&I Storefront Environment

Widget Developer

Operational Storefront Environment

Submit

Feedback

Discover

Consume

Feedback

Promote
What is a Widget?

▼ Lightweight
▼ Single-purpose
▼ User configured
▼ Web-enabled application
▼ Provides summary information or a limited view into a larger application
▼ Also used alongside related widgets to provide an integrated view
Better Buying Power and Culture Change

Better Buying Power 2.0

- Control Costs Throughout the Product Lifecycle
  - Supports the rapid IT widget governance process
- Eliminate Unproductive Processes and Bureaucracy
  - Supports the widget governance process with increased user input
- Promote Effective Competition
  - Encourages the creation of more widgets