Open Source in Mission Critical Operations
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Mission Critical Operations
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Benefits of Open Source to the Tactical Domain

5 Nov 2009
Robert Wolborsky
Program Manager (PMW 160)
Benefits of Open Source to the Tactical Domain

• The flexibility of using open source products promotes interoperability between COI services
• More Open = More Flexibility = More Adoption
• More Adoption = More Invocation of multi-services
  ➢ Ex. METOC data consumed by C2 services
• Ease in Reengineering
• Reduces time of delivery of services to the fleet
Benefits of Open Source to the Tactical Domain Cont’d

- Reduces our dependencies to any single entity
- Promotes the states of vendor agnostic
  - Ex: Ease of transitioning capabilities from Jboss to Sun application servers (vise versa)
- Increases the independence of Tactical programs in influencing the direction and modification of open source capabilities.

- **Above all**, It reduces IT burden and life cycle costs in procurement of these services!
We get it.
We also integrate it, install it and support it. For today and tomorrow.

Paul Schoen, Director
Infrastructure Software Development & SOSCOE
Combat Systems, NS&S, The Boeing Company

Approved for Public Release, distribution is unlimited. PEO Integration Case 09-066. 2 November 2009
SOSCOE Components and Tools promote Reuse

- SOSCOE Software Developer toolkit (SDK) includes
  - Runtime software
    - Executable processes
    - Run time libraries
  - Developer Tools
    - Code Generators
    - TDD Editor
    - Administrative tools
  - Documentation
    - Programmer’s Reference Manual
    - Developer’s User Guide
  - Installation and field upgrade tools
  - Configuration examples and files

Use of a Single Toolkit significantly reduces maintenance costs, promotes reuse of applications and guarantees interoperable solutions
SOSCOE Deployments Standard

Tactical COE Foundation: Discovery and dissemination of services/data in a secure and trustable manner for the tactical environment.

Systems Management: Uniform configuration and process management and customization for the tactical environment. Includes support for the maintenance of complex multi blade deployments, field update/versioning.

Interoperability: Extensible and secure interoperability of data and services with external systems to include current force, enterprise services (NCES), and JIMI.

Collaboration: Instant messaging, whiteboard, and email capabilities supporting tactical users including seamless collaboration to enterprise users.

Workflow Automation and Policy: Complete environment for automating and orchestrating operational task sequences for SOA-based applications.

Information and Knowledge Services: Data management, mining, and search for the tactical environment including semantic interchange.

User Experience: Comprehensive source of user documentation, guidance, examples, and tutorials for solution developers and integrators.

Multiple products and editions allow SOSCOE to meet performance, scalability, portability, composability, and interoperability requirements of platforms.
By basing the SOSCOE APIs on standards (DISR, WSTAWG, OMG, etc.), the Battle Command Services are isolated from any dependence on the computer HW, OS and COTS products. This will allow SOSCOE to upgrade/change implemented code over time without changes required in the application services.
Today’s Unified Battle Command Challenge – Affordable Modernization

• Multiple tactical systems, all with unique and beneficial features in five major components for each system
  – Wide range of hardware solutions
  – Operating systems (Windows, Linux, etc. and versions therein)
  – Communications interfaces, processor allocation, applications control, data management, and information assurance (middleware)
  – Application Software
  – System user interfaces or I/O

• Cost savings are achieved through standardization today and evolution to common HW, OS, Middleware, SOA, and GUI
  – Leveraging COTS and OSS increases saving in development and maintenance
TIERS of Use of SOSCOE - An Investment Strategy in Reuse

**Tier 0: Net-Centric Interfacing**
- Legacy Interoperability
- There is no impact to the external system to interoperate with a SOSCOE based system but communication is limited to existing message sets and NR KPP not satisfied.

**Tier 1: Net-Centric Exchange**
- Strategic SOA Components
- COI-coordinated web services
- External systems "adopt" the "Edge Node" and "subset" of data exposed
- External systems implemented using WEB services (SOAP, WSDL, HTTP, etc) interact with a SOSCOE-based system via the "Edge Node" Limited to high bandwidth connections and 'sunset' of data exposed

**Tier 2: Platform Integration**
- Tactical Network Services (TNS) Integration
- Load on Platform
- External systems "port" their components into "TIN-ABLE" systems on top of SOSCOE but do not decompose the software into "TIN-ABLE Components" External systems can exploit a SOSCOE-based system but do not fully exploit external systems beyond Data

**Tier 3: Int. BC**
- Battle Command Interoperability
- Integrated into NIMM and GIG
The threshold for this tier provides complete and seamless interoperability between systems, allows full leverage of Battle Command Applications at the component level.

**Tier 4: Int. BC Net-Centric Threshold**
- Interoperability
- External systems "adopt" enough SOSCOE services to discover, be discovered, and exchange data in a trustable manner, but no ability to participate as a full member of the COI with respect to Application Services
- External systems "port" their systems on top of SOSCOE but decompose the software into "TIN-ABLE Components", External systems can exploit a SOSCOE-based system but do not fully exploit external systems beyond Data

**Integration Goal**
- Provides complete and seamless interoperability between systems, allows full leverage of Battle Command Applications at the component level.
SOSCOE – Conclusion

- SOSCOE is a tailorable software toolkit to support legacy and SOA applications for the Tactical Domain
  - Designed to exist in a Bandwidth and Computer constrained environment
  - Supports net centric tenets
  - Product Line approach allows for a Scale-able application and maintenance

- **Provides critical Information Assurance**

- **Reduces Enterprise life cycle costs**
  - High degree of use of Open Source Software and COTS

- **Enables a loosely coupled system with “Plug and Play” of new hardware and software applications**

- **Allows the user to establish an “Investment Strategy” for evolutionary and incremental change**

The Army-Boeing partnership has made SOSCOE an integrating solution for the Tactical Domain
The IC’s Social Software Environment

Don Burke
CIA/CIO
For GOSCON panel
11/5/2009
Disclaimers and Context

- The views expressed are my own and not those of the US Federal Government
- Links or discussions of specific products do not constitute endorsement
Intellipedia: Some Background

- Represents a **suite** of tools on **three** different networks
- The servers and software are maintained and operated by the **Office of the Director of National Intelligence**
- Users of the tools populate the information
- CIA has been a leading advocate and was the pilot customer for Intellipedia in 2005
A Suite of Open Source Tools

That enable Andy McAfee’s “SLATES”

- MediaWiki – Intellipedia
- Gallery – Photo management
- KnowledgeTree - A Web-based Share drive
- Jabber – Chat
- WordPress - Blogging
- StatusNet (formerly laconica) – Microblogging
Comparison

**Wikipedia**
- Allows "anonymous" edits
- Encyclopedic
- Few contributors responsible for majority of edits
- Neutral Point of View (NPOV)

**Intellipedia**
- Edits are attributable
- Not limited to being an encyclopedia
- Many contributors from different agencies
- Attributable Point of View
Lessons Learned Along the Way

- Start with small projects first
- Myth: It is all about youth/"net generation"
- Keep it Simple (wiki editing)
- Be Selfish
- Grassroots vs. Top-Down
- The Power of One
- Maintain a “Sense of Play“
Our Core Principles and Results

- Work at Broadest Possible Audience
- Replace Existing Processes
- Work topically, Not Organizationally

Result:
- Thousands of small wins a day
- People connecting, sharing, and collaborating

See Prof. Wesch’s video:
  “The Machine is Us/Using Us.”
Questions?

Tell us what you think:
Complete the survey