World Wide Consortium for the Grid (W2COG)
Institute: Assured Value-of-Information-Service (VoIS) across a networked enterprise

“Better networked capability - faster, and cheaper - through adaptive collaborative, value-focused, architecture, engineering, and acquisition

Chris.Gunderson@W2COG.org
(o) 703 262 5332
(m) 831 224 5182
www.w2cog.org

Mission Thread Market (MTM):
A Faster, Cheaper, Better Path to Netcentricity
(A JITC - W2GOG Project)

Chris Gunderson
Chris.gunderson@w2cog.org
David H. Minton
Dminton@plansys.com
W2COG “GIGlite”

• Independent (501(c)3) government-industry net-enabling research project partnered with JITC; not a program
• Hands dirty in real commercial and government engineering and procurement activity; not a standards body
• Brokers government and industry experts for consultation, demos, and prototypes at cost; i.e., a “capability broker”

Observations

• COTS software in government systems is generally out of date at IOC and falls farther behind throughout life cycle.
• Government requirements process does not intercept new COTS s/w vectors or sunset archaic s/w requirements.
• Government rapid technology insertion methods generally lack sustainment tail.
• IRT the above, enlightened e-Gov policy mandates COTS, SOA, OSS, and “best” industrial practice (e.g., ABC, FDCE, OTD, etc.)

➤ e-Biz unwritten “policy” is to leverage competition in the marketplace…
Problem

- At home, a warfighter can text message his children and trade photos with them using his cell phone. At war he can use a stovepipe circuit to send e-mails without attachments
- At home and at war, a terrorist can and does text his associates using Google earth.

Solution

- Get sustainable COTS information processing capabilities into the war fighting kit faster
  - Often tried, never very successful
  - Success is prevented by an archaic legacy acquisition method designed to build embedded computer systems
  - Given modern SOA and distributed services, the success of the archaic method can only decrease
  - Success requires a modern acquisition method
What New Modern Method?

• “Mission thread marketplace” (MTM) for acquiring information processing tools for warfighters
• Federate GIG COTS/GOTS development and certification through a “NetCert Logo” qualification process
• How is this method different?
  1. Increases and sustains competition
  2. Decomposes traditional acquisition risk into four manageable components and makes managing risk factors basis of competition

Traditional S/W Acquisition Risks

• Cost and Schedule
  – Risk managed by continuous competition and frequent deliveries
• Interoperability
  – Risk managed by measurable/testable net-ready criteria
• Performance
  – Risk managed by Mission Threads
• Assurance
  – Risk managed by certified, reusable, high assurance GOTS components

NetCert Logo Program = "NR-KPP + C&A inside"
Traditional Procurement
Risks are treated monolithically and serially

Mission Thread Market Procurement
Risks are treated iteratively and in parallel
Market Competition

- Treats the four main Acquisition risks in parallel
- Adds and sustains competition past traditional contract award, decreasing cost, and risk
These graphs are notional, but they are based on side by side case study of traditional and MTM models performed in collaboration with Navy CANES program.
Market Model Acquisition Strategy

- Identify and manage components of acquisition that can reduce risk and make it possible to deliver better information processing capability faster
  - Exploit new NDI/COTS DoD/IC GIG Acquisition policies
  - Extend and expand pure COTS competition for DoD/IC information processing capabilities
  - Require prototypes over paper studies for decision support
  - Shorten delivery cycles
  - Incentivize PMs and COTS vendors to participate
    - Furnish pre-approved GOTS components
    - Streamline C&A
    - Furnish V&V to put COTS on approved products list
  - Create boiler plate process and artifacts to achieve all the above via “NetCert Logo” program
NetCert Logo Concept

- Implementation strategy for federated development, T&E, and C&A of GIG capability
- Create a literal federation of independent government, industry, and academic “net-ready” certification labs
- Define minimal federation membership requirements re: standard net-ready criteria, methods, and tools
- Certify compliant labs with a JITC “NetCert Logo”
- Maintain “living” and continuously improving NetCert master template lab at JITC
- Place COTS & GOTS products certified by logo’d labs on GIG approved products list

JITC NetCert Logo
A business model for Acquiring net-enabling capability faster, better and cheaper
Pre-deployment V&V of net-enabling capability via Modeling & Simulation and T&E as-a-service
Post deployment audit of capability “on the ground”

Measurable and testable criteria tied to mission use cases and audited continuously

Source selection & contract performance incentives based on testable criteria tied to mission context

Use cases
Executive Dashboard displays quarterly contract performance based on tested criteria in mission context.

Performance basis

Source selection & contract performance incentives based on testable criteria tied to mission context.

Use cases

Pre-deployment V&V of net-enabling capability via Modeling & Simulation and T&E as-a-service.

Post deployment audit of capability "on the ground".

Measurable and testable criteria tied to mission use cases and audited continuously.

NetCert Logo

NetReady Acquisition Artifacts

Policy, and funding adjusted quarterly.

$$$

JITC NetCert Logo

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NetCert Logo Strategy

- **Born Netcentric**
  - Partner with JITC re: NR-KPP
  - Partner with NSA re: C&A
  - Partner with W2COG re: eBiz & collaborative best practice
  - Focus on “open” architecture for security (e.g. MILS*) and data strategy (e.g. CIEF**)
- **Learn by doing**
  - Use existing GIGlite infrastructure as ramp up “training wheels”
  - Build infrastructure iteratively per feedback from “training wheels”
  - Certify testing-as-a-service capability as first use-case
    - Certify ~1 X net-ready test case per month thereafter
- **Feedback & continuous improvement**
  - Regular customer visits
  - Teach new functionality
  - Collect new use cases
  - Audit performance

*Multiple Independent Layers of Security
**Cross-domain Information Exchange Framework
NetCert Logo Lab Requirements

- Reference Implementation of Net-Ready Service Oriented Architecture:
  - Routable network backbone
  - Open standard, self described, discoverable interfaces.
  - Assured Security (MILS\(^*\) compliant)
  - Assured Data Strategy (CIEF\(^**\) compliant)

- Mission-model based measures of effectiveness (e.g. NECC Mission Level Model BPMN graphic to BPEL executable)

- Software Assurance & Performance test tools and trained operators (e.g. OMG Software Assurance Eco-system methodology)

- SOA functional and performance test tools and trained operators.

- “Architecturally Net-ready” Acquisition artifact boiler plate (e.g. Net-Ready COTS Acquisition Strategy, C&A plan, NR-KPP, T-ISP, TEMP, etc.)

- Government purpose rights to software enforced. (Standard license model for GFE s/w re-use across programs)

\(^*\)Multiple Independent Levels of Security
\(^**\)Cross-domain Information Exchange Framework
Early Adopter “NetCert Logo” Candidate’s 1st year Objectives

- Certified by JITC as qualified to perform Net-Ready s/w assessment per GIG policy stack
- Interim Authority to Operate (ATO) SOA Test Lab per DIACAP and appropriate DAA
- Multiple Independent Levels of Security (MILS) Reference Architecture Implementation (IA control)
- Cross-domain Information Exchange Framework (CIEF) Reference Architecture Implementation (GIG Data Strategy control)
- Open Standard SOA Infrastructure
  - Cadre of professional s/w developers trained to maintain Open Standard SOA Infrastructure
- Suite of SOA design and test tools
  - Cadre of professional testers trained to maintain and operate SOA design and test tools
- Three net-ready test cases leads to one certified net-ready service = testing-as-a-service capability
- Prepared to perform one net-ready test case per month going forward

NetCert Logo Candidate’s POA&M

- Establish use cases & test cases: 60 Days
- 1st lab demonstration: 120 Days
- 1st draft lab design & docs*: 130 Days
- Training complete: 130 Days
- 2nd lab demo: 180 Days
- 2nd draft lab design & docs: 190 Days
- 3rd lab demo: 270 Days
- Final documents revision: 290 Days
- Lab Certification & IATO: 360 Days

*e.g. Net Ready COTS Acquisition Strategy, T-ISP, NR-KPP, TEMP, Diagnostic DoDAF artifacts, Government Purpose Rights (GPR) license model
ROM* NetCert Logo Ramp UP

Costs

- Expert consultants (IA, C&A, Acquisition, Data Strategy): ~1.5 FTE @$300K = ~$450K
- Open Standard SOA infrastructure & SOA test tools: $250K - $1.2M (varies based on desired scale and internal FTE available.)
- 3 X Tests @ $125K = $375K
- Documentation ~ $440K

*Highly variable based on internal resources available

Deliverable

- Create and implement a self-sustaining Mission-Thread-Market of certified “architecturally net-ready” off-the-shelf offerings
  - Provide for continuous and/or opportunistic competition across a broad spectrum of information processing capabilities
  - Level the playing field among vendors by reducing cost of entry
  - Reduce certification timeline by certifying concurrent with developing
  - Reduce delivery time by making more pre-approved COTS available faster
Investment and RoI

- Invest AoA and/or development funds from program to stand-up MTM and “NetCert logo” process.
- Achieve self sustainment by requiring vendors to obtain, at their cost, NetCert logo to “qualify” their COTS for GIG deployment.

Acquisition Strategy

- Incremental improvements
  - COTS based on market
    - Source selection and contract performance based on life cycle re-capitalization
    - Sustained competition provides improvements
      » Also reduces cost and time to deploy
  - Mission Threads provide specs
  - Lab environment provides early testing
    • For certification and accreditation
    • For interoperability
  - Product support team provides continuous customer feedback
### MTM via NetCert Logo Schedule

- Establish Use cases: 70 DAC*
- Establish lab under JITC/NPS: 80 DAC
- COTS jamboree: 100 DAC
- First vendor lab demo: 120 DAC
- Revise acquisition documents: 120 DAC
- Second vendor lab demo: 180 DAC
- Second documents revision: 195 DAC
- Third vendor lab demo (TRR): 270 DAC
- Final documents revision: 290 DAC
- COTS Evaluation (SS): 330 DAC
- Installation ready products: 360 DAC

* DAC = Days After Contract