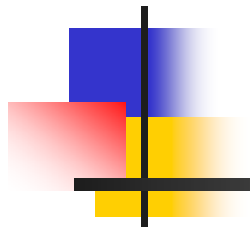


The Association for Enterprise Integration



Net-Centric Enterprise Services
Workshop #2

Enterprise Service Management;
Applications; Storage; User Assistant



ESM Team Presentation

- Introduction Bill Ricks
- General Issues Bill Ricks
- ESM Jon Edmondson
- Applications Kelly Brown
- Storage R.B. Hooks
- User Assistant Andre Francis
- Summary ESM Team

Please wait to ask your questions until the end each section

A complete report of the team's effort with discussion and detail has been provided to AFEI



AFEI ESM Objectives

The Governments asked us to:

- Give a fresh, different, and unbiased point of view
- Provide Industry's Point of View
 - Provide Lessons Learned from Industry
 - Assist in making a quality acquisition



AFEI Specific Tasks

- Verify Definitions
- Identify Enablers and Inhibitors
- Provide LL on gauging ROI
- Determine Performance Thresholds
- Integrate Industry Ideas and concepts into the IPTs
- Discuss teaming and coalition approaches
- Discuss SLAs across the enterprise and the services
- Suggest Guidance for DOD to provide to Industry when acquiring CES services



ESM Team - General Issues Requirements

- **Issue G-1R:**

- For the largest number of vendors to correctly propose the services the Government seeks, the needed services must be clearly described.

- **Recommendation(s):**

- In addition to defining the service, additional information must be provided to help vendors be responsive in their proposals. Provide descriptive information on the bounds of the service, the physical and logical environment, an operational concept and the desired results appropriate for a Performance Based Contract
- Recommend that the government make this a performance based contract

NETOPS + ESM = Assured network availability, assured information delivery and assured information protection ~ end-to-end.

GIG NETOPS

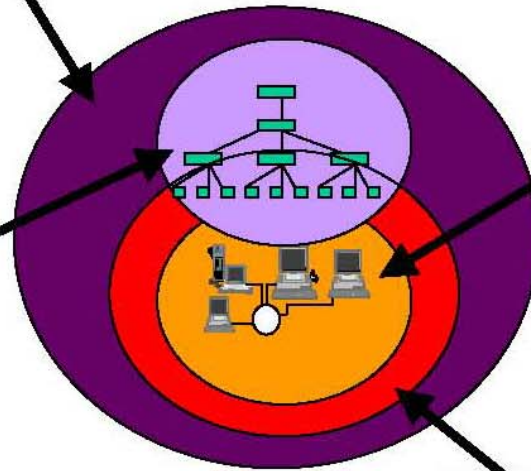
Command and control of the GIG in support of the war fighter and all other aspects of DoD. Providing clear and contiguous global network operations and defense, direction, oversight, situational awareness, readiness reporting, prioritization, collaboration, and arbitration end-to-end.

Enterprise Services Management (ESM)

Enables the life cycle management (planning, design, developing, organizing, coordinating, staging, implementing, monitoring, maintenance and disposition) of all the capabilities of, and services provided by, GIG Enterprise Services (GES). Thereby enabling NETOPS of GIG systems, networks, and their defense, through standard technological solutions (people, tools and integration).

ESM Technical Environment

- Enterprise technical standards, policies and rules
- Technical development and integration of situational awareness and cross-domain management information exchange
- Technical development and integration service level management
- Technical development and integration of performance monitoring and analysis
- Life cycle management of GES services



NETOPS C² Operations

Hierarchy

- USSTRATCOM JFHQ-10
- Global: JTF-GNO GNCC
- Theater/Functional: COCOM Coordination Centers
- Service/Agency: NOSCs, NOCs, Systems Management Centers
- Tactical: JTF-JCCC

SCOPE of GIG-ES-ESM

Establish an integrated set of technological tools, policies, rules that:

- Guide developers of CES for ESM and NETOPS compliance
- Implement standards based solutions for ESM and NETOPS





ESM Team General Issues Requirements

- **Issue G-2R:**

- It may be extremely difficult to bring all nine CES services on line simultaneously, thus a phased or incremental approach might be best. IA/Security and ESM should be defined, acquired and implemented before some of the other services.

- **Recommendation(s):**

- Core Enterprise Services should be implemented incrementally. IA/Security and ESM services should be defined and implemented first.



ESM Team - General Issues Policy

- **Issue G-3P: Are we focused on the warfighters' needs?**
- **Recommendation(s):**
 - Solicit interaction with current and future users of the services.
 - Recommend that warfighter inputs be included at all stages and that war fighters participate in all working groups.



ESM Team - General Issues – Policy

- **Issue G -4P: Vendors may have difficulty responding to the solicitation if they do not know the following:**
 - Who will set priorities for the allocation of resources in a CES environment?
 - Will allocation of computing and communications resources in a dynamic environment be left to automation through decision rules or some other algorithm or rule set?
- **Recommendation(s):**

The approach to CES resource allocation must be specified, designed, and exposed to vendors. It must also be decided where this functionality resides. The ESM CES seems the most likely candidate service.



ESM Team- General Issues – Acquisition

- **Issue G-5A: If the Government is seeking open but commercial products, how does it get the best current and emerging technology from a vendor who must protect profit margin (and in turn shareholders)?**
- **Recommendation(s):**
 - Use an approach that enables the Government to benefit from the billions of dollars already invested in software development. Make provisions for open source AND proprietary software.
 - First, give incentives to vendors to provide open source by providing multi-year licensing arrangements.
 - Second, leverage billions of existing and future software intellectual property by allowing software vendors to retain ownership of their intellectual property but requiring them to place the source code in escrow.
 - This will provide the Government with the benefits of open source while providing software vendors with a business case.



ESM Team – General Issues – Acquisition

- **Issue G-6A: How will Commercial-Off-the-Shelf (COTS) software be procured?**

- **Recommendation(s):**

If the COTS product is widely used for multiple purposes (Microsoft Desktop Software) and can be implemented by existing staff, then enterprise licensing can work well.

If only the “service” is needed then the service can be procured; then vendor allowed to purchase the product or tool. For example, if a Help Desk is needed let the vendor selected provide the Help Desk Service using the trouble ticketing system they prefer. The vendor would own the product but could include this cost in the price to Government. The vendor can then select the best tools/products in the market place and when appropriate replace them, at their cost as better products emerge. The Government must determine and communicate to vendors whether it is buying a product or a service.



ESM Team – General Issues – Acquisition

- **Issue G-7A: The Core Enterprise Services appear to require Government specific functionality and interfaces. What is the incentive for commercial vendors to provide COTS software that has Government specific interfaces and functionality?**
- **Recommendation(s):**
Attempt where possible to limit government unique requirements. Provide multi-year contracts so that vendors can plan to support this government specific functionality.



ESM Team General Issues – Acquisition

- **Issue G-8A: The Core Enterprise Services must have an overall metadata repository and a distributed control and monitoring functionality. Will the ESM core service provide this functionality? If so, how will COTS be procured which adheres to unique control structures?**
- **Recommendation(s):**
 - Consider addition of a Metadata Core Enterprise Service.



ESM Team – General Issues – Acquisition

- **Issue G-9A: Will leasing be considered as part of an acquisition strategy for COTS software?**
- **Recommendation(s):**

As the government develops its acquisition strategy, it should consider leasing as an alternative to purchasing. There may be times, in order to provide a competitive environment or to fairly evaluate capabilities, when the government should provide or define the information technology environment.



ESM Team – General Issues – Acquisition

- **Issue G-10A: Has market search been performed to determine if COTS software products exist for each of the service areas? Have products, which cover more than one area, been discussed or considered?**
- **Recommendation(s):**

There are vendor independent companies and non-government organizations that collect product information, evaluate products and provide objective assessments of the market place. Recommend that DOD use existing research to determine the “best of breed” products for further evaluation. Requests for Information to industry can provide information on new implementations or emerging products.



ESM Team – General Issues – Acquisition

- **Issue G-11A: Does the Government envision being the maintenance agent for all of the CES software or will it be performed by a prime contractor or will it be performed by the COTS vendors?**
- **Recommendation(s):**
 - Life Cycle Maintenance Concept must be planned and described in the procurement.



ESM Team – General Issues Engineering

- **Issue G-12E: The use of Linux can have both positive and negative aspects. Does the Government have a strategy for the use of Linux?**
- **Recommendation(s):**

Conduct a pilot project to determine the viability of using an open source operating system such as Linux. Use the pilot project to determine how the Government can have confidence that the open system that it is buying has not been compromised by hackers or enemies. Tell industry your plan for Linux.



ESM Team – General Issues Engineering

- **Issue G-13E: The Core Enterprise Services must include shared data architectures. How is the shared architecture envisioned in the federated architecture?**
- **Recommendation(s):**

Develop a shared data architecture prior to procuring the core enterprise services. If available, provide the shared architecture to the vendors. If the architecture is not done by the Government, the RFP should state that the vendor is to develop a shared architecture.



ESM Team – General Issues Engineering

- **Issue G-14E: The external interfaces of all CES service areas (i.e., those interfaces provided to other CES service areas or to non-CES applications) need to be open, non-proprietary interfaces.**

The implementation of CES services with the external interfaces of those services having closed or proprietary interface definitions will result in limited flexibility, greater lifecycle maintenance costs, and other negative impacts on the CES delivery and performance.



ESM Team – General Issues Engineering

Issue G-14E

Recommendation(s):

The Government should specify the requirement for all external interfaces of all CES service areas to be open, non-proprietary interfaces.



ESM Team - General Issues

- Questions

- Follow by ESM Specific Issues

Jon Edmondson



ESM Team – ESM Issues Requirements

- **Issue ESM-1R: Vendors will need a concept for the “care and feeding” (supportability, availability, survivability, etc.) of the steady state environment.**
- **Issue ESM-2R: The Government must provide a mechanism for describing the level of service needed by service and by user.**
- **Issue ESM-3R: The Government must specify the bounds of the service and the interfaces. The relationship between NETOPS and ESM must be delineated.**
- **Issue ESM-4R: Will Information Dissemination Management (IDM) be part of ESM? IDM should be part of the ESM environment.**

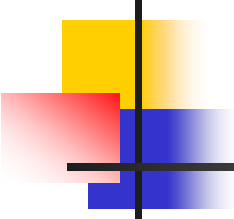


ESM Team – ESM Issues Requirements

- **Issues ESM-1R, ESM-2R, ESM-3R, ESM-4R**

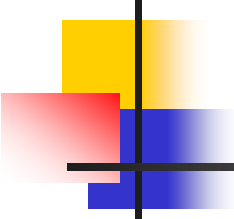
- **Recommendation(s):**

Provide a Request for Proposal with documentation to describe what the Government wants to buy, in performance- based contract terms. Give the background, describe the environment, bound the service, give necessary interface information and then describe desired outcomes or results. For example provide the IDM Lessons Learned from Quantum Leap 1.



ESM Team – ESM Issues Policy

- **Issue ESM-5P: The successful performance of ESM responsibilities (i.e., the successful execution, delivery, providing of ESM-provided services) is very unlikely to be assured without ESM-initiated control of Network Operations (i.e., “NETOPS”).**



ESM Team – ESM Issues Policy

- **Recommendation(s):**
 - **Establish and communicate (in the very near future) clear policy direction to existing, affected DOD organizational elements that NETOPS capabilities will need to be controlled by ESM capabilities in order for NCES/GIG to achieve assured, end-to-end network availability, information delivery and information protection.**
 - **Clearly communicate a vision for changes in development and operational organizational elements that are expected to result from a “reunification” of “infrastructure management” and “network management” operations.**



ESM Team – ESM Issues Engineering

- **Issue ESM-6E: The “quality of service” (e.g., timeliness, bandwidth, robustness, reliability, fault tolerance, failover, etc.) of the services provided to / used by “consumers” of ESM services will be an important (or even critical) aspect of those services.**



ESM Team – ESM Issues Engineering

Issue ESM-6E

Recommendation(s):

- Automated NCES Enterprise Services Management services should include “Services Consumer”-tunable parameters for setting “Quality of Service” (QoS) attributes for the service(s) being requested. Examples of QoS attributes include timeliness, bandwidth, robustness, reliability, fault tolerance, failover, etc.
- The Net-Centric Operations and Warfare (NCOW) Performance Reference Model (PRM) Working Group (WG) has begun an effort to identify and characterize performance-related parameters and measures. The definition of QoS attributes for ESM services should leverage and build upon the information being generated by the NCOW PRM WG.

(Note: It may also be important for the other NCES Services areas to “pass through” QoS attributes in the services they provide to their “consumers.”)



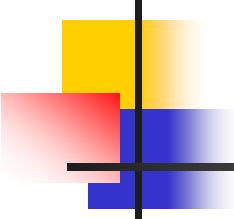
ESM Team – ESM Issues

- Questions
- Followed by Applications – Kelly Brown



ESM Team – Applications Requirements

- **Issue A-1R: The Application Core Enterprise Service definition needs expansion/clarification.**
- **Recommendation(s):**
 - Recommend that the Application Core Enterprise Service definition be expanded to more fully define the role it will play.



ESM Team – Applications Acquisition

- **Issue A-2A: Is there a strategy for how “proprietary” versus “open source” will play into the delivery of the Application Service?**
- **Recommendation(s):**
 - Specify “Black Box” Architecture (with specific interfaces and capabilities) for Application service instead of specifying standard design. All COTS software implementations should follow Open Architecture Standards for the interfaces and not necessarily what is implemented inside the box.



ESM Team – Applications Engineering

- **Issue A-3E: What is the mechanism for the evolution of the core services?**
- **Recommendation(s):**

Recommendation is to design the Application Service after the ESM service is well defined. Also, a software development environment must be procured or developed as part of the support structure for the Core Enterprise Services. Would this be one of the functions of the Application core service?



ESM Team – Applications

- Questions
- Followed by Storage – R. B. Hooks



ESM Team – Storage Requirements

- **Issue-S-1R: Storage requirements need to be defined with respect to service level requirements.**
- **Recommendation(s):**

The government should clearly specify application requirements and use industry accepted specifications such as I/Os per second, throughput, and capacity to ensure vendor solution applicability.



ESM Team – Storage Requirements

- **Issue-S-2R: Storage must provide for active storage management including data staging and active provisioning of storage devices to meet application requirements.**
- **Recommendation(s):**
 - Active data provisioning within the storage repository must work in coordination with ESM as well as being storage provider agnostic.



ESM Team – Storage Requirements

- **Issue-S-3R: Storage management must allow for supplemental technologies to support a growing storage repository.**
- **Recommendation(s):**
 - Storage management technology must allow for and support a tiered storage repository solution/environment.



ESM Team – Storage Requirements

- **Issue-S-4R: Storage architecture must allow for the migration within the repository between technologies agnostic to application.**
- **Recommendation(s):**
 - Storage solutions must take full advantage of a tiered architecture as well as being agnostic to the application allowing for full utilization of technologies.



ESM Team – Storage Policy

- **Issue-5P: Storage management with respect to data availability and performance must be definable by application requirements.**
- **Recommendation(s):**

The management of data within the tiered storage hierarchy must be accomplished by policies defined by the government and not vendors. Defining these policies must use industry standard protocol and interfaces as opposed to proprietary technology limited to a single vendor's storage device.



ESM Team – Storage Policy

- **Issue-S-6P: Storage management must provide availability to resolve and provide for business continuity and data replication.**
- **Recommendation(s):**
 - Data should be replicated at physically different sites to ensure mission data availability as well as potentially data dissemination.



ESM Team – Storage Policy

- **Issue-S-7P: Storage Area Management must provide support for all technologies.**
- **Recommendation(s):**
 - Storage Area Management must be storage vendor agnostic and application agnostic as well as reporting and managing storage utilization and the interconnectivity of applications to the repository.



ESM Team – Storage Issues Engineering

- **Issue-S-8E: Integration of new storage technologies must be easily accepted into the architecture.**
- **Recommendation(s):**
 - The government must specify that storage solutions must support an architecture that allows all storage vendors to participate freely while allowing the government to select “best of breed” specific devices and advancing technologies.



ESM Team – Storage Issues Engineering

- **Issue-S-9E: Storage connectivity must be transparent to application requirements.**
- **Recommendation(s):**
 - Physical connectivity between the applications and the storage repository (I.E., SAN) must be transparent and only serve to provide the pathway for data movement and not application development.



ESM Team – Storage Issues Engineering

- **Issue-S-10E: Storage repository architecture should not be limited to a single vendor technology but open to provide competition.**
- **Recommendation(s):**
 - Functional/Operational specifications should be defined as opposed to vendor proprietary technologies.



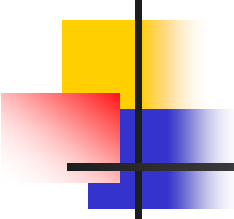
ESM Team – Storage Issues Engineering

- **Issue-S-11E: Storage repository devices must provide fault tolerant design and high availability with non-disruptive capacity upgrades.**
- **Recommendation(s):**
 - All storage devices must provide fault tolerant architectures as well as non-disruptive dynamic growth. If the lowest level device does not provide fault tolerance, then a solution of multiple devices is suitable as long as it is transparent to the storage repository and the application.



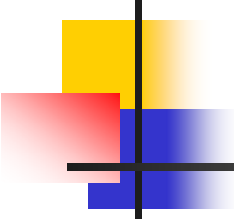
ESM Team – Storage Issues

- Questions
- Followed by User Assistant – Andre Francis



ESM Team – User Assistant Issues Requirements

- **Issue UA-1R: To respond to a request for proposal, a vendor will need more information than is provided in the definition of User Assistant.**
- **Recommendation(s):**
 - **Incorporate Lessons Learned from Quantum Leap One.**
 - **Conduct Government/Commercial Industry Search for Best Practices and Lessons Learned Regarding Service-Based User Aids.**
 - **Provide detailed operational views which will help develop and clarify the UA concepts and capabilities.**



ESM Team – User Assistant Issues Requirements

- **Issue UA-2R: It should be made clear that UA is a pure service; only the presentation (sub) service should interact directly with the user and be aware of the devices context.**
- **Recommendation(s):**

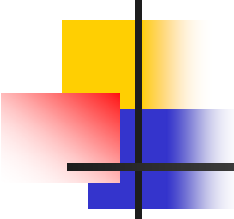
Mandate that NCES User Assistant is a set of pure services conditioned by preferences and parameters. Users and application shall set these parameters and utilize the services provided. UA (other than the presentation sub services) shall deal with content and not the data format.



ESM Team – User Assistant Issues Policy

- **Issue UA-3P: Should all aspects of User Assistant require an open architecture?**
- **Recommendation(s):**

Specify “Black Box” Architecture (with specific interfaces and capabilities) for NCES User Assistant instead of specifying standard design. All COTS Software used in NCES User Assistant implementations shall follow Open Architecture Standards for the interfaces and not necessarily what is implemented inside the box.



ESM Team – User Assistant Issues Acquisition

- **Issue UA-4: The capabilities addressed are broad and disparate in UA. There may not be a single vendor that has all the strengths or best products.**

(This may apply to all other services.)

- ***Recommendation(s):***

To get the best of the breed the government should, for each service, develop a process or mechanism to evaluate technical merits and the ability to deploy into the Net Centric environment.



ESM Team – User Assistant Issues Engineering

- **Issue UA-5E: The User Assistant definition is incomplete with regard to ‘Learned Capabilities.’**
- **Recommendation(s):**
 - NCES User Assistant must distinguish between Role-Dependent Information (RBAC via IA/Security) and Role Independent Information.



ESM Team – User Assistant Issues Engineering

- **Issue UA-6E: The timing or tempo of User Assistant Services will be significant.**
- **Recommendation(s):**

Automated NCES User Assistant Functions shall include User-Tunable Parameters for Setting Priorities, Rate of Service, and Real Time Response. (Quality of Service consistent with roles for Information Assurance/Security)



ESM Team – User Assistant Issues Engineering

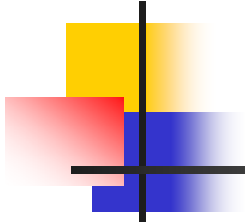
- **Issue UA-7E: Known standards, protocols, and interfaces to be followed should be identified.**
- **Recommendation(s):**
 - If specific standards, protocols, or interfaces are required or favored, they should be specified in the Request for Proposal.

The logo for the ESM Team features a stylized graphic on the left consisting of overlapping colored squares (yellow, red, blue) and a black crosshair. To the right of this graphic, the text "ESM Team" is written in a large, blue, sans-serif font. A thin horizontal line extends from the end of the graphic across the slide.

ESM Team

- Questions

- Summary
 - Requirements - State need; not how to do it.
 - Policy – Hierarchy; Adjudicator; Rule Maker
 - Acquisition – Services Not Systems! Solutions - not hours for dollars, performance based
 - Engineering – Open, Modular, Scalable



■ Team Members

- Booz Allen Hamilton – Judy Smith, Greg Wenzel, Marla Canete, Kathryn Daly
- Boeing – Vish Dixit, Ken Cureton, Patricia Boggs, Sheryl Sizelove, Shawn Taylor
- USMC – MAJ Vlandts
- Dimensions International – Andre Francis
- EM Solutions – Kelly Brown, Mike Judd, Jacqueline Miller
- Raytheon – Jon Edmondson
- StorageTek – Tom Underdown, R.B. Hooks III
- McDonald Bradley – Bill Ricks