Build DoD in the Cloud

Spotfire Dashboard
Research Notes

3rd Annual DoD SOA & Semantic Technology Symposium

Background
Theme
Track Descriptions
Program at a Glance

Day 1 Wednesday, July 13, 2011
Day 2 – Thursday, July 14, 2011 7:00am – 8:15am

Annual Award Nominations
Nomination Form
Speakers and Abstracts

Opening Remarks: Dave Chesebrough, AFEI
Welcome: HON Elizabeth McGrath, DCMO (DoD)
First Opening Keynote: Dennis Wisnosky, BMA CTO (DCMO, DoD)
Second Opening Keynote: Aneesh Chopra, Federal CTQ
Third Opening Keynote: James Steiner, Vice President, Oracle

Semantics and Cultural Change: Robert Damashek, Binary

The Enterprise Information Web: Semantically-enabled Enterprise Analytics: Jonathan Underly, BTA, and Brooke Stevenson, Spry

Agile NOW: The Approach for Delivering Information Capabilities in the DoD: Chris Kraus, iTKO, and Steve Thomas, iTKO

The Promise of Watson: Kerrie Holley, IBM Fellow

Building DoD Vocabularies in the Cloud: Brand Niemann, Semantic Community

Demonstration: End-to-End Business Models and Execution with BPMN 2.0 Primitives, RDF, OWL and Business Analytics Using Standards Based Products Today: Linus Chow, Oracle

More than IT: Extending SOA to the Entire Enterprise: John McDowall, Mantech

TOPSS -- A Metadata-based Reporting System for Contractor Accountability (And More): Daniel Cerys, ASC and LTC(P) Richard Faulkner, OSDATL

SILK: Efficiently Building Systems with Complex Behaviors and Varieties: Carl Andersen, Raytheon BBN

Realizing the GPRAMA using Government Linked Data: George Thomas, HHS

Securing the Global Maritime Domain using Common Semantics defined in NIEM Maritime: Olithia Strom, SPAWAR


Opening Remarks: Dennis Wisnosky, BMA CTO, ODCMO, DoD

First Opening Keynote: MaryJo Zaborowski, VP, Lilly

Second Opening Keynote: Tom Koulopoulos, Founder, Delphi Group, Author, Futurist, Visionary, Leader

Third Opening Keynote: The next Generation Consumer Business - Semantically Enabled for Real-Time Intelligence, Bill Guinn, AMDOCS

DoD Semantic Training: Amy Anda, BTA

Health Promotion, Risk Reduction and Suicide Prevention in Service Members: Lawrence Dirienzo and Greg Ritacco, CECOM

Extending SOA Infrastructure for Semantic Interoperability: Wen Zhu, and Sumeet Vij, Alion Science and Technology

Bridging the Gap Between Structured and Unstructured Semantic Processing: Rita Joseph, Expert System

Designing Ontologies to Use Semantic Rules: Chris Moran, IMSC

Experiences in Building a Semantic Service Composition Engine: Paul Buhler, Modus 21

Awards Luncheon Keynote: Rob Carey, Deputy Chief Information Officer, DoD With Announcement of Contest Winner

Achieving Interagency Interoperability and Service Reuse: Ontologies as Mediators and Facilitators: Patricia Craighill, JPDO, Lowell Vizenor, Alion Science and Technology, and Elizabeth Huffer, Concept Solutions, LLC

Using Semantic Analysis and SOA Convergence for Enrichment of Business Capabilities: Erich Oliphant, Dovel Technologies

Metadata ontologies to support DoD and IC information interoperability: Steven Wartik, IDA

Semantic Technology and Cloud Computing Applied to Tactical Intelligence Domain: Steve Hamby, Orbis

Semantically Enabled Dynamic Discovery and Delivery: Aaron Griggs, MITRE and Danny Gagne, MITRE

Semantic Interoperability in a Network-enabled Environment: Sven Kuehne, NATO C3 Agency


Closing Keynote: Contest Winner

Closing Remarks: Dennis Wisnosky, BMA CTO, ODCMO, DoD

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Spotfire Dashboard

Slides and Slides

http://semanticommunity.info/Build_DoD_in_the_Cloud

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Research Notes

Note: Get rest of photos


Here’s a link to Dennis’s site that deals with DoD Common Vocabulary. There are two vocabularies here, one for the HR community and one for UCORE-SL, though the former is likely more understandable to a general audience. On the HR site, you’ll find a quick link to the domain vocabulary. There’s also a lot of HR data instantiated in Knoodl, but you’ll need to signup to their community. This is the only DoD vocabulary that I know for sure is publicly accessible: [https://www.commonvocabulary.army.mil](https://www.commonvocabulary.army.mil)

3rd Annual DoD SOA & Semantic Technology Symposium

Realizing Efficiency & Interoperability: SOA & Semantic Technology in the Business Mission Area (BMA), U.S. DoD

Source: [http://afei.org/events/1A03/Pages/default.aspx](http://afei.org/events/1A03/Pages/default.aspx) (PDF) (PDFV2) (PDFV3) (PDF)

Video: [http://www.kzoinnovations.com/afei/events/97](http://www.kzoinnovations.com/afei/events/97)

Background

In 2009, the DoD SOA Symposium demonstrated that SOA must be considered a Team Sport – involving all elements of people, process and technology, and highlighting the necessity of Trust. The 2010 Symposium highlighted that individual and team Discipline is critical to making SOA a successful reality. The theme was Discipline, Teamwork and Semantic Technologies.

This 3rd Annual SOA & Semantic Technology Symposium focuses on the technology and standards required to drive semantic interoperability and realize IT efficiencies within the Department of Defense and beyond. The Symposium addresses enterprise services that promote reuse, lessen redundancy and waste, and enable the Department to share knowledge and achieve enterprise business analytics. The theme for 2011 is Perseverance!

The Annual DoD SOA & Semantic Technology Symposium is a special event for government and industry IT decision makers, business and technology professionals; providing a forum to connect, share, strategize and educate one another on government and industry best practices and emerging technology.
Theme

The symposium theme for 2011 is **Perseverance**: Interoperable Business Operations Through Shared Understanding

Mr. Wisnosky discusses the future of the DoD Enterprise and the necessity of Semantic Technology.

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Track Descriptions

The 3rd Annual SOA & Semantic Technology Symposium focuses on the technology and standards required to drive semantic interoperability and realize IT efficiencies within the Department of Defense and beyond. The Symposium addresses enterprise services that promote reuse, lessen redundancy and waste, and enable the Department to share knowledge and achieve enterprise business analytics. The theme of this year’s symposium is **Perseverance**!

**Track 1 - Standards: Semantic Data Sharing using effective Standardsbased Approaches**

This track focuses on the use of open standards such as OWL and RDF for the creation of common vocabularies, data integration and business intelligence efforts, and other semantic applications.

**Track 2 - Competency: Creating Competency for Shared Understanding and Interoperable Business Operations.**

This track focuses on the development of knowledge and skills for SOA & Semantic projects, the handling of organizational change management, and the governance needed for and associated with such projects and initiatives.

**Track 3 - Case Studies: Case studies in SOA and Semantic Services, Data Management Business Analytics.**

This track focuses on real world case studies from the perspective of user organizations. Topics of interest for this track include SOA and Semantic Technology, semantic platforms for business intelligence, SOA and Semantic analytics, and performance and compliance management.

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Program at a Glance

**Program subject to change**

**Day 1 Wednesday, July 13, 2011**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>7:00am – 8:15am</td>
<td>Registration</td>
</tr>
<tr>
<td>8:15am – 8:25am</td>
<td>Opening Remarks</td>
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<tr>
<td></td>
<td><strong>Dave Chesebrough, AFEI</strong></td>
</tr>
<tr>
<td>Time</td>
<td>Event Description</td>
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<td>--------------</td>
<td>----------------------------------------</td>
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</tbody>
</table>
| 8:25am – 8:40am | Welcome  
**HON Elizabeth McGrath, DCMO (DoD)**  
Ms. Elizabeth (Beth) A. McGrath is the Department’s first Deputy Chief Management Officer and leads the Department’s efforts to better synchronize, integrate and coordinate DoD business operations and serves as the Principal Staff Assistant (PSA) and advisor to the Secretary and Deputy Secretary of Defense for matters relating to management and improvement of business operations. |
| 8:40am – 9:10am | First Opening Keynote  
**Dennis Wisnosky, BMA CTO (DCMO, DoD)**  
Presentation |
| 9:10am – 9:40am | Second Opening Keynote  
**Aneesh Chopra, Federal CTO**  
Presentation |
<table>
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| 9:40am - 10:10am | Third Opening Keynote  
James Steiner, VP Oracle  
Presentation       |
| 10:15am – 10:45am | Networking Break, Vendor Exhibits                                      |
|               | Competency: Creating Competency for Shared Understanding and Interoperable Business Operations. This track focuses on the development of knowledge and skills for SOA & Semantic projects, the handling of organizational change management, and the governance needed for and associated with such projects and initiatives. |
|               | Case Studies: Case studies in SOA and Semantic Services, Data Management & Business Analytics. This track focuses on real world case studies from the perspective of user organizations. Topics of interest for this track include SOA and Semantic Technology, semantic platforms for business intelligence, SOA and Semantic analytics, and |

http://semanticommunity.info/Build_DoD_in_the_Cloud  
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<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Location</th>
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</table>
| 10:45am – 11:20am | Presentation: **Semantics and Cultural Change**  
*Robert Damashek, Binary*  
Presentation: **DoD EIW – Enterprise Information Web**  
*Jonathan Underly, BTA  
Brooke Stevenson, Spry* |             |
| 11:20am – 11:55pm | Presentation: **Delivering Agility**  
*Chris Kraus, iTKO  
Steve Thomas, iTKO*  
Presentation: **The Promise of Watson**  
*Kerrie Holley, IBM Fellow* |             |
| 11:55pm – 12:30pm | **Building DoD (Vocabularies) in the Cloud**  
*Brand Niemann, Semantic Community*  
Demonstration: End-to-End Business Models and Execution with BPMN 2.0 Primitives, RDF, OWL and Business Analytics Using Standards Based Products Today  
*Linus Chow, Oracle* |             |

**Standards: Semantic Data Sharing using effective Standards-based Approaches. This track focuses on the use of:**

**Case Studies: Case studies in SOA and Semantic Services, Data Management & Business Analytics. This track focuses on:**

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<tr>
<td>12:30pm – 1:05pm</td>
<td>More than IT: Extending SOA to the Entire Enterprise</td>
<td>John McDowall, Mantech&lt;br&gt;Daniel Cerys, ASC&lt;br&gt;LTC(P) Richard Faulkner, OSDATL</td>
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<tr>
<td>Lunch</td>
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<td>1:05pm – 2:00pm</td>
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<tr>
<td>2:00pm-2:45pm</td>
<td>Afternoon Keynote&lt;br&gt;General James E. Cartwright</td>
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<tr>
<td>2:45pm-3:10 pm</td>
<td>Networking Break, Vendor Exhibits</td>
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**Open Standards Track**

- Open standards such as OWL and RDF for the creation of common vocabularies, data integration and business intelligence efforts, and other semantic applications.
- Real world case studies from the perspective of user organizations. Topics of interest for this track include SOA and Semantic Technology, semantic platforms for business intelligence, SOA and Semantic analytics, and performance and compliance management.

**Case Studies Track**

- Case studies in SOA and Semantic Services, Data Management & Business Analytics. This track focuses on real world case studies from the perspective of user organizations. Topics of interest for this track include SOA and Semantic.
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<td>Carl Andersen, Raytheon BBN</td>
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<td></td>
<td>The Advent of Executable Business Process Models</td>
<td>Lloyd Dugan, BMA</td>
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<td></td>
<td>The Perfect Storm of BPMN 2.0, SOA, and Semantic Technologies</td>
<td>Nathaniel Palmer, SRA</td>
</tr>
<tr>
<td>3:45pm – 4:20pm</td>
<td>Realizing the GPRAMA using Government Linked Data</td>
<td>George Thomas, HHS</td>
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<td>Securing the Global Maritime Domain using Common Semantics defined in NIEM</td>
<td>Olithia Strom, SPAWAR</td>
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<tr>
<td>4:20pm – 4:40pm</td>
<td>Networking Break, Vendor Exhibits</td>
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<tr>
<td>4:40pm – 5:10pm</td>
<td>Closing Keynote</td>
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**Stephen Baker – Final Jeopardy**

“Man v. Machine”

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Day 2 – Thursday, July 14, 2011 7:00am – 8:15am

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<td>Welcome&lt;br&gt;&lt;em&gt;Dennis Wisnosky, BMA CTO&lt;/em&gt;  &lt;br&gt;(DCMO, DoD) &lt;br&gt;Mr. Wisnosky is responsible for providing expert guidance and oversight in the design, development, and modification of the federated architectures supporting the Department's Business Mission Area. This role incorporates oversight of the DoD Business Enterprise Architecture (BEA) - the corporate level systems, processes, and data standards that are common across the DoD, in addition to the business architectures of the services and defense agencies.</td>
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<tr>
<th>8:30am – 9:00am</th>
<th>First Opening Keynote&lt;br&gt;&lt;em&gt;MaryJo Zaborowski, VP, Lilly&lt;/em&gt;</th>
</tr>
</thead>
</table>

<p>| 9:00am – 9:30am | Second Opening Keynote&lt;br&gt;&lt;em&gt;Tom Koulopoulos, Founder, Delphi Group&lt;/em&gt; &lt;br&gt;Tom Koulopoulos is the founder of Delphi Group and was named one of the industry’s most |</p>
<table>
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</table>
| 9:30am – 10:00am | **Third Opening Keynote(Invited)**

**Bill Guinn, AMDOCS**

The Next Generation Consumer Business – Semantically Enabled for Real-Time Intelligence |

**“video recording only”**

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<thead>
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<tr>
<td>10:05am – 10:35am</td>
<td><strong>Networking Break, Vendor Exhibits</strong></td>
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Influential information management consultants by Information Week magazine. He is recognized as an authority on the implications of information technology on global organizations. His eight books include: The Innovation Zone, Smartsourcing, Corporate Instinct, Smart Companies, Smart Tools and The X-economy. “Tom’s writing makes you question not only the way you run your business but the way you run yourself.” - Peter Drucker
<table>
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<th>DoD Semantic Training</th>
<th>Health Promotion, Risk Reduction and Suicide Prevention in Service Members</th>
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<td>10:35am – 11:10am</td>
<td>Amy Anda, BTA</td>
<td>Lawrence Dirienzo and Greg Ritacco, CECOM</td>
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<th>Extending SOA Infrastructure for Semantic Interoperability</th>
<th>Bridging the Gap Between Structured and Unstructured Semantic Processing</th>
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<tr>
<td>11:10am – 11:45pm</td>
<td>Wen Zhu, and Sumeet Vij, Alion Science and Technology</td>
<td>Rita Joseph, Expert System</td>
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<th>Speaker 3</th>
<th>Designing Ontologies to Use Semantic Rules</th>
<th>Experiences in Building a Semantic Service Composition Engine</th>
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<tr>
<td>11:45am-12:20pm</td>
<td>Chris Moran, IMSC</td>
<td>Paul Buhler, Modus 21</td>
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<tr>
<th>Lunch</th>
<th>Awards Luncheon</th>
<th>Keynote ~ Robert Carey, DoD Deputy CIO With Announcement of Contest Winner</th>
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<tbody>
<tr>
<td>12:20pm – 1:30pm</td>
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</table>

| TOPPS Winner Presentation |
Boxed Lunch
[provided for attendees not registered for the Awards lunch in the Exhibit Hall]

Standards: Semantic Data Sharing using effective Standards-based Approaches
This track focuses on the use of open standards such as OWL and RDF for the creation of common vocabularies, data integration and business intelligence efforts, and other semantic applications.

Achieving Interagency Interoperability and Service Reuse: Ontologies as Mediators and Facilitators
Patricia Craighill, JPDO
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Steve Hamby, Orbis

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Aaron Griggs, MITRE
Danny Gagne, MITRE

Semantic Interoperability in a Network-enabled Environment
Sven Kuehne, NATO C3 Agency
3:20pm – 3:50pm  Networking Break, Vendor Exhibits


Thomas Erl is a best-selling IT author and founder of SOASchool.com® and CloudSchool.com™. With over 140,000 copies in print worldwide, his seven published books have become international bestsellers and have been formally endorsed by senior members of major IT organizations, such as IBM, Microsoft, Oracle, Intel, Accenture, IEEE, HL7, MITRE, SAP, CISCO, HP, and others.

Presentation

4:20pm – 4:50pm  Closing Keynote ~ Contest Winner

4:50pm – 5:00pm  Closing Remarks

Dennis Wisnosky, BMA CTO (ODCMO, DoD)

Annual Award Nominations

3rd Annual SOA & Semantic Technology Symposium 2011 SOA Award – Call for Nominations is now open.

The 3rd annual SOA & Semantic Technology Award, sponsored by Mr. Dennis Wisnosky, CTO and Chief Architect, Office of the Deputy Chief Management Officer, DoD, brings together lessons learned and emerging topics from both government and industry SOA and Semantic Technology Projects.

About the Award

The SOA & Semantic Technology Symposium 2011 Award will highlight a “best of show” case study that excels in the theme of the conference – perseverance. We seek nominations of SOA and/or Semantic Technology projects that can highlight the role of collaboration and technical excellence in providing SOA and/or Semantic Technology-based solutions with significant business or mission value.

Nominations for the Award are open to organizations of all sizes, including government agencies, which have successfully delivered business or mission value using SOA and Semantic Technology. Nominations will be evaluated

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based on the quality of the problem they addressed, the value that they have generated, the exhibition of the Symposium theme (perseverance), and the sophistication of the solution presented.

How to Nominate

1. Download the nomination form here (PDF)
2. Complete the form as clearly and concisely as possible. Remember that this is the only input on the nominated project the judges will see.
3. Submit the nomination via email to Jessica Zucal at jessica.zucal.ctr@bta.mil
4. Notify: If you are a contractor nominating a Government project please secure their permission prior to submission so they may plan on attending if selected as a finalist.
5. Attend the conference to learn more.
6. All nominations must be received no later than June 9, 2011.

Awards Guidance

• Three finalists will be selected to attend the Awards Luncheon on Wednesday, July 14, 2011.
• The award winner will be announced during the lunch.
• The winning project team will have the opportunity to provide the closing Keynote Address on July 14.
• The three finalists will have their projects described in the conference program guide.
• Please limit the submission to three pages total, not including the contact page.
• Nomination packets are due NLT June 9 via email.
• Nominees will receive notifications by June 20, 2011
• If you are a contractor working on behalf of a government customer, please insure their knowledge of the program submission.

Nomination Form

Nominations longer than three pages will not be considered

The 3rd annual SOA & Semantic Technology Award, sponsored by Mr. Dennis Wisnosky, CTO and Chief Architect, Office of the Deputy Chief Management Officer, DoD, brings together lessons learned and emerging topics from both government and industry SOA and Semantic Technology Projects.

To be considered nominations should include:

Nominee Identifying Data (complete all)

Project/Program Title:

Performing Organization:

Primary Nominee:
(Return completed forms in word format NLT June 9, 2011 to jessica.zucal.ctr@bta.mil)

1. What was the business/mission challenge or opportunity addressed by the project?
2. Why was SOA and/or Semantic Technology an appropriate way to address the challenge/opportunity?

3. Project Demographics:
   a. When was the project started?
   b. How large was the project (both in terms of personnel and budget)?
   c. How was the project funded?
   d. How long did it take to see results?

4. What ROI was planned, was it achieved?

5. Which non-financial objectives were achieved (e.g., agility, innovation, flexibility, resilience)?

6. Project Organization:
   a. How was the project team organized?
   b. What types of business users were on the team?
   c. How was collaboration between business and technology achieved?

7. Technical Profile:
   a. What technology was used in the project?
   b. Which vendors were involved?
   c. Did you achieve Service reuse?
   d. What was the most complex technical challenge encountered?

8. What were the most significant lessons learned from the project?

9. How did perseverance contribute to project success?

Primary Nominee Contact Information

Please provide the following contact information for the primary nominee:
Name:
Title:
Organization:
Address:
Phone number:
E-mail:

Three finalists will be selected to attend the Awards Luncheon on Wednesday, July 13, 2011. The top winner will be announced during the lunch. The winning proposal team will have the opportunity to provide the closing Keynote Address and present their project at the conference.

The three finalists will have their projects listed in the conference program guide. Please limit the submission to three pages total, not including the contact page. Nomination packets are due NLT June 9 via email. Nominees will receive notifications by June 20, 2011.

If you are a contractor working on behalf of a government customer, please insure their knowledge of the program submission.
Speakers and Abstracts

Opening Remarks: Dave Chesebrough, AFEI

Welcome: HON Elizabeth McGrath, DCMO (DoD)

Ms. Elizabeth (Beth) A. McGrath was sworn in as the Department’s first Deputy Chief Management Officer, a Senate-confirmed and politically appointed position, on July 1, 2010. Ms. McGrath leads the Department’s efforts to better synchronize, integrate and coordinate DoD business operations and serves as the Principal Staff Assistant (PSA) and advisor to the Secretary and Deputy Secretary of Defense for matters relating to management and improvement of business operations. Ms. McGrath is focused on achieving sustainable and enduring improvements and efficiency and effectiveness in the Department’s business related enterprise policies, processes and systems. She also serves as the DoD Performance Improvement Officer and is responsible for formulating the legislatively mandated Departmental Strategic Management Plan.

Ms. McGrath serves as the Milestone Decision Authority for numerous business-focused Major Automated Information Systems (MAIS) and also executes the Department’s primary governance body for business transformation, the Defense Business System Management Committee; establishes performance goals and measurements for the Department’s business operations; implements the Department’s Continuous Process Improvement efforts; and is the Vice-Chair of the Performance Accountability Council that is responsible to the President to reform the government-wide security clearance process. Her responsibilities require extensive integration and coordination across the Department as well as with many Federal agencies, such as the Office of Management and Budget, Director for National Intelligence and the Department of Veterans Affairs. Previously, Ms. McGrath served as the Deputy Director for Systems Integration, Defense Finance and Accounting Service (DFAS) where she created a financial migration strategy that was executed with a collective budget of approximately $1B. She managed the entire financial architecture supporting DoD-wide standard financial systems, integrating it with the Department’s evolving target, enterprise architecture. Project scope included logistics, personnel, medical, acquisition and financial missions including many information technology solutions.

Prior to joining DFAS, Ms. McGrath served in a variety of program management roles culminating in Program Executive Office-level oversight responsibility. She possesses extensive knowledge of acquisition-related statutes, regulations and policies with over 20 years applied acquisition experience with Major Defense Acquisition Programs and MAIS. She served as the Business and Acquisition Manager on an international torpedo defense program with the United Kingdom and held numerous other financial, acquisition and program management positions within the Department of the Navy. Ms. McGrath was awarded the Meritorious Executive Presidential Rank Award for Fiscal Year 2008 and the Office of the Secretary of Defense Exceptional Civilian Service Award in October 2008. She holds a bachelor’s degree in Economics from George Mason University, is a graduate of the Federal Executive Institute, is certified Acquisition Level III in Program Management, Financial Management and Logistics and is a member of the DoD Acquisition Professional Community.

First Opening Keynote: Dennis Wisnosky, BMA CTO (DCMO, DoD)

Mr. Dennis E. Wisnosky is the Chief Architect and Chief Technical Officer (CTO) of the Department of Defense (DoD) Business Mission Area within the Office of the Deputy Chief Management Officer.

As Chief Architect and CTO, Mr. Wisnosky is responsible for providing expert guidance and oversight in the design, development, and modification of the federated architectures supporting the Department’s Business Mission Area. This role incorporates oversight of the DoD Business Enterprise Architecture (BEA) - the corporate level systems, processes, and data standards that are common across the DoD, in addition to the business architectures of the services and defense agencies. Mr. Wisnosky ensures that the federated architectures of the BMA fully support the Department’s
vision, mission, strategy and priorities for Business Transformation, and that each tier of the overall architecture is clearly defined with appropriate focused accountability aligned to the management structure of the DoD. He verifies that the BEA and component architectures remain consistent and compliant with the Federal Enterprise Architecture (FEA), and will support and collaborate with the DoD Components to unify architecture planning, development, and maintenance through a federated approach. Mr. Wisnosky also serves as an advisor on the development of requirements and extension of DoD net-centric enterprise services in collaboration with the office of the DoD Chief Information Officer.

Second Opening Keynote: Aneesh Chopra, Federal CTO

Aneesh Chopra is the United States Chief Technology Officer and in this role serves as an Assistant to the President and Associate Director for Technology within the Office of Science & Technology Policy. He works to advance the President’s technology agenda by fostering new ideas and encouraging government-wide coordination to help the country meet its goals from job creation, to reducing health care costs, to protecting the homeland. He was sworn in on May 22nd, 2009. Prior to his appointment, he served as Secretary of Technology for the Commonwealth of Virginia from January 2006 until April 2009. He previously served as Managing Director with the Advisory Board Company, a publicly-traded healthcare think tank. Chopra was named to Government Technology magazine’s Top 25 in their Doers, Dreamers, and Drivers issue in 2008. Aneesh Chopra received his B.A. from The Johns Hopkins University and his M.P.P. from Harvard’s Kennedy School.

Third Opening Keynote: James Steiner, Vice President, Oracle

A Vision for the Mainstream: A Semantic IT infrastructure for Shared Business Operations Semantic technologies hold the promise for synchronizing, integrating and coordinating business operations and improving efficiency and performance in an enterprise’s policies, processes, and systems. A Semantic platform that marries standards-based semantic information discovery and data integration, and the workflow of Business Process Modeling Notation standards with mainstream, commercial database and Service-Oriented Architecture technologies can address long-standing challenges of incompatible schema and uncoordinated business processes faced by complex operational and analytic systems. This expressive data management platform is ideal for a range of business applications, including business process management and business intelligence. It can add meaning to data, perform machine-driven discovery of new relationships and enable discovery processes for insight and transparency. The benefits of integrated semantic capabilities include better data reuse, flexible business processes and lower total cost of ownership in an open, standards-based environment.

James Steiner currently serves as Vice President in Oracle’s server technologies organization. Since 1996, he has been responsible for Oracle’s business management and product strategy for geospatial, location-services, semantic and rich media technologies including market development, product direction, and partner strategy and relationships. During his tenure, Oracle’s spatial technology became part of the core software development organization and was incorporated in every major technology Oracle offers. It has become the most widely adopted spatial database offering in the world according to repeated IDC studies.

In his long career in the enterprise software business, Mr. Steiner has been a major contributor in bringing about the broad adoption of a number of industry-changing technologies. While at Digital Equipment in the late 1980s, Mr. Steiner introduced SQL database technology and was a member of the initial core team with Microsoft, Lotus

Semantics and Cultural Change: Robert Damashek, Binary

Enterprise fragmentation due to cultural and institutional boundaries presents the most formidable challenge to change initiatives. This is particularly so for those initiatives that must fundamentally change the way things are currently done, such as Government-wide initiatives focused on enhancing efficiency. The standard excuse for rejecting such initiatives is that “xyz change can’t possibly work here because my organization’s needs and supporting processes are unique”. At
some level, this is by definition true. Government processes such as acquisition have become extremely complex and unique simply to support variations in goods and services acquired, along with the numerous checks and balances introduced over time to deal with cost overruns, fraud and system abuse. Enterprise change can be facilitated, however, by introducing a standardized high-level model of the enterprise investment lifecycle that establishes common semantics that bridges these cultural boundaries. The semantic model can then be used to facilitate information sharing, standardize analytics, and galvanize the community to drive out inefficiency regardless of all the process and organizational variants. The key to success is having a lifecycle model that is comprehensive enough so that all stakeholders can identify themselves, yet simple enough to enable ready adoption.

The speaker will present such a model, show how it maps to current more complex institutional processes, and discuss some preliminary results of its introduction to support enhanced IT interoperability and reuse at DoD, along with DoD IT acquisition reform.

Mr. Robert Damashek is Chief Architect at the Binary Group where he plays a critical role in the delivery of enterprise transformation initiatives across all clients and service practices. Robert has over thirty-five years experience in enterprise architecture and integration for large-scale industry and government organizations. Over the past nine years, Robert has supported Chief Information Officer and Chief Architect organizations at the U.S. Department of Defense (DoD) and the U.S. Army, and currently supports the DoD Chief Architect. He has been responsible for guiding strategy, policy and process development for architecture-based design and analytical support to net-centric force, business and shared infrastructure transformations. As part of these responsibilities, he has participated in architecture analysis and continuity planning for Joint and Army enterprise and domain information technology.

Mr. Damashek provides thought leadership and supports agency participation in U.S. Federal, Inter-Agency, DoD, Coalition, Joint and Army interoperability activities, and is currently engaged in DoD’s interoperability policy and IT acquisition reform. In addition to direct support to clients, Mr. Damashek has actively participated in the U.S. Federal Open Government Initiative, helping advise CIOs across the U.S. Federal Government on enhancing transparency, collaboration and participation both with the public and with other Government stakeholders.

The Enterprise Information Web: Semantically-enabled Enterprise Analytics: Jonathan Underly, BTA, and Brooke Stevenson, Spry

Semantic technologies have the potential to greatly improve the way the US Dept. of Defense (DoD) does business by providing rich enterprise analytic capabilities. Describing our business and information environments and the relationships between them utilizing semantic technology standards will provide DoD a foundational model necessary to build a powerful set of cross-domain analytic capabilities. This presentation provides a case study of how the DoD Enterprise Information Web (DoD EIW) is implementing an agile approach in developing semantically-enabled analytic capabilities in a matter of weeks. These capabilities include policy compliance, gap analysis, data lineage, operational analysis, data integration, portfolio management, and strategic performance analysis. This presentation will cover the following:

- Clearly define the current problems surrounding the development of information models, particularly enterprise architectures, relational models and the ‘Big Bang’ development methodology
- Provide a demo of the current DoD EIW analytic capabilities achieved through the agile development approach
- Provide a case study of effectively establishing an environment suited for distributed agile development to meet the needs of global organizations
- Outline EIW’s agile development methodology

Mr. Underly is currently the program manager of the DoD EIW program, an effort to connect disparate data sources in DoD Business Domain by applying Semantic Web technology to achieve Enterprise Analytics and Business Intelligence goals. With 18 years of experience applying technology solutions to business problems, Mr. Underly has worked on enterprise solutions for some of the world’s largest organizations
including the Department of Veterans Affairs and Department of Defense. The solutions have spanned case management, ERPs, Enterprise Architecture, Enterprise Data, and Enterprise Integration. His most recent work has been applying Semantic Web technology to Business Intelligence & Analytics to improve information visibility and business performance.

Ms. Stevenson, founder and CEO of Spry, is an experienced information architect with particular expertise in operational governance of community developed federated architectures, including SOA and data. She currently serves as the Chief Information Architect for the Dept. of Defense Deputy Chief Management Office (DoD DCMO) Enterprise Information Web (EIW) project, a transformational DOD project to implement a federated information management capability for supporting any and all DCMO analytical requirements. She also recently worked for the US Army developing joint DoD enterprise architecture and data federation strategies. Prior to her consulting career, Brooke worked for MetaMatrix (now part of RedHat) and BEA (now part of Oracle), providing leading edge solutions in data federation, metadata management, and SOA architecture, deployment, and governance. She is a graduate of Princeton University with a degree in Computer Science.

**Agile NOW: The Approach for Delivering Information Capabilities in the DoD: Chris Kraus, iTKO, and Steve Thomas, iTKO**

This practical and best practice session focuses on delivering capabilities to the War fighter in less time, at a lower cost and with higher quality. In the agile process, DoD information capability projects look to take advantage of the benefits of agile development methods and rapidly field capabilities that use state-of-the-practice “best in class” commercial products, while simultaneously lowering risk. This session will explore an agile architecture that leverages core competencies to automate and accelerate the delivery and performance of War fighter capabilities. Specific areas of discussion will include critical capabilities on: Real-time access and integration of cross-organization data faster with security and governance policy enforcement that addresses how organizations control their data and applications to outside divisions, partners, mobile developers and cloud services. Big data caching techniques to provide dynamic, seamless scaling, for optimum speed and scalability. Utilizing simulation, collaboration and continuous validation techniques to deliver higher quality with less risk. The use of test automation and processes for conducting in-situ testing that provides a persistent, virtual, service-based environment.

Chris is an expert quality and architecture strategist, with a 20 year background in computer software development, product management, Architecture strategy for enterprise software and Agile development. Chris applies both project management and development experience to refine Strategy to best suit organizational quality needs throughout the software delivery lifecycle. Chris was previously a Retail and Manufacturing Industry Manager at the enterprise software platform firm webMethods, over-seeing requirements, customer presales and training for the $16M annual group. At supply chain software provider i2 Technologies he worked in i2's infrastructure group, with responsibility for the release of business process, workflow and monitoring engines. Prior to i2 at Software AG, Chris specialized in cross platform product installation and administration. As a software engineer, project manager, and solution architect, Chris has a great breadth of industry knowledge from working with companies like Citi, TD Ameritrade, Lenovo, Tandy, Rubbermaid, TI, and TxDOT.

**The Promise of Watson: Kerrie Holley, IBM Fellow**

Our world is becoming increasingly interconnected, and organizations are experiencing an unprecedented explosion of digital information. The challenge for business leaders is finding the ‘intelligence’ in all the white noise. As data analytics become more critical to the business, how can today’s executives offer customized intelligence to their organization for timely and reliable business insight? What new roles or skills will be required? In an effort to understand the deeper aspects of human intelligence and harness the transformative potential of data analytics, the top minds at IBM started on
a journey to create the phenomenon we know today as Watson. This talk explores what Watson teaches us about the future of computing and its impact on business and industry.

Mr. Kerrie Holley, IBM Fellow, is the Global CTO for AIS responsible for executive technical leadership to AIS in client projects, strategic initiatives, assets, offerings, methods and tools. He is also CTO role for IBM SOA Center of Excellence. IBM’s CEO in 2006 appointed Kerrie to Fellow, IBM’s highest technical leadership position. It is the highest honor a scientist, engineer, or programmer at IBM (and perhaps ‘in the industry’) can achieve. The Fellows program was founded in 1962 by Thomas J. Watson, Jr., as a way to promote creativity among the company's “most exceptional” technical professionals.

The criteria for appointment are stringent and take into account only the most significant technical achievements. Since 1963, 218 IBM Fellows have been appointed. His expertise centers around software engineering, business architecture, service oriented architecture, cutting-edge distributed solutions. His responsibilities include technical leadership, oversight, strategy development, consulting and software architecture for a portfolio of projects around the world.

Building DoD Vocabularies in the Cloud: Brand Niemann, Semantic Community

Several DoD vocabularies have been harvested into the cloud computing tools used by the author to produce data science products. Those are Air Force OneSource and the DoD Common Vocabulary with two vocabularies, one for the HR community and one for UCORE-SL.

The purpose of the Semantic Community’s data science products are to show when/where it is practical to insert semantic technologies in support of cross-domain process and analysis, and the value/ease of using other more mature technologies for certain tasks. The practical boundaries we have found supporting data fusion and analysis for information sharing, and when in the process to maximize the value from applying semantic technologies, are discussed.

Dr. Brand Niemann is the Director and Senior Data Scientist of the Semantic Community. He was the former Senior Enterprise Architect and Data Scientist at the U.S. Environmental Protection Agency and co-led the Federal CIO Council’s Semantic Interoperability Community of Practice (SICOP) with Mills Davis from 2003-2008. He is currently authoring a series of Editorials for Federal Computer Week on his work and recently made Spotfire’s Twitter list for his cool visualizations on government data to produce more transparent, open and collaborative business analytics applications. See http://semanticommunity.info/A_Gov_2.0_spin_on_archiving_2.0_data and http://spotfireblog.tibco.com/?p=5328

Demonstration: End-to-End Business Models and Execution with BPMN 2.0 Primitives, RDF, OWL and Business Analytics Using Standards Based Products Today: Linus Chow, Oracle

The Advance of Standards in BPM/ SOA, Semantic, and Analytics Technologies provides Enterprises with a unique opportunity for greater transparency, agility, and collaboration. In this session we want to demonstrate that these technologies can be used in a real life Enterprise environment that supports current Department of Defense Standards (BPMN 2.0 Primitives Conformance Class Modeling and Execution, RDF, and OWL) in a true end to end execution environment.

Linus Chow is the Chair of the WfMC Public Sector Chapter, AIIM Ambassador, and a Principal BPM Champion for Oracle. He has over 18 years of leadership and management experience in information technology internationally with over 12 years in Process Improvement using BPM/ SOA/E2.0 and related technologies. He has played crucial roles in expanding the growth of BPM adoption first in the US and then internationally from Australia to Switzerland. Currently, Linus leads the adoption of BPM/ SOA/E2.0 solutions for Public Sector customers promoting the its standards, operational efficiency, and best practices. He has won his customers numerous awards over the last five years (CIO 100, Excellence.gov, AIIM, ComputerWorld, OMG, WfMC, etc.). He is a published author and an active speaker on the Best Practices of BPM and SOA frequently engaging with OMG, ACT-IACT, WfMC, IQPC, AIIM, Universities, and other
industry organizations. A decorated former US Army Officer, Linus has an MBA, a MS in Management Information Systems, and BS in Mathematics.

More than IT: Extending SOA to the Entire Enterprise: John McDowall, Mantech

For almost a decade, SOA implementation has focused on improving the interoperability of electronic information systems. It is time to take a fresh look at the enterprise and apply the principles of service orientation beyond electronic services. Drawing upon the emerging discipline of service science, we can extend SOA principles beyond information systems and incorporate non-electronic services into the scope of enterprise reusability. Very few business processes can be fully automated; most include tasks that can only be performed by people. While traditional interoperability efforts have focused on electronic services such as data interchange, services such as transportation or imagery interpretation can also be offered for reuse. Using standards such as OWL to semantically describe non-electronic services, we can improve the reuse of these services across the enterprise and enable interoperability between electronic and non-electronic services. Combining semantically described services with semantically annotated business process models enables increased efficiency and improved cross-organizational service reuse in an era of shrinking budgets and increased inter-agency operations. This presentation describes original research that applies these ideas to automatically compose services of all types into executable workflows. This presentation will describe the development of a service description language and process description notation. The service description language expands upon the Web Services Description Language (WSDL) to describe any service in terms of its inputs, outputs, preconditions, and effects, together with the semantic annotation required to eliminate ambiguity. The process description notation expands upon Business Process Modeling Notation (BPMN) to include information necessary to correlate individual BPMN tasks to the services necessary to complete those tasks. These two techniques combined will enable the dynamic discovery and composition of services to implement the process described by a suitably-annotated BPMN model.

Mr. McDowall is a Software Architect with ManTech International Corporation supporting a variety of programs for both the Department of Defense and Intelligence Community. He has over 20 years of experience in DoD and IC leadership including operations, technical, and policy roles. After graduating from the US Naval Academy he served in the Marine Corps as a helicopter pilot, forward air controller, and staff officer. He received an MS in Computer Information Systems from Boston University and he is currently a doctoral candidate in Information Technology at George Mason University, where his research focuses on the use of semantic technologies to enable dynamically reconfigurable workflows within Service Oriented Architectures.

TOPSS -- A Metadata-based Reporting System for Contractor Accountability (And More): Daniel Cerys, ASC and LTC(P) Richard Faulkner, OSDATL

The Total Operational Picture Support System (TOPSS) was developed to provide DoD and global Combatant Commanders an advanced data analysis and business intelligence toolset to dramatically increase the analysis and business intelligence capability currently available from the Synchronized Personnel Operational Tracker (SPOT) system.

This significantly enhanced capability set the foundation for performing increasingly advanced analytics/business intelligence from the available data stores populated over the life cycle of the program. The effort included evaluating and adapting currently available COTS and/or GOTS technologies capable of integrating with the SPOT database, along with other available data sources. TOPSS is an advanced business intelligence system that has supported data mining, analysis, visualization, and reporting of structured data sources and the capability to provide increased “intransit/in theater visibility” of assets and manage costs more effectively. This capability allowed the Department of Defense to have increased visibility to issued Letters of Authorization; contracted entitlements and privileges; and actual resources consumed or obtained, which greatly enhanced the ability to detect and deter fraud, waste and abuse while at the same time creating valuable information that increases the ability to forecast, budget, and manage costs. In addition, TOPSS was utilized to support logistics planning, based on population, location and period of performance, air planning-seat management based on inbound contractor status, trend analysis, and more.

http://semanticommunity.info/Build_DoD_in_the_Cloud
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TOPSS was designed within a SOA framework to leverage the .NET-centric infrastructure utilized in the rest of the SPOT ES suite of systems. Notably, this includes use of the SQL Server database, with heavy emphasis on the XML-based object-oriented representations natively supported by the RDBMS. The TOPSS metadata implementation uses this object representation to represent multiple aspects of the domain of dynamic report generation across multiple, heterogeneous data sources. The metadata is used for mapping underlying data sources and elements to attributes presented to the user in TOPSS reports, allowing ad-hoc reports to be dynamically created by users. Additionally, in support of the information access requirements of the underlying TOPSS data sources, the metadata is used by the permissions-based filtering of the data as part of the TOPSS-maintained role-based security mechanism. In order to leverage the variety of powerful semantic technologies that have evolved from the OWL and RDF initiatives, we are currently migrating and extending the TOPSS proprietary XML-based metadata representations.

Daniel Cerys is the Lead Software Architect at American Systems Corporation, where he provides technical leadership for the TOPSS program, in addition to managing the overall Software Engineering activities for the SPOT Enterprise Suite of Systems. He has applied advanced software capabilities in the logistics domain for over 20 years. Daniel has been applying advanced knowledge representation and distributed agent-based technologies to military logistics programs for DARPA, USTRANSCOM, DLA, and the US Army. Prior to the TOPSS program, he was the technical director of the logistics Supply and Distribution components within the overall Army Future Combat System (FCS), working for BBN Technologies. Daniel holds B.S. and M.S. degrees from Stanford University, and lives in the Boston area with his wife Phyllis.

LTC Richard Faulkner is currently the Program Manager for the “Contractor Management and Accountability Mission” at OSD-ATL. He is responsible for program development and implementation for SPOT Enterprise Suite of Systems for the Department of Defense. The program recently received awards as top Government program by Computerworld and shared honors with Google for the Identity Deployment of the Year. Prior to being re-called to active duty in February 2005, Richard worked in distribution, supply chain management and manufacturing roles with the Target, Kmart, Amazon.com and the Pillsbury Company.

Richard is a Cavalry Officer having served on active duty for 10 years, and then transitioned to the reserves in 1996. He is a graduate of the Command and General Staff College, the Sustaining Base Leadership Management Course and numerous other military schools. Richard holds a bachelors degree in Business Administration and a Masters degree in Administration. Richard, his wife Ginger, and their two sons, Griffin and Lane reside in the Hampton Roads, Virginia area.

SILK: Efficiently Building Systems with Complex Behaviors and Varieties: Carl Andersen, Raytheon BBN

SOA visionaries prophesize a seamless web of transaction between flexible, evolving services. In reality, the pieces of any large-scale service network are only integrated and kept in sync by constant re-engineering: conflicting data and interfaces are reshaped and mediated, new system areas are painstakingly modeled, built and tested. While this picture will not soon disappear, representational technologies can drastically reduce the amount of manual human intervention and maintenance.

We present the SILK (Semantic Inferencing for Large Knowledge) language, a new representational toolset that enables unprecedented automation of the construction and integration of complex-behavior systems. SILK, a rule language and reasoning engine, lets users build systems using logical constructs that are intuitive because they are similar to natural language. For example, SILK (unlike prior rule engines) includes intuitive representations for ontologies and rules; business processes, goals and constraints; time, events, and provenance; and objects, methods and inheritance. All these constructs can be incorporated into flexible, exception-tolerant ontologies whose organization is driven by user rules.

SILK's other (but related) strength is its ability to model exceptional cases, especially slight variations in a rule, component or process. Unlike less powerful ontological languages like OWL, SILK can model ontologies/hierarchies by overriding default values. For example, one might model a 'Purchase' as, by default, having one 'Buyer', but also
allow an exceptional subclass 'ManyBuyerPurchase' that has multiple buyers, but whose other properties are exactly those of 'Purchase'. This identification is so complete that the information in common between the original class and the variation is stored only once in the system.

This exception mechanism extends to any part of the modeled system, including rules and behaviors. For example, in SILK, it is easy to represent policies and exceptional cases, as well as to reason about whether some action is in accord with a policy or any of its exceptions. Subtle variations in system behavioral response to policy violations are also easily expressed. This exception mechanism also offers a capability unique to the SILK system: graceful tolerance of conflicting data and rules, which are automatically identified and isolated.

Dr. Carl Andersen is a Computer Scientist in Raytheon BBN Technologies' Knowledge Engineering group focusing on the Semantic Web and advanced reasoning technology. He holds a Ph.D. in Computer Science from the University of Maryland, College Park. Dr. Andersen works on the Semantic Inferencing on Large Knowledge (SILK) engine for Vulcan Inc.'s Project Halo. SILK is a semantic rule engine that can model complex, changing worlds and gracefully tolerate conflicting information.

The Advent of Executable Business Process Models The Perfect Storm of BPMN 2.0, SOA, and Semantic Technologies: Lloyd Dugan, BMA and Nathaniel Palmer, SRA

Three converging areas of technology are radically reshaping the potential benefits and the design and governance considerations for complex business systems. First, that Business Process Model and Notation (BPMN) has become widely adopted and generally accepted as the de facto notational standard for business process models. Secondly, SOA technologies have both matured significantly and become increasingly integrated within Business Process Management (BPM) technologies. Third, the recent advancements across semantic technologies, which now for the ontological expressions of data in OWL and RDF support richer representations, as well as the persistence of both transactional and analytical data.

Combined, these three critical trend lines make it possible to talk in practical terms about not only what it means for business process models to be executable, but also so how such models can be created within governing architectures that support compliance and other avenues of introspection (e.g., compliance within defined conformance classes and design primitives/patterns). This presentation frames the intersection of these converging areas, explaining developments in the BPM tool/platform marketplace and standards bodies that are bringing about this perfect storm, as well as illustrating through living case studies when, where and how these technologies can be most affectively applied.

Lloyd Dugan is a co-author of the ”BPMN 2.0 Handbook” (the chapter on Making a BPMN 2.0 Model Executable). He is the Chief Architect for Business Management Associates, with whom he provides senior-level BPMN modeling, system design, and architectural advisory services for the DCMO of the DoD, including development and delivery of BPMN training and maintenance of the BEA. He is also an Independent Consultant that designs systems in BPMN for clients seeking to implement executable BPMN processes that leverage Service Component Architecture (SCA) patterns (aka BPMN4SCA), principally on the Oracle BPMN/SCA platform. He is a frequent speaker at conferences covering topics on BPM, SOA, and EA, including Process.Gov, Workflow Management Coalition (WfMC), Association for Image and Information Management (AIIM), and Association for Records Management and Administration (ARMA). He has over 25 years of experience in providing process modeling and system design services.

Nathaniel Palmer is the co-author of ten books on process improvement and information management, including "The BPMN 2.0 Handbook" and "The X-Economy." He is a Principal and Chief BPM Architect with SRA International, and prior to this worked for BPR pioneer Jim Champy at Perot Systems. He was the first individual recognized as "Laureate in Workflow" (1998) and since 2006 has served as Executive Director of the Workflow Management Coalition. He also leads BPM.com and serves on a variety of industry boards, such as the Adaptive Case Management Awards, Global Excellence in Workflow Awards and the AIIM New England board of directors. He has been featured in media ranging from Fortune to The New York Times, as well as National Public Radio and World Business Review.
Realizing the GPRAMA using Government Linked Data: George Thomas, HHS

In this session, an demonstration of how and an overview of why a Government Linked Data driven US Federal Information Technology Dashboard is a blueprint for realizing the Government Performance and Results Act Modernization Act of 2010 (GPRAMA).

The US Federal IT Dashboard (ITDB) homepage says: "The IT Dashboard is a website enabling [...] stakeholders to view details of federal information technology investments. The purpose of the Dashboard is to provide information on the effectiveness of government IT programs and to support decisions regarding the investment and management of resources. The Dashboard is now being used by the Administration and Congress to make budget and policy decisions."

While the ITDB fulfills much of its stated purpose, this session will explore multiple Linked Data implementations that substantially enhance its utility, simply by linking IT expenditures to the specific agency mission goals and program objectives they support. The flexibility and extensibility of this approach will then be explored as a cost effective blueprint for the realization of the more general performance management requirements in the GPRA Modernization Act of 2010.

Keywords:
• Government Open Linked Data
• Performance Management
• Business Intelligence
• Open Standard Vocabularies
• ITDB - http://it.usaspending.gov/
• GPRAMA - http://www.gpo.gov/fdsys/pkg/BILLS-113hr2142enr.pdf

George Thomas is an Enterprise Architect in the Office of the Chief Information Officer at the US Department of Health and Human Services. George leads the Semantic Web and Linked Data team in the US Data.gov Program Management Office, and co-chairs the W3C Government Linked Data Working Group.

Securing the Global Maritime Domain using Common Semantics defined in NIEM Maritime: Olithia Strom, SPAWAR

In 2008, NIEM Program Management Office and the DoD Executive Agent (DoD EA) for Maritime Domain Awareness (MDA) entered into a strategic partnership to develop a maritime domain for NIEM that focuses on technology and promotes standards required to drive semantic interoperability and realize IT efficiencies within the MDA community of interest. MDA is the effective understanding of anything associated with the global maritime domain that could impact the United States’ security, safety, economy, or environment. This is realized through effective, timely, security information sharing across multiple agencies and organizations. Because of the widespread adoption of NIEM throughout Federal, state and local governments, the inclusion of maritime information exchange data components in NIEM offers the potential for well-defined information sharing at lower costs to interagency, coalition, state, and local partners, who have a need to share information about maritime activities and events.

The DoD EA for MDA has championed an effort to develop Information Exchange Package Documentation (IEPDs) for sharing maritime information within five key focus areas, i.e., Indicators and Notifications (I&N); Notices of Arrival (NOA); positions and tracks; Maritime Operational Threat Response (MOTR) reporting; and biometrics. The IEPDs provide a means to uniformly capture the semantic and syntactic structure of data. The IEPDs will re-use the semantic vocabulary defined for the Maritime Domain. This presentation will highlight the progress of the first DoD-Sponsored NIEM domain, share lessons learned from these efforts, and discuss future plans and partnering opportunities.

A native of San Diego, Ms. Olithia Strom earned a Bachelors of Science in Computer Science from San Diego State University. She has served as a Systems Engineer at the Space and Naval Warfare (SPAWAR) Systems Center Pacific (SSC PAC) since 2002. Currently Ms. Strom is the Director of the SPAWAR Data Engineering Services Center as well as Project Manager and Technical Lead for the NIEM Maritime domain. Prior tours of duty at SPAWAR have included Senior Technical Advisor to the DoD Co-Lead for the Universal Core Federal Information Sharing Initiative,
Development Lead for a Data capability module under the next generation Joint C2 program, Net-Enabled Command Capability (NECC), and SOA Developer for a component of the Navy’s Global Command and Control System - Maritime (GCCS-M).

**Closing Keynote: Stephen Baker, Final Jeopardy "Man v. Machine"**

His book examines what is involved with creating a machine that can decipher complex and puzzling clues in English and provide the correct answer – within three seconds. Watson is an artificial intelligence computer system capable of answering questions posed in natural language, which is full of unstructured data. Humans deal with unstructured data effectively, computers do not.

**Opening Remarks: Dennis Wisnosky, BMA CTO, ODCMO, DoD**

**First Opening Keynote: MaryJo Zaborowski, VP, Lilly**

MaryJo Zaborowski joined Lilly in April 2008 as the Information Officer for Lilly Research to head the informatics and IT systems teams that support scientific innovation and R&D operations. In addition to providing traditional workflow support for experiment design and data capture, as well as informatics analytics for drug target identification and biomarker discovery, MaryJo’s group earned thought leadership positioning in advanced technology and open innovation initiatives for cloud computing, semantics, open source data provisioning, and analyses related to epigenetic targets associated with Asian-prevalent diseases. With the global IT reorganization in 2010, MaryJo assumed expanded responsibility for IT through clinical development, regulatory submission and launch preparation, along with the challenge of organizational reduction and transformation.

Prior to Lilly, MaryJo was the global head of R&D IT for Roche Pharmaceuticals, where she led the global harmonization of LIMS across research, the centralized integration of R&D information and the introduction of global electronic clinical trial technology. She was recruited to work with the senior executives of UnitedHealth Group to develop an enterprise information and analytics strategy and to establish a biostatistics and health economics research organization where she led a team to explore disease progression, patient stratification, value-based benefit design and identifying optimized patient-physician matches.

Earlier in her career, MaryJo worked as an in silico scientist at Merck, where she earned an inventor patent for the lead series in the benign prostatic hypertrophy program, and she developed visualization technologies that facilitated Merck’s early research on monotherapy resistance in HIV patients. MaryJo was an early employee of the first commercial chemoinformatics company (MDL) and a scientific support investigator for the first NIH-grant-funded bioinformatics utility (BIONET).

MaryJo received a bachelor’s degree in genetics from the University of California, Berkeley. She has been a guest lecturer in courses at Stanford, UCLA, and University of Nevada, and has held roles on boards for Indiana University School of Informatics, Molecular Diversity Symposium, and Network Science.

**Second Opening Keynote: Tom Koulopoulos, Founder, Delphi Group, Author, Futurist, Visionary, Leader**

Tom Koulopoulos is the founder of Delphi Group, a 20-year-old Boston-based think tank, which was named one of the fastest growing private companies in the US by Inc. Magazine. Delphi provides advice on innovation practices and methods to Global 2000 organizations and government agencies. He is also an Executive in Residence at Bentley University, the past Executive Director of the Babson College Center for Business Innovation, and past Executive Director of the Perot Systems Innovation Lab, which was acquired in 2009 by Dell Computer.

Named one of the industry's most influential consultants by InformationWeek magazine, his articles and market insights appear frequently in national and international print and broadcast media such as BusinessWeek.
Journal, Forbes, The Economist, CNBC, CNN and NPR. Geoff James of CBS Interactive Media called Tom, "one of the truly deep thinkers in the arena of technology and culture." Forbes.com named Tom one of its Business Visionaries with, "an incisive view of world trade..."

Mr. Koulopoulos has also authored eight books which have been translated into nine languages. His most recent, The Innovation Zone: How Great Companies Reinnovate for Amazing Success, is one of the most comprehensive and hard hitting books on the current state of innovation and how it can be leveraged to create a new era of prosperity and possibilities.

His work has been praised by luminaries such as Peter Drucker and Tom Peters who called his writing, "a brilliant vision of where we must take our enterprises to survive and thrive." And according to the late Peter Drucker, Tom's writing "makes you question not only the way you run your business but the way you run yourself."

Third Opening Keynote: The next Generation Consumer Business - Semantically Enabled for Real-Time Intelligence, Bill Guinn, AMDOCS

As the CTO of the Amdocs Product Enablers Business Group, Bill Guinn is one of Amdocs' most senior technologists. He selects new technologies and builds innovative platforms for Amdocs and its service provider customers. Bill led the creation of the award winning semantic intelligent decision engine platform for Amdocs. Prior to this role, Bill was a Senior Vice president of Product Management and Architecture at DST Innovis, a provider of billing and customer care solutions to the largest broadband and satellite companies, which was acquired by Amdocs in 2005. Before joining DST, Bill held positions at Bell Labs, ITT and Digital Equipment Corp. With 20+ years of experience in the communications industry, including a focus on building large-scale OSS/BSS solutions, his expertise means he is frequently asked to comment in major industry publications such as Business Week, Forrester, CRM Magazine, and Stratatecast. He also regularly briefs analysts and is asked to speak at industry event, as well as executive-level Amdocs customer events. Bill holds a master's degree in computer sciences from University of Tennessee.

DoD Semantic Training: Amy Anda, BTA

Health Promotion, Risk Reduction and Suicide Prevention in Service Members: Lawrence Dirienzo and Greg Ritacco, CECOM

The increasing rate of suicide the US Army is experiencing is directly impacting the combat readiness and morale of the Army. Although authoritative data sources relevant to research have been identified the challenge is the amount of time to assemble data for epidemiological investigation from these disparate and compartmentalized systems. Developing a system to expose data through Net-Centric Web Data Services in a Service Oriented Architecture Framework has greatly reduced time to identify and request relevant information. Following the Army Information Architecture Framework and process needed to expose this data through secure Net-Centric SOA environment reusable services and processes have been developed at the CECOM SEC allowing rapid deployment of services, making this data trusted, accessible, visible and understandable.

Lawrence Dirienzo is a software engineer at the Army’s CECOM Life Cycle Management Command Software Engineering Center (CECOM LCMC SEC). During his six years at SEC he has been working to help define and implement the Army’s net-centric visions, and he has developed a wide set of skills and experience through participation on a variety of projects related to the Army’s Messaging Standards and Data Strategy. This participation has included software engineering leadership on components of the Army Enterprise Service Oriented Architecture Foundation (AE SOAF), the Enterprise Data Sharing Initiative (EDSI), and most recently the Common Data Services Framework (CDSF). On the CDSF project he functioned as the primary Microsoft .NET engineer responsible for producing a framework that utilizes the Windows Communication Foundation (WCF) for accelerating the creation of data web services in accordance with Army and other US Government service and data standards as well as facilitating the transition to an Agile Process development methodology. Lawrence is also part of the Army Net-centric Data Strategy Center of Excellence (ANCDS) team at SEC, and he currently is the Data Technical Lead for the Army.
Extending SOA Infrastructure for Semantic Interoperability: Wen Zhu, and Sumeet Vij, Alion Science and Technology

The ability to understand SOA services and their relationships is a critical part of the DoD Net-Centric Data Strategy. While organizations have embraced semantic technology to improve service understandability, ontologies are still viewed as a design time conceptual tool which has no direct impact on the run time behavior of services. As such, organizations are often faced with questions such as "Now we have invested in the development of ontologies, what’s next?"

In our presentation, we will introduce the concept of semantic mediation that enables semantic interoperability through common ontologies, even while the services are implemented using different data models and message standards. This approach helps organizations to better manage and streamline SOA integration projects, while reducing overall operational cost by preserving existing investment in SOA infrastructures and extending Enterprise Service Buses (ESB) beyond their traditional role of protocol adoption and message transformation. A Semantic Mediation Bus (SMB) provides the foundation for addressing real world challenges, such as building a data mash up solution, incorporation of unanticipated sources in intelligence analysis, and the enhancement of battlefield situational awareness through on-demand integration of data. Leveraging open standards such as Web Ontology Language (OWL) and Semantic Annotations for XML Schema and WSDL (SAWSDL), it removes the need to perform manual correlation among disparate data sources.

Key characteristics of the semantic mediation approach include:
• Cooperation through federation, instead of standardization. The ontology driven approach avoids imposing a standard that has to be agreed by everybody, thus allowing the agencies to select the formats best suited for their business needs, while still being able to use services offered by other agencies.
• Increased ability to adapt to the ever changing business needs in a timely and cost effective manner. The semantic mediation approach encourages transformation logic to be declaratively defined in the ontology, instead of buried in the code, often in multiple places.
• No need for rigid conformance. Through loose coupling, the SMB allows transformation between message formats which might not be a complete match.
• Building on SOA infrastructure, instead of replacing it. By extending ESB infrastructure, organization can leverage their SOA investment and the existing expertise of their personnel.

Mr. Zhu is a Senior Principal Software Engineer at Alion and Science and Technologies. In this position, he leads the effort to document existing inter-agency infrastructure and layout infrastructure requirements for effective information sharing for US government agencies and private partners involved in modernizing the US national air transportation system. Consistent with the DoD net-centric data strategy, the new infrastructure will provided enhanced service discoverability and interoperability by leveraging semantic web service architectures and open standards. Mr. Zhu is also an expert in SOA and web service technologies, with extensive experiences in delivering large scale SOA solutions often involving key infrastructure components such as Enterprise Service Bus (ESB) and service registries.

Sumeet Vij is Chief IT Engineer for a Group at Alion Science, a Domain OMG member. He is responsible for shaping advanced IT solutions in the SOA, Web Services, Business Process Modeling, and Distributed Computing arena. Sumeet is a highly accomplished technology leader with a of proven track record of successfully providing enterprise level vision, strategy and execution of complex technology initiatives from concept to production in the DoD & commercial sector. He has been a pioneer in the field of Service Oriented Architecture (SOA) starting with the first implementation of XML-RPC (US Patent: 7028312, circa 1999), the precursor to current day SOAP. He has led large development teams creating enterprise software products like the webMethods Enterprise Service Bus (ESB) and Business Process Management (BPM) execution engine. He has published and presented in the fields of SOA/BPM/ BPMN.

http://semanticommunity.info/Build_DoD_in_the_Cloud
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Bridging the Gap Between Structured and Unstructured Semantic Processing: Rita Joseph, Expert System

Rita has spent over 25 years managing federal sales and federal operations for software companies, primarily in the fields of enterprise search and emerging technologies for the government space. Rita previously held positions at Autonomy, Convera, Cassatt and NetBase. Rita received her Bachelor of Science in Information Systems from George Mason University.

Designing Ontologies to Use Semantic Rules: Chris Moran, IMSC

Traditionally, systems have been built upon fixed structures. These structures exist in data bases, in system source code, and in message formats. It makes systems easy to build, but hard to change and integrate. Logic too is baked into all of these structures. Even with semantic technology, there is a tendency to combine the description of our data with the logic we apply to it. As engineers, our love of structure made us do it this way. But it makes semantic technology hard to reuse and hard to implement; and it hinders the full use of ontologies as a description of the data in systems.

This talk examines the problem and explains some design principles that employ semantic rules to separate your data model from system logic. It describes how to design ontologies for maximum re-use. It will demonstrate a system that employs the approach.

Chris Moran is an innovator and evangelist for semantic technology and controlled natural language. He developed and brought to market the rules4J semantic rule engine as well as Common, a controlled natural language for building ontologies. He lives and works in Washington DC.

Experiences in Building a Semantic Service Composition Engine: Paul Buhler, Modus 21

In the realm of process-oriented solutions, the traditional focus on BPM (Business Process Management) is giving way to notions of ACM (Adaptive Case Management). ACM is characterized by a shift that models and represents information as a first class entity, on par with the process description itself. This transition is important from the perspective of semantic data interoperability, as more often than not process participants are exchanging data as a means of facilitating the execution of a business process. While BPM is adept at solving complicated problems, ACM is necessary for solving complex problems. The inflection point from complicated to complex occurs at the boundary where one transitions from a closed world to open world assumption. In the era of distributed, net-centric computing, open world assumptions are necessary to handle the complexity introduced by heterogeneous resources, partial system failures, unreliable communications, et. al. Just as semantically tagged information is critical to facilitating dynamic information exchange, semantically described web services can likewise facilitate dynamic formation of service compositions. Against this backdrop, this presentation will discuss many of the lessons learned during a four year development activity of a semantically driven Service Composition Engine (SCE). Topics of the presentation will include: the proper role and positioning of Topic Map and RDF/OWL technologies; the utility of pairing of a traditional UDDI registry with a triple-store for the storage of semantic service metadata; the use of semantic data types for mapping input and output web services messages onto one another; and finally, the benefits of interaction based computation for solving complex problems with a distributed multi-agent system architecture.

Dr. Paul Buhler is Chief Scientist at Modus21, a consultancy that drives enterprise transformation through a business architecture practice specializing in the creation of executable business models. Paul is also a Certified SOA Trainer for Architura and SOA School. With over 20 years of professional experience, Paul is a respected researcher, practitioner, and educator of service-oriented computing, SOA, and service-based technologies. He serves as the Chair of the SOA Education Committee for SOASchool.com and on the program committees of many of the international conferences and workshops relevant to the advancement of service engineering. Paul’s expertise has been sought in areas of enterprise architecture, open source middleware, complex event processing, semantic Web technologies and cloud computing.
Awards Luncheon Keynote: Rob Carey, Deputy Chief Information Officer, DoD With Announcement of Contest Winner

Achieving Interagency Interoperability and Service Reuse: Ontologies as Mediators and Facilitators: Patricia Craighill, JPDO, Lowell Vizenor, Alion Science and Technology, and Elizabeth Huffer, Concept Solutions, LLC

The need to access and share information – and to do so in a manner that is cost-effective – has given the services-oriented architectural paradigm an endurance that is not often enjoyed in the world of technology. That is not to say, however, that SOA has not had its difficulties. Successful and cost-effective implementation of a SOA depends not just on achieving interoperability among the disparate systems that provide services, but also on ensuring that the capabilities provided by those services are used and reused throughout the enterprise.

Interoperability can be difficult to achieve in large enterprises where there is disagreement about the proper terminology for referring to the enterprise business objects: a system maintained by one division won’t understand the data from a system used by a different division, when the terms used by the respective databases differ.

SOA implementations can also fail to achieve the expected cost-savings if existing services are not leveraged by multiple divisions. Often, multiple services that provide the same capability are developed by separate divisions within the enterprise. The duplication of effort is costly when the implementation demands heavy investments in labor and resources. It can also result in operational inefficiencies and data integrity problems. Perhaps not surprisingly, a common barrier to service reusability is the simple fact that prospective service consumers don’t know that a service already exists and so, rather than using it, they develop their own.

The Net-Centric Operations Division of the JPDO is responsible for driving the implementation of a SOA environment in which information can be shared not only between incompatible systems within a single agency – itself a very large enterprise - but also between incompatible systems across agencies. The interagency nature of our task magnifies the inherent difficulties in achieving interoperability and service reuse, meaning that overcoming them is a top priority.

We believe that the solution to both problems starts with creating and maintaining a single, common ontology that can (1) mediate between the multiple and disparate data vocabularies already in use by NextGen partner agencies, and (2) support an effective, government-wide service discovery system that will encourage service reuse.

The NCOD is creating a NextGen Enterprise Ontology that will serve as a mapping ontology for NextGen partner agencies. By aligning their own data vocabularies or ontologies with the NextGen Enterprise Ontology, organizations will automatically achieve alignment with the data vocabularies or ontologies of any other organizations that have aligned their own ontologies with the Enterprise Ontology.

The NextGen Enterprise Ontology will also serve as a search facilitator that will help system integrators, application developers, enterprise architects and other prospective service consumers find existing services quickly and with minimal effort, as the same Enterprise Vocabulary that mediates discrepancies in data vocabularies can be used to mediate discrepancies in search strings.

The net-centric information sharing environment envision for NextGen will implement key attributes of the DoD’s Net-Centric Data Strategy: data dissemination services will be visible, accessible, understandable, and interoperable. Toward this end, data services in NextGen will be standardized and well-annotated, with published service-level agreements, transparent security attributes, and other metadata to facilitate collaboration.

This presentation will outline the NCOD approach to the development and coordination of an Enterprise Ontology that is driven by participant Communities of Interest and has a basis in real information sharing needs. In addition, the presentation will illustrate how the use of Semantic Web standards such as RDF/OWL and architectures (e.g. linked
data) can integrate enterprise architecture and other relevant technical documentation into a semantically enabled knowledgebase.

Ms. Patricia Craighill, a member of the Senior Executive Services – Senior Level/Highly Qualified Expert program, is Special Advisor, Air Traffic Services to the Chief of Warfighting Integration and Chief Information Officer, Office of the Secretary of the Air Force, Washington, D.C. Ms. Craighill represents the Air Force as Executive Agent for the Department of Defense, serving as the Assistant Director – Defense, Joint Planning and Development Office, the organization responsible for development of the Next Generation Air Transportation System (NEXTGEN). These responsibilities include leading, integrating, analyzing, and defending efforts related to Net-centric Operations, Information Exchange design/planning for the Joint Planning and Development Office.

Ms. Craighill, a native of New Jersey, joined the Air Force in 2009 as a highly qualified expert with over 30 years of corporate and industry experience. Prior to joining the Air Force, Ms. Craighill was Founder and President of KeenEdge Associates, LLC, an independent contractor serving companies in the federal contracting space, and positioning for growth into direct federal contracting. She advised companies on business strategy, sales and marketing, and assisted with pursuit of major government procurements. She has held senior executive roles in large and small systems integrators and service providers with budgets ranging from $40 million to nearly $2 billion. Ms. Craighill has been responsible for both general management/operations and business development in such companies as SI International (Serco Inc.), UNITECH (Lockheed Martin), Horne Engineering, Bearing Point, PRC (Northrup Grumman), SAIC and GTE Government Systems/ISD (CSC).

Lowell Vizenor is the lead ontologist in support of the Joint Planning and Development Organization’s Net-Centric Operations Division and is the Ontology and Semantic Technology Practice Lead for Alion Science and Technology. He has over 10 years experience developing and implementing semantic solutions for industry, government and university projects. He received his PhD in Philosophy from the University at Buffalo in 2005.

Beth Huffer is a Senior Consultant and Semantic Information Architect with Concept Solutions, LLC, currently supporting the NextGen Air Transportation Joint Planning and Development Office Net-Centric Operations Division. Beth has a Master’s Degree in Philosophy from the University of Colorado and has been working in the Semantic Technology field since 1998, when she joined the Cyc Project in Austin, Texas. Prior to joining the JPDO team, Ms. Huffer worked on knowledge representation, formal logic modeling, and semantic technologies at Microsoft, HIGHFLEET, and the University of Groningen, The Netherland.

Using Semantic Analysis and SOA Convergence for Enrichment of Business Capabilities: Erich Oliphant, Dovel Technologies

Systems implemented over many years typically degenerate into stovepipes because they focus on a particular set of requirements for a particular set of business needs at a particular time. Sometimes these systems are inherited as part of an acquisition and need to be integrated to the rest of the enterprise. This presents tremendous integration challenges due to the existence of different vocabularies for the data that evolve in these isolated domains. With adoption of Service Oriented Architecture (SOA), best practice suggests designing services based on a common controlled vocabulary through the entire enterprise or its part or domain. Traditionally, large efforts were made to create elaborate data models, however due to the complexity of these models, organizational challenges in achieving consensus, and difficulties in enforcing adoption and governance, this is not always achievable.

This is where semantic technologies can complement a SOA service model by creating ontology models that formally capture characteristics and relationships of vocabulary elements into common controlled vocabularies. The net benefit of this approach is that it reduces the need to map and transform data from one format to another. The same philosophy can be extended to the large amount of unstructured data on the web as well as in the enterprise if knowledge information needs to be extracted with virtually unlimited potential. At the moment, this potential is relatively untapped because it is difficult for machines to process and integrate this information meaningfully.

This is where using the semantic web helps address these challenges. A semantic technology approach can facilitate multilayered application, process, and service interoperability across disparate environments. When combined with...
Enterprise Service Bus (ESB), it can be a powerful tool to address the challenges described earlier. To date, there has been little production implementation of Semantic Web standards in the ESB arena. However, there are a few vendors who are starting to adopt semantics, ontologies, and RDF to describe the conceptual models implemented by application endpoints, agents, and intermediary nodes within ESB-like middleware.

Dovel Technologies has implemented this solution. To view it in action, please go to http://www.fdausdaalerts.com. It is single place where we have taken public data published by both the FDA and USDA in free text format and demonstrate how correlations can be drawn across disparate data sources. Using semantic technologies along with service data layer, the data is published on an ESB in the form that allows any interested party to obtain this data by subscribing to the content of interest. One application of such subscription allows to get data and to publish it to GIS map. Another potentially useful business case can be allowing the DoD commissaries to subscribe to the alerts and provide value added services to their business customers.

Erich Oliphant leads the implementation of key Dovèl projects, as well as providing overall guidance and leadership for Dovèl technical staff. Oliphant has over 20 years experience in the design, development and deployment of large-scale, mission-critical systems for federal civilian, DoD and NGO customers. Oliphant has broad-based experience with SOA as well as Event-Driven and Space-based architectural approaches to system development. He is proficient in both CMMI and Agile development practice and is well-versed in leading-edge Open Source technologies. He has been instrumental in the development of Dovèl’s “Smart Source” approach, which delivers harmonized, cost-effective solutions based on best-of-breed Open Source/COTS products.

Oliphant has recently begun to focus on innovations in social media, mobile technology and the Semantic Web.

**Metadata ontologies to support DoD and IC information interoperability: Steven Wartik, IDA**

DoD information sharing makes widespread use of metadata to capture security, provenance, format, and summary data about the information exchanged. The DoD Discovery Metadata Specification (DDMS) provides a standard syntax (in XML) for capturing and sharing metadata in all of these categories. DDMS also includes optional extensions for additional security metadata from the Information Security Markings (ISM) standard of the Intelligence Community (IC).

But, neither of these metadata standards captures much in the way of formal semantics for the metadata content. Formal semantics, specified using a logic-based ontology, captures the meaning of information elements and their relationship in a form that can be automatically processed by computers. Although informal semantics, specified in natural language, facilitates human understanding of information exchanges, it does not enable machine-understanding and automated semantic processing. Formal semantics enables search and discovery based on semantic relationships resulting in higher precision and recall. It also provides a formal structure that enables information extraction, integration, and reasoning. Hence, DoD information sharing standards could well benefit from extension from merely syntactic standards to semantic ones, which include formal specifications of the meanings of the information exchanged. The Defense Intelligence Agency (DIA), recognizing the potential benefits of semantic standards, has developed a suite of ontologies to capture the semantics of many of the existing IC syntactic information sharing standards. This suite includes ontologies in the Web Ontology Language (OWL) for DDMS, the IC-ISM, IC Information Resource Markings (IRM), Need-To-Know (NTK) metadata, and associated Controlled Vocabulary Enumerations (CVEs). These ontologies were developed specifically for use in the DIA Metadata Extraction and Tagging Service (METS). Recently, we have adapted these metadata ontologies for applications being developed for the Office of the Assistant Secretary of Defense Research and Engineering.

We will describe how we have adapted the current IC metadata ontologies in several ways: extending them to handle additional metadata; modifying them to work better with OWL Description Logic (DL) reasoners; and linking them into emerging semantic standards, such as the Universal Core (UCore) and the UCore Semantic Layer (UCore-SL).

The DIA metadata ontologies used OWL Full constructs: specifically, they sometimes treat RDF literal values as instances of OWL classes. Since IDA believes classification to be an important component of our target applications, we have modified the ontologies to replace the
OWL Full constructs with OWL-DL compliant ones, enabling the use of OWL-DL reasoners. We have created a Metadata ontology in the file metadata.owl, which aggregates all of these modified DIA ontologies using OWL’s import construct.

In addition to importing the modified IC metadata ontologies, our metadata ontology incorporates new concepts for confidence of sources in assertions, as well as their roles in making or commenting on assertions. Confidence is specified using the “confidence” annotation property, which has class Confidence as its range. Five members of class Confidence are defined: absoluteConfidence, highConfidence, mediumConfidence, lowConfidence, and noConfidence. The intent is to allow confidence to be measured discretely, using a Likert scale. However, the class Confidence is not limited to these members. An ontology could introduce new members, or use a completely different set.

However, every member of class Confidence must assert a “value” property. The range of this property is a floating-point value between 0.0 and 1.0, inclusive. Confidence therefore involves a numeric ranking, which facilitates comparison across different Likert scales and enables combining confidences of multiple assertions.

To facilitate information sharing using UCore, we have placed the existing DIA metadata ontology classes into the context of UCore and UCore-SL by adding subclass relationships between the related classes. This enables UCore exchanges to be specified in which the metadata classes are included as extensions of the corresponding UCore classes.

Dr. Haugh did his undergraduate studies in computer engineering at Case Western Reserve University, followed by graduate studies in philosophical logic and artificial intelligence at the University of Maryland, College Park. His research interests focus on intelligent systems technologies, including semantic technologies, ontologies, knowledge representation and reasoning, software agents, complex adaptive systems, and cognitive modeling and simulation.

His work at the Institute for Defense Analyses has included: temporal reasoning for the Multi-Domain Expert System for the FBI; analyses of relationships between DoD simulation models and command and control information models; target audience analysis architecture and ontologies for psychological operations for Special Operations Command (SOCOM); and development of ontologies for assessment of potential impacts of cyber exfiltrations of DoD information.

Steve Wartik is a Research Staff Member at the Institute for Defense Analyses in Alexandria, Virginia. His primary area of interest is information modeling. He assists DoD programs in their efforts to create consistent, useful, and practical views of their information assets. He has been especially active in supporting the Multilateral Interoperability Programme, where he is actively employing Model Driven Architecture concepts, studying how their use can save time and money, and improve work product quality. Dr. Wartik received his PhD in Electrical and Computer Engineering from the University of California at Santa Barbara in 1984, and his BS in Computer Science from Pennsylvania State University in 1977.

Semantic Technology and Cloud Computing Applied to Tactical Intelligence Domain: Steve Hamby, Orbis

The tactical intelligence community is plagued with the inability to share actionable information across the various services. The Distributed Common Ground System (DCGS) Integration Backbone (DIB) allows services to share metadata about information resources, but it does not provide the capability to share relationships of the information required to make decisions. Semantic technologies have been successfully applied in the tactical intelligence community to address this lack of actionable intelligence sharing problem. Semantic technologies, and the associated standards Resource Description Framework (RDF) and Web Ontology Language (OWL) hold promise for providing the tools required for capture and dissemination of complex information across the services. Providing accurate solutions that are scalable and reusable can be challenging when extended to the ever increasing data sources and size of data being collected now an in the immediate future. This session will present a proven approach to applying semantic solutions to enterprise-level information sharing by utilizing cloud computing technologies as a scalable back end infrastructure coupled with light-weight Ozone widget-based UI’s on the front end, and semantic technologies as the agile data space. This allows for the delivery of solutions by leveraging the power of large-scale
RDF graphs in a cloud environment, while, at the same time, shielding the end user from the complexities associated with that backend infrastructure (e.g., complex queries, data mappings, rules, etc.). Certain real-world use cases of this approach, specifically in the tactical intelligence but also commercial industry, will be discussed to highlight both the benefits and technological challenges associated with building enterprise-level solutions, including:

- Semantic integration of disparate data sources using layered federated ontologies
- Provenance of topics and concepts across unstructured data sources (e.g., HUMINT reports) and integration of those items to structured data
- Platform requirements for large numbers of user communities to have access to their data via a shared cloud environment
- Capture of SME information necessary to build end user applications (e.g., desktop and mobile apps), for a variety of domain applications and different levels of the organization.

Mr. Hamby joined Orbis in 2006 and currently serves as Chief Technology Officer (CTO) and Vice-President, Semantic Technology & Information Fusion. Mr. Hamby commands technical responsibility for all technology systems, semantic programs and ontology development efforts at Orbis. He brings 20+ years of experience in the IT industry, including XML Architecture, IT consulting, data architecture, and data management. Mr. Hamby has experience developing and deploying semantic-oriented technologies (specifically OWL and RDF), Service Oriented Architecture (SOA), XML-based applications, and numerous semantic Commercial-Off-The-Shelf (COTS) software technologies. He has authored numerous articles on XML and semantic technologies, is regularly solicited to speak at industry conferences, and is widely regarded as a leading technologist in the semantic technology field. Prior to Orbis, Mr. Hamby was Director, Sales Support at Cerebra Inc., an industry-leading semantic reasoning software provider. Mr. Hamby holds BS and MBA degrees and retired from the U.S. Army.

**Semantically Enabled Dynamic Discovery and Delivery: Aaron Griggs, MITRE and Danny Gagne, MITRE**

The tactical environment has many constraints that affect service discovery and delivery. These constraints can be mapped to characteristics that are associated with users and services providers. The characteristics can be leveraged to enable semantically rich mapping between the users and providers. This mapping enables context-aware computing.

Context is information that characterizes entities that comprise the computing environment. Context-awareness leverages this information to understand who, where, what and when of the entities and take some action based on the context.

The Semantically Enabled Dynamic Discovery and Delivery (SED3) research project provides a simple, configurable approach to context-aware computing through:

- Context defined through semantic web standards (RDF, RFDS and OWL)
- Extension of existing ontologies (FOAF, EndS)
- New ontologies developed from existing DOD data models (JC3IEDM)
- Developer-friendly rule engine to query RDF triple stores
- External interfaces exposed as services (REST)

As part of SED3, the following components were developed:

- Ontology provides standards-based definition of the characteristics, to include: users, apps, feeds, devices, mission and roles
- RDF Triple Store is a graph database to persistently manage characteristics
- Profile Manager provides web application and service-oriented interfaces for users to manage characteristics
- Context Matcher is a recommender engine to enable context-aware search based on the characteristics
- Context Monitor is a client-side application to dynamically update characteristics as the user’s computing environment changes
- Configuration Manager is a rule engine to update the configuration of the user’s computing environment in response to dynamic characteristics

http://semanticommunity.info/Build_DoD_in_the_Cloud
Updated: Wed, 23 Sep 2015 05:46:14 GMT
Powered by mindtouch™
• SED3 Android Framework enables developers to rapidly create context-aware applications
• Demo Applications to demonstrate context-aware applications

The presentation for the SOA & Semantic Technology Symposium will discuss the ontology and service-oriented interactions between the SED3 components. Specifically, the presentation will address how the standards are employed and the specific tools that are leveraged to enable developer-friendly capabilities.

Aaron Griggs is a Principal Information Systems Engineer at The MITRE Corporation in Stafford, Virginia. He leads multidisciplinary teams focused on effective employment of information technology across the Department of Defense. Currently, he provides systems and software engineering leadership at Marine Corps Systems Command in Quantico, Virginia. He is also a principal investigator in MITRE’s research program focused on Composable Capability on Demand (CCOD®).

Prior to joining MITRE in 2005, he spent 10 years as a product developer and software engineer in a variety of industries. He is a graduate of Virginia Tech (B.S. Electrical Engineering in 1996), Stevens Institute of Technology (M.E. Systems Engineering in 2008) and currently pursuing graduate studies in Data Mining (George Mason University).

Danny Gagné is a Senior Software Systems Engineer at The MITRE Corporation in Bedford, Massachusetts. His research interests lie in the area of the semantic web, socio-technical systems, complexity, and programming language design. He is also a principle investigator in MITRE’s research program focused on CCOD®. He is a graduate of Northeastern University (B.S. Computer Science in 2006), and current pursuing graduate studies in Engineering Systems (Massachusetts Institute of Technology).

Semantic Interoperability in a Network-enabled Environment: Sven Kuehne, NATO C3 Agency

Sharing information within NATO - as well as with NATO Nations and Partners - is a crucial part of how the Alliance conducts its business and inevitably requires reaching a common understanding to allow effective and efficient processing of information. With the focus on exchanging information between C2 systems, simply providing information to the intended recipients is not enough in a complex operational environment. Given the multinational nature of the Alliance, with 28 nations, dozens of languages, and different cultural backgrounds, semantic interoperability is an important factor. Information exchanged between systems must be understood and interpreted by the recipient as intended by the originator and in accordance with task requirements. For this reason, semantic interoperability has been identified as a key concept for NATO Network Enabled Capability (NNEC).

The connection between Service Oriented Architecture and semantic technologies is actually quite close. SOA, as a leading architectural paradigm for NNEC, includes an enabling layer of Core Enterprise Services (CES) that provide the foundation for functional services as part of C2 systems and end-user applications. Semantic technologies add the necessary functionality to utilize the shared information more efficiently. The goal for information integration through SOA is not simply to increase the quantity of information available to the user but to ensure that its quality improves (or at least does not diminish in the transfer). To reach this goal semantic technologies have to be applied at the level of core enterprise services.

The NATO CES Framework defines a number of core enterprise services that directly support semantic interoperability. For example, metadata registry services enable users to share and reuse structural and semantic XML artefacts. Other services provide the foundation for semantically enabled applications and allow Communities of Interest (COIs) to conduct their business in a more effective way. This includes discovery of services and information, as well as translation and mediation services.

This presentation addresses how the NNEC Core Enterprise Services and semantic technologies provide the foundation for semantic interoperability in network-enabled environment. This includes an overview of the relevant core enterprise services that have been identified in the NATO CES Framework as part of the transition towards SOA, as well as a discussion of examples for the use of semantic technologies in the NC3A program of work.
The presentation illustrates two distinct aspects of the relationship between SOA and semantic technologies. We will show how Core Enterprise Services can be used to increase semantic interoperability. Furthermore we will explore how semantic technologies can provide new functionality to Core Enterprise Services for the use in functional services.

Dr. Sven E. Kuehne is a Senior Scientist at the NATO C3 Agency in The Hague, The Netherlands. In this function he is involved in the development of new information sharing and integration capabilities for current and future command and control systems. A particular focus of his work is the application of semantic technologies in the context of NATO Network Enabled Capability (NNEC).

Prior to becoming a staff member at NC3A in 2005, Dr. Kuehne was a research scientist at Northwestern University. During this time he was involved in a number of projects funded by the Department of Defense in the areas of Artificial Intelligence and Cognitive Science. Dr. Kuehne received his doctorate degree in Computer Science from Northwestern University.


Thomas Erl is a best-selling IT author and founder of SOASchool.com® and CloudSchool.com™. Thomas has been the world's top-selling SOA author for over five years and is the series editor of the Prentice Hall Service-Oriented Computing Series from Thomas Erl (http://www.soabooks.com), as well as the editor of the SOA Magazine (http://www.soamag.com). With over 140,000 copies in print world-wide, his seven published books have become international bestsellers and have been formally endorsed by senior members of major IT organizations, such as IBM, Microsoft, Oracle, Intel, Accenture, IEEE, HL7, MITRE, SAP, CISCO, HP, and others.

Three of his books, SOA Design Patterns, SOA Principles of Service Design, and SOA Governance, were authored in collaboration with the IT community and have contributed to the definition of the service-oriented architectural model and service-orientation as a distinct paradigm. Thomas is currently working with over 20 authors on several new books dedicated to topic areas such as cloud computing, modern service technologies, and service-orientation.

As CEO of Arcitura Education Inc. and SOA Systems Inc. and in cooperation with SOASchool.com® and CloudSchool.com™, Thomas has led the development of curricula for the internationally recognized SOA Certified Professional (SOACP) and Cloud Certified Professional (CCP) accreditation programs, which have established a series of formal, vendor-neutral industry certifications. Thomas is the founding member of the SOA Manifesto Working Group and author of the Annotated SOA Manifesto (www.soa-manifesto.com). He is a member of the APQC Service-Orientation Maturity Model (SOMM) Advisory Council, co-chair of the SOA Education Committee, and he further oversees the SOAPatterns.org and CloudPatterns.org initiatives, which are dedicated to the on-going development of master pattern catalogs for service-oriented computing and cloud computing.

**Closing Keynote: Contest Winner**

**Closing Remarks: Dennis Wisnosky, BMA CTO, ODCMO, DoD**