

Semantic Technology Boot Camp

Day One: Wednesday, September 21

- 08:15 Registration
- 08:30 What is Semantic Technology? (Smith)
 - Background
 - Semantic Technology and the DoD
 - Ontology best practices
- 10:15 Break
- 10:30 A strategy to ensure consistency of data across multiple DoD communities of interest (Mandrick)
 - Warfighter Ontology: A repeatable process for creating ontologies in military domains
- 12:00 Lunch
- 13:00 Realizing this strategy across the DoD (Smith)
 - Towards a common top level: UCore and UCore Semantic Layer
- 14:30 Break
- 14:45 How to build an ontology (Smith)
 - Ontology development methodology
 - Ontology and Referent Tracking

Day Two: Thursday, September 21

- 08:15 The basic languages of the Semantic Web (Vizenor)
 - Resource Description Framework: RDF
 - Resource Description Framework Schema: RDFS
 - Web Ontology Language:OWL
- 10:15 Break
- 10:30 How to reason with data using Semantic Web (Vizenor)
 - Open World versus Closed World reasoning
 - Reasoning in OWL
 - Rule Languages: SWRL, RIF
- 12:00 Lunch
- 13:00 How to query and manipulate RDF data: An overview of SPARQL 1.1 (Mekonnen)
 - Parts of a SPARQL query
 - SPARQL endpoints
 - SPARQL CRUD operations
- 14:30 Break
- 14:45 How to build ontologies in OWL (Vizenor /Smith)
 - Event models
 - Roles, Attributes, and Types
 - Information Content Entities

Day Three: Friday, September 23

- 08:15 Overview of Semantic Tools (Mekonnen)
 - Ontology Editors (e.g., Protégé OWL and TopBraid Composer)
 - Data stores (e.g., Jena SDB, Virtuoso, and Mulgara)

- Programming Frameworks (e.g., Jena and Sesame)
- 10:15 Break
- 10:30 Leveraging existing (non-RDF) data (Mekonnen)
 - Mapping relation data to RDF using D2RQ
 - Mapping XML to RDF/OWL: SAWSDL

12:00 Lunch

- 13:00 Example applications (Vizenor)
 - Semantic SOA
 - Semantic Metadata Portal
- 14:30 Break
- 14:45 Advanced Topics (Mekonnen, Vizenor)

Trainers

Barry Smith, PhD, is an internationally recognized leader in the field of ontology and semantic technology. He has MA and PhD degrees in Mathematics and Philosophy, and is Distinguished Professor of Philosophy, Neurology, and Computer Science at the State University of New York at Buffalo. He is the author of over 400 peer-reviewed publications and of numerous expert appraisals and planning documents prepared for national and international agencies on ontology-related themes.

Smith is Director of the National Center for Ontological Research, a Principal Investigator of the NIH Roadmap National Center for Biomedical Ontology, and the leader of multiple ontology development, coordination and training projects in medicine, defense, and other fields, and the founder of the Ontology for the Intelligence Community/Semantic Technology for Intelligence, Defense and Security (STIDS) conference series. He is the founder of the OBO (Open Biomedical Ontologies) Foundry initiative, widely regarded as a uniquely successful application of semantic technology to the task of data integration, whose suite of high quality interoperable ontology resources is now used by thousands of life science researchers throughout the world.

Lowell Vizenor, PhD, is Ontology and Semantic Technology Practice Lead for Alion Science and Technology and is currently supporting the NextGen Air Transportation Joint Planning and Development Office Net-Centric Operations Division in the role of Lead Semantic Architect. He and his team have successfully championed the use of Semantic Technology as the foundation for the NextGen Information Sharing Environment. He has over 10 years experience developing and implementing semantic solutions for industry, government and academia. He received his PhD from the University at Buffalo in 2005 under Smith's supervision.

LTC William Mandrick, PhD, has twenty-three years of military leadership experience in both garrison and austere environments, including 4 combat deployments. Has has Commanded a Civil Affairs Company in Iraq, acted as the key adviser to brigade staff on civil-military and counterinsurgency operations, and also acted as a liaison to the State Department (Provincial Reconstruction Team) in two provinces. He is the Co-Creator of Command and Control (C2) Ontology, and of UCore extensions for Global Force Management, COIN Operations, Position Reporting, STRIKE, Call For Fire, IED-Defeat, and Targeting. He received his PhD from the University at Buffalo in 2004 for a dissertation under Smith's supervision on the Ontology of War.

Daniel Mekonnen is a Semantic Technologist at the DoD's Business Transformation Agency (soon to become part of the DCMO). He brought his background in Aerospace Engineering and Computational Linguistics to a primary ontologist position on the NASA Constellation Program, where he developed both ontology models for engineering domains as well as model driven applications such as for the Kennedy Space Center's Launch Control System. He has also been a Semantic Architect on the FAA's NextGen Air Transportation System and for several years a TopQuadrant team member that produced the industry leading TopBraid Composer.

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