

#### 2010 DTIC CONFERENCE March 22-24, 2010

Celebrating 65 Years of Providing Access to Defense Information

# DoD Collaborative Tools with Innovative Web 2.0 Features: DoDTechipedia, DefenseSolutions and Aristotle

22 March 2010

Ms. Charlene Madaffer-Meehan





#### **DoD Collaborative Tools**

DoD Field Activity Since 2004 DoD Field Activity Since 2004

#### Mr. Christopher Thomas

Director, Information Systems Support and

Chief Technology Officer (CTO), DTIC

#### Mr. David Edwards

Information Broker

Open Business Cell, Rapid Fielding, DDR&E

#### Dr. Joel C. Sercel

Program Manager

Air Force Research Laboratory (AFRL)





# DoDTechipedia - Update

DoD Field Activity Since 2004 DoD Field Activity Since 2004

# DoDTechipedia – Update

# Countering Threats Through Innovation and Information Sharing

Mr. Christopher Thomas





# The Department of Defense Depends on Technology

DoD Field Activity Since 2004 DoD Field Activity Since 2004

"Our conventional modernization programs seek 99 percent solutions in years."

Stability and counterinsurgency missions – the wars we are in require 75 percent solutions in months."

Secretary of Defense, Robert M. Gates National Defense University, Delivered, September 29, 2008





# **How Should We Respond?**

DoD Field Activity Since 2004 DoD Fi

# Do What We've Always Done?

- Write RFI's and RFP's
- Pay contractors for custom solutions
- State that new technologies do not fit DoD needs

# Rapidly Adopt New Technologies?

- Develop new approaches
- Modify our practices to leverage innovative ideas
- Get 75% solution now

# - Ge

#### **Study Options?**

- White papers from consultants
- Tiger teams
- Research policy implications

RFI: Request for Information

FRP: Request for Proposal





# Technology Is a Game Changer



How do we quickly and securely bring iPhone / Android / Kindle like innovation into our capability sets? How do we leverage other DoD integration efforts?



# Changing the Game?

### Standard DoD Issued Mobile Phone

DoD Field Activity Since 2004 DoD Field Si

ty Since 2004





Today



2007

- Phone
- Email
- Address Book
- Calendar
- (really bad) Text Web Browser
- Calculator
- Break Out

- Phone
- Email
- Address Book
- Calendar
- (bad) Text Web Browser
- Calculator
- Break Out



# Moving Forward Requires Broad Collaboration Overcoming Barriers to Progress

DoD Field Activity Since 2004 DoD Fi innovation Community Continuous Industr engagement between awareness those with challenges and those charged to improvement provide solutions **DoD Primes** esponse

Sharing Knowledge - Cutting across organizational boundaries
Fostering communication between those with needs and
those with solutions
Refusing to accept mediocrity





# Why Web 2.0 Technology for Collaboration?

DoD Field Activity Since 2004 DoD Field Activity Since 2004

Combining knowledge, perspectives, and approaches from across the Defense





Will result in new innovative solutions and capabilities





## DoDTechipedia's Response

DoD Field Activity Since 2004 DoD Fi





#### Response:

DoDTechipedia introduces a Suite of Services that include an internal wiki, DefenseSolutions, and Aristotle Beta. These tools begin to provide a means to advertise, discuss, and challenge information rapidly, adding inputs to quickly identify/invent the 75% solutions commanders need.



# PoDTechipedia Progress Report

DoD Field Activity Since 2004 DoD Fi

Unclassified Wiki Data	2009 Users Conference	2010 Users Conference
New Registered Users	6,100	11,000
Total Articles/Org Pages	900	1,300+
Total Articles Viewed	170,000	364,000
Monthly Unique Hosts	300	800

#### **New Version Released in January 2010**

- Enhanced Layout
- Invite a Friend
- Ask a Question
- Updated User Profile
- Improved Document Import
- Improved Editor
- Organization Badge
- Next Update via May 2010





### **DTIC's Goal**



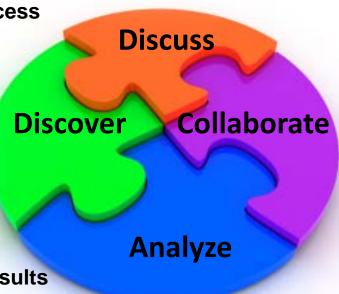
DTIC's goal is to provide an integrated space where the S&T community and the DoD Enterprise can intuitively **DISCOVER**, **ANALYZE**, **COLLABORATE**, **and DISCUSS** relevant data on science and technology topics



# Roadmap

DoD Field Activity Since 2004 DoD Fi

- Continuing enhancements to DoDTechipedia Wiki
- Allowing DoDTechipedia Wiki users to easily access DTIC Online content (Including contractors with CACs)
- Initiation of full-text indexing of TR's adding
   Wiki content to DTIC Online AC search
- Aristotle Beta
- Simplified budget tool
- TechSpace social media component
- Update CAC support in Registration
- Visualization enhancements to add context to results
- Leveraging semantic search advances
- Shared Profile across tools



**FY10** 

**FY11** 

FY12 +



# A Tool Is Not Enough Challenges to Collaboration

DoD Field Activity Since 2004 DoD Fi

- Culture of Securing Information
- Balance must be developed between the risks and benefits of sharing
  - Not just preventing the wrong people from accessing information
  - Ensuring the right people have access to information
  - Identity Management remains a key challenge

Securing Information Saves Lives



Sharing
Information Saves Lives

Decision Makers, Commanders, Acquisition Officials... must act. They need immediate access to your knowledge and information to make the best decision!



# What Is the Potential of Collaboration?

DoD Field Activity Since 2004 DoD Fi

DoDTechipedia Suite of Services is not a single, stand-alone source, rather a set of tools, intended to provide users with multiple sources of information





- Giving users better information and additional options as they make decisions
- Moving to "75% solutions in months" not years

#### We Need You on the Team: "Join the Fight"



# **Open Business Cell – Update**

DoD Field Activity Since 2004 DoD Fi

# Open Business Cell – Update

Mr. David A. Edwards







# **Open Business Cell UPDATE**

A Brief for the DTIC Conference

DoD Collaborative Tools with Innovative Web 2.0 Features: DoDTechipedia, DefenseSolutions, and Aristotle

22 March 2010



#### What Does OBC Do?



- Active outsourcing agent of DoD needs to companies that have not done business with DoD before
- Use Other Transactions (OT) Agreements to simplify relationships with "nontraditionals," and speed up contracting
- Reduce time to test prototype solution for need



#### Open Business Cell



- Pilot program launched 6 Feb 09 seeking developmental prototypes
- DefenseSolutions.gov
  - Public portal to submit ideas on listed topics
- Submission process is short & free form
  - What does your idea do?
  - Why technically will this work?
  - How will we test it?
- Battlefield forensics was pilot topic
  - Needed capabilities: drugs/expl test kit; digital image recognition; auto latent print machine
  - 96 ideas received; 24 proposals requested
  - 6 proposals selected for funding in FY09.
- Additional topics now sought
  - More Battlefield Forensics, JNLWD, JUONS, IPLS, Crowdsourcing, & others



JNLWD: Joint Non-Lethal Weapons Directorate JUONs Joint Urgent Operational Needs IPLs: Integrated Priority Lists



# **Battlefield Forensics Proposals Funded**



#### Multi-Test Kit for Explosives, Drugs, and Heavy Metals/Gunshot Residue

A rugged field test kit for suspicious substances

- Naval Air Warfare Center (\$150K@7 months) Awarded 17 Aug 09,
- USSOCOM (\$980K@24 Months ,Awarded 8 Oct 2009), &
- Georgia Tech Research Institute (\$500K @18 Months, Awarded 30 Nov 2009).

#### **Digital Image Device Linkage at Warfighter Level**

A method to determine the origin of digital cell phone photos

AAVET Inc. (\$400K @ 24 months, Awarded 27 Jan 2010)

#### **Automated Process for Latent Fingerprint Development on Documents**

A high speed document handler that develops and captures latent fingerprints

- Lockheed Martin (\$1,750K@15 months, Awarded 26 Jan 2010) &
- Naval Air Warfare Center (\$500K@18 months, Awarded 17 Aug 09)

#### Handheld Sensitive Site Exploration Documentation Device;

A combination tool that speeds up the collection/custody of evidence in the field

Five proposals are under evaluation for funding in FY-10.



### **Update Summary**



- OBC works 6 funded projects underway within six months of selection
- Many lessons learned
  - Good topics are hard to find
  - Program support is crucial
  - Contracting must be facile to suit the respondents
  - Marketing methods will change
- Ready to proceed
  - Expanding into JUONs, IPLs, and other areas, for new topics, but treading tenderly
  - Adopting new crowdsourcing method this year to expand solution capacity
  - Excellent working relationship with DeVenCl



### Aristotle – Update

DoD Field Activity Since 2004 DoD Field Activity Since 2004 DoD Field Activity Since 2004 DoD Field Activity Since 2004

# Aristotle - Update

Dr. Joel C. Sercel



# Aristotle



# Built By and For DoD Scientists and Engineers



- Graph Data Model Provides Unique Capabilities
- Social Networking Designed for Scientists and Engineers
- Provides Constantly Improving Situational Awareness Re:
  - People
  - Projects
  - Topics

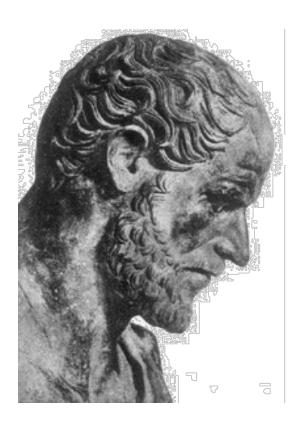


## Inspiration



#### **Aristotle: Personal Tutor of Alexander**

 Tells you what you need to know, when, and how you need to know it







### **Background**



- Aristotle V1: Deployed across > 15 AFRL sites to > 10,000 science and technology workers
  - Integrated with ARFL's DTIC Projects and Topics
    - >50,000 Project, >30,000 Tpics
    - Reach-back to DTIC documentation
    - Active AFRL userbase
- AFRL Motivation for Aristotle: Situational Awareness Regarding
  - People: who knows what and who?
  - Projects: What are we doing, what we have done
  - Topics: Science and Technology Knowledge
- DDR&E: funding Version 2.0 for deployment across DTIC Userbase and full DTIC collection
  - ≈200,00 possible users
  - Same Motivation as AFRL
- Version 2.X Development Planned
  - Rich integration with DoDTechipedia and other systems (A-Space?)



### **AFRL's Perspective**



- AFRL is in the <u>knowledge business</u>, so leading edge knowledge management is key to our mission success
  - The leading edge of knowledge management today is Web 2.0 and social networking
  - Aristotle is more than LinkedIn for the technical enterprise
- AFRL funded the development of Aristotle to
  - Encourage/enable SME's to work across technical boundaries
  - Provide management with better <u>technical and</u> <u>programmatic situational awareness</u>

The more people use Aristotle, the better it is for AFRL users

- The network effect
- AFRL management intends to encourage Aristotle use across all sites and disciplines
- Hence, AFRL's motivation for version 2.0



### Aristotle Helps People ...

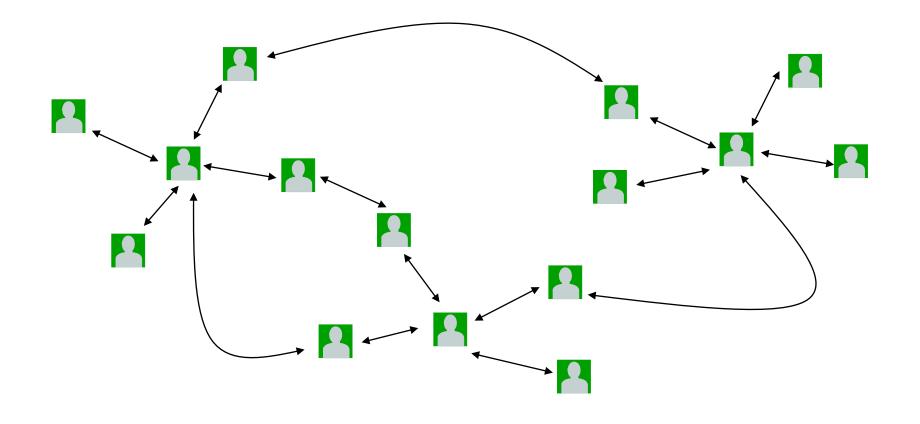


- Easily find the answer to questions like . . .
  - Who has expertise in this area, where are they located?
  - Have we tackled a project like this before, what did we learn?
- More simply and easily access complex data
- Find and enhance information about S&T projects
- Build teams, identify experts, quickly expand contacts
- Exploit existing social networks within organizations
- Create new social networks across organizations
- Access information for better decisions
- Provide better, faster customer support
- Discover and build relationships among
  - People
  - Projects
  - Topics
- Synthesize knowledge from disparate sources



# For People , Aristotle is Like Linkedln....



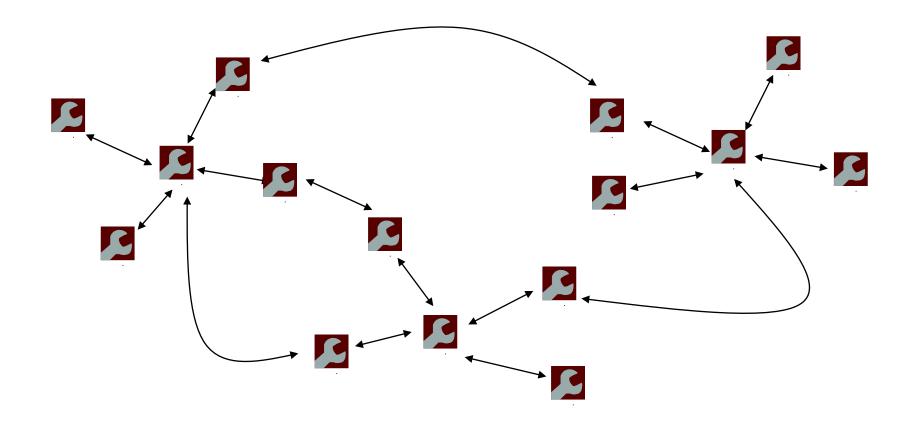


... and could easily be made to work with A-Space



# Aristotle Creates Networks of Projects ...



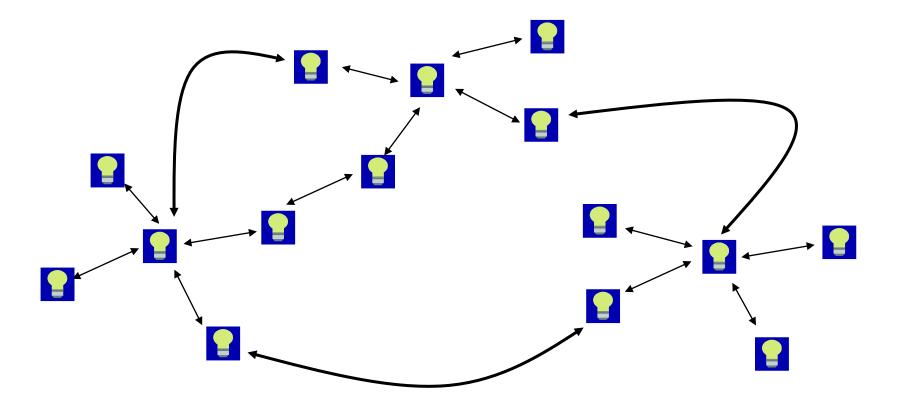


But it does a lot more inside the enterprise ...



# For Topics , Aristotle is Like Wikipedia....



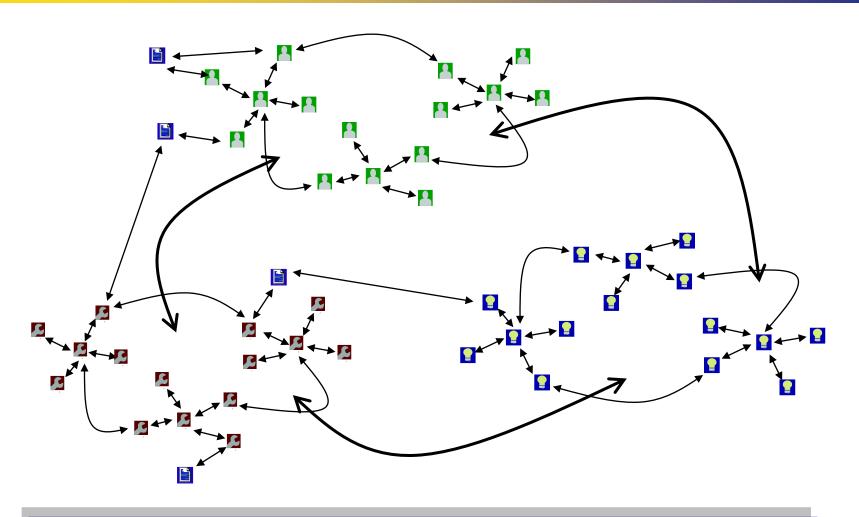


And will tie to DoDTechipedia



# **Aristotle Ties Everything Together**





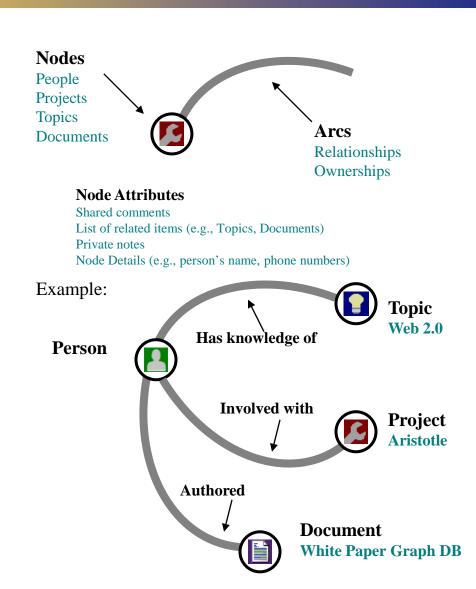
**Providing Collaborative Situational Awareness** 



# Aristotle's GRAPH Data Model



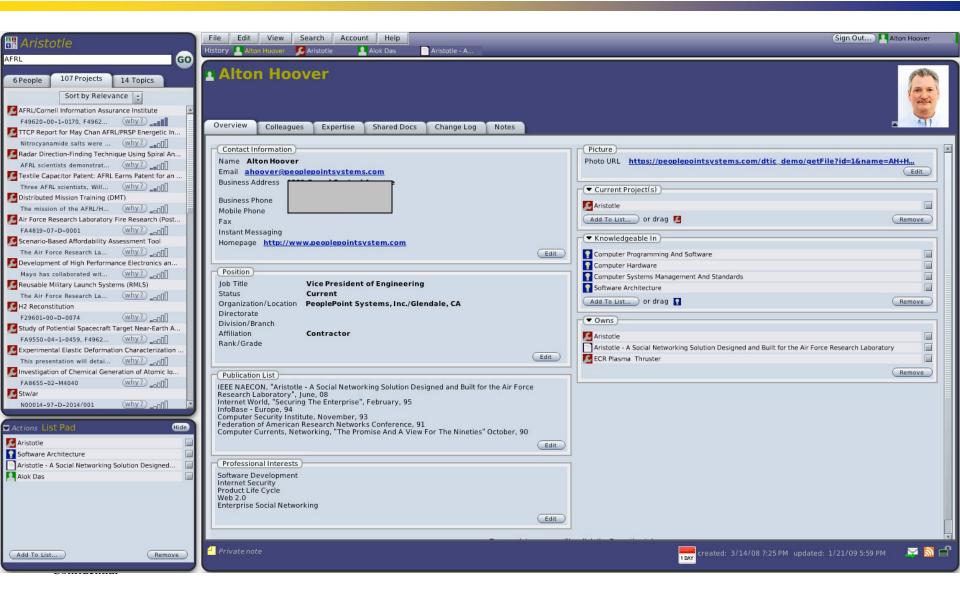
- Explicitly models realworld relationships enabling users to discover the connections between entities
- Real-time, fully referential updating without re-indexing
- Supports multi-path searching for entities that are not directly related, e.g., indirect relationships with multiple degrees of separation





### **People Profiles**







# Concept of A-Space Federation With Aristotle



- The Social Networking Parts of Both Systems Contain Similar Data
  - Who You Know
  - What you Know
- If A-Space (or D-Space) is deployed for DTIC Users, Aristotle could be federated with it via Web Services
  - A change in one system would reflect in the other
  - The two systems would strengthen each other



### **Projects in Aristotle**

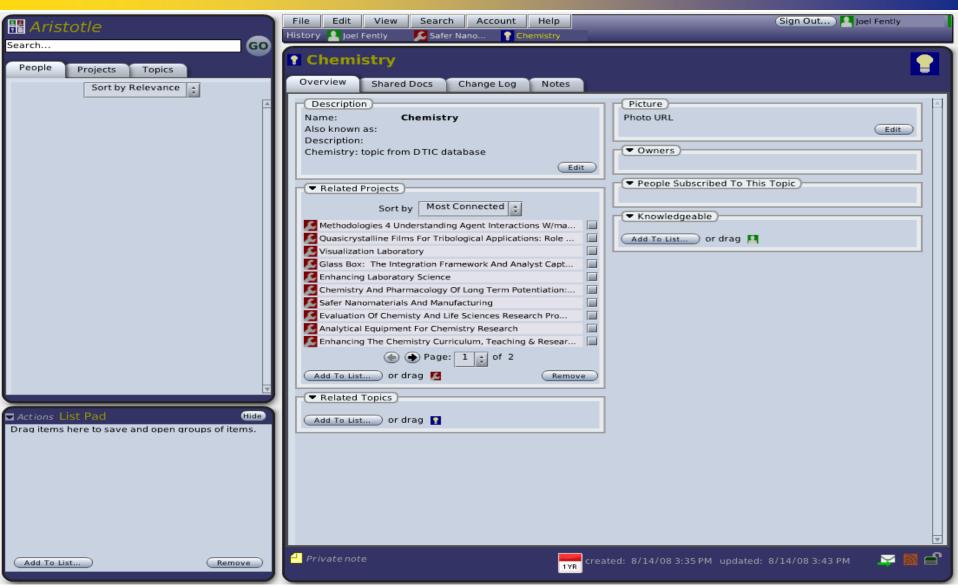






## **Topics in Aristotle**

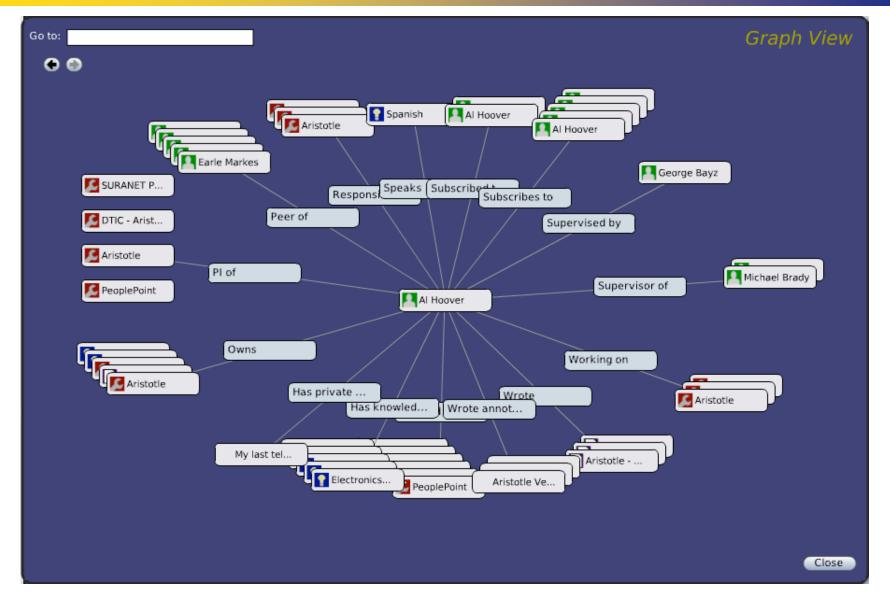






# **Aristotle Graph Visualization**

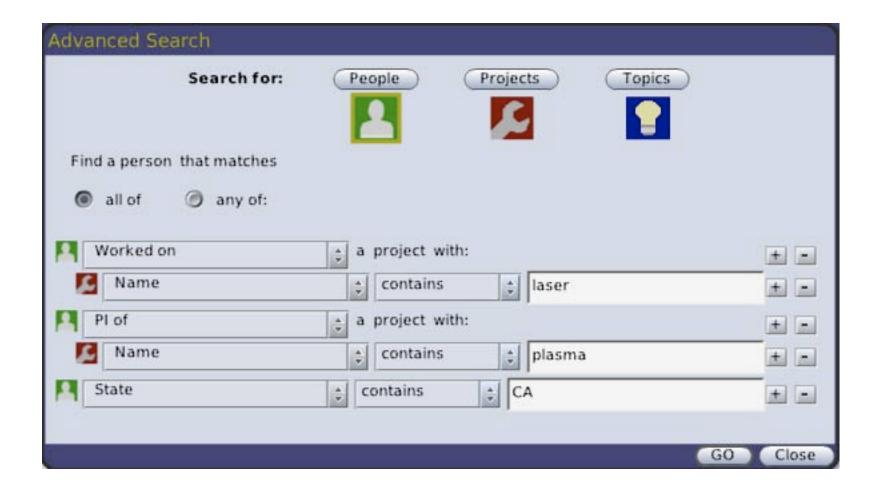






#### **Aristotle Advanced Search**



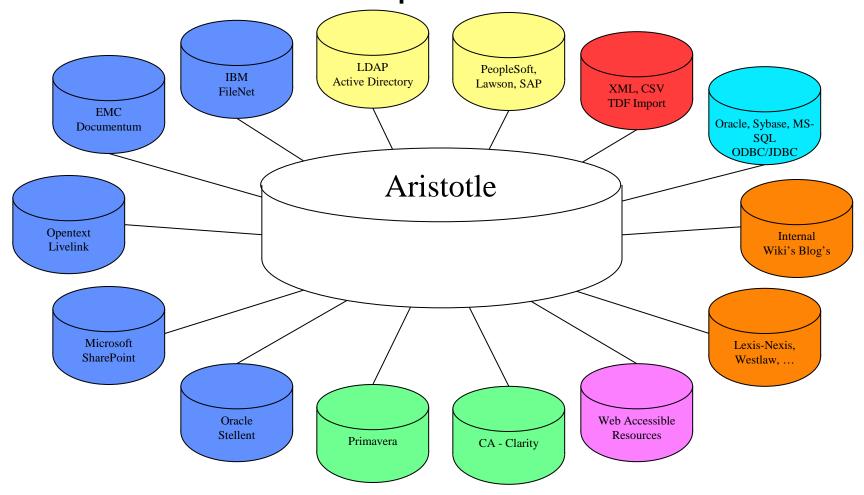




### **Data Source Integration**



Aristotle integrates data from ECM, Project Management, HR and internal and trusted external sources via XML gateway, JDBC, direct Web links and standard data import





### **Aristotle Software Architecture**



- AJAX Web 2.0 application: Hibernate & Lucene
- Web Browser Client (IE 6/7, Firefox 3.X)
- OpenLaszlo Based Flash migrating to DHTML and JavaScript
- Solaris 10, Red Hat Enterprise 5, SUSE Linux Enterprise Server 10 SP1, Windows Server 2008 Enterprise\*
- Hibernate SQL database layer abstraction supporting: Oracle 10G R2, MS SQL 2008 Enterprise\*, MySQL
- JDBC access to remote databases
- External data import via calls to XML gateways or bulk load parsing of XML tagged files or CSV/TDF
- Web Services Apache, Tomcat & IIS
- Email messaging



# **Aristotle For DDR&E - Roadmap**



- Version 1
  - Currently deployed and in-use at AFRL
  - User-base of 10,000 across many sites
  - Fully integrated with AFRL DTIC archival content
- Version 2
  - V2.0 deployment for all DTIC users, fieldable system delivery in May 09, includes systems engineering and initial integration with DoDTechipedia system
  - V2.X refinement and expansion delivered incrementally over an additional 9 months
    - Incremental deployments along the way
    - Includes collaboration for full DoDTechipedia integration
      - A-Space (D-Space) integration feasible if resourced



### **Development for Version 2.0**



- Aristotle Today
  - What's New
  - What's Hot
  - Related News
- Systems Engineering and Design for DoD Techipedia Integration
- XML Ingest Utilities for Content Integration
  - For enterprise with XML-based Web Services
- Integrate With SiteMinder/LDAP for User Authentication
- SunONE JBoss Server/Deploy Environment
- Source Code Security Validation
- Virus Scan Compatibility



# The Existing Aristotle For Science and Technology (S&T)



- Provides:
  - Situational Awareness
     Regarding S&T Work
  - Rapidly Reformulated
    - Responsive Data Structure
- For:
  - Organizations
  - Management
  - Technologists

**People-Projects-Topics-Documents** 



# Concept of A-Space Federation with Aristotle



- The Social Networking Parts of Both Systems Contain Similar Data
  - Who You Know
  - What You Know
- If A-Space (or D-Space) is deployed for DTIC Users, Aristotle could federate with it via Web Services
  - A change in one system would reflect in the other
  - The two systems would strengthen each other



# Summary



- Aristotle is a proven product in use by the AFRL enterprise
- Provides collaboration, social networking, and situational awareness to Science and Technology (S&T)
- On-going Aristotle improvement efforts with DDR&E are expanding these benefits and providing connectivity among all service labs.
- Aristotle also has strong application to a myriad of other DoD domains.



### **Points of Contact**

DoD Field Activity Since 2004 DoD Fi

Mr. David A. Edwards
DDR&E
(703) 588-2413 (O)
(571) 334-7821 (Cell)

<u>David.a.edwards.ctr@osd.mil</u> <u>dedwards@sainc.com</u> http://www.defensesolutions.gov

Dr. Joel C. Sercel
AFRL
(818) 422-05114
sercel@icsassociates.com

Mr. Christopher Thomas
DTIC
703-767-9124
cthomas@dtic.mil
https://www.dodtechipedia.mil
http://www.defensesolutions.go
v/suite\_of\_services.html

Ms. Charlene Madaffer-Meehan DTIC 703-767-8248 cmadaffe@dtic.mil



#### **Disclaimer of Endorsement**

DoD Field Activity Since 2004 DoD Field Activity Since 2004

Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government, and shall not be used for advertising or product endorsement purposes.