



**November 2004 PI Meeting  
Opening Thoughts**

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## Problem:

Computers cannot process most of the information stored on web pages

## Solution:

Augment the web to link machine-readable knowledge to web pages

Extend RDF with Description Logic

Use a frame-based language design

Create the first fully distributed web-scale knowledge base out of networks of hyperlinked facts and data

## Approach:

Design a family of new web languages

Basic knowledge representation (OWL)

Reasoning (SWRL, OWL/P, OWL/T)

Process representation (OWL/S)

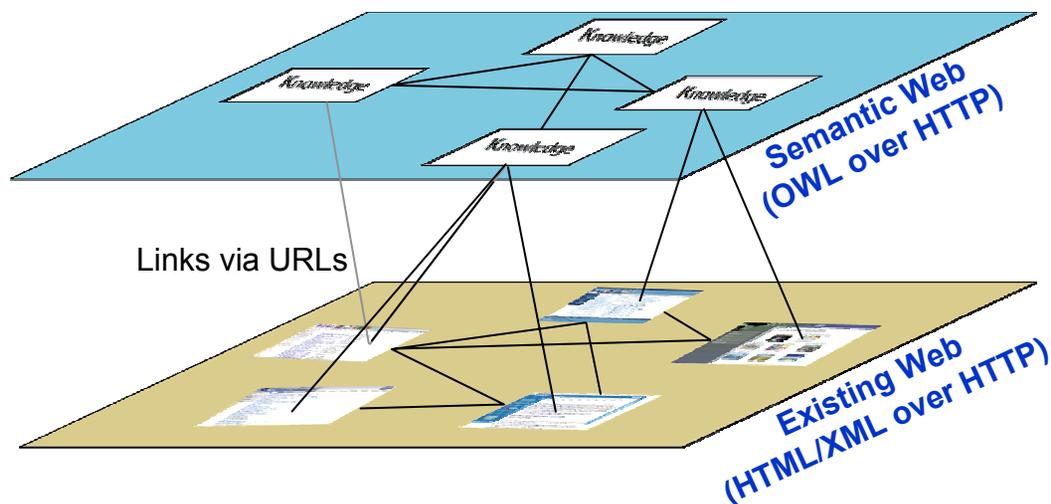
Build definition and markup tools

Link new knowledge to existing web page elements

Test design approach in the Intelligence Community and others

Standardize the new web languages

**Computers require explicit knowledge to reason with web pages**



**People use implicit knowledge to reason with web pages**



# Impact



Google Search: darpa - Microsoft Internet Explorer

Address: <http://www.google.com/search?sourceid=navclient&ie=UTF-8&q=darpa>

Google darpa

Web Images Groups News Froogle more »

Google darpa Search Advanced Search Preferences

Web Results 1 - 10 of about 661,000 for darpa [definition]. (0.34 seconds)

**DARPA Home**  
The Defense Advanced Research Projects Agency (DARPA) is the central research and development organization for the Department of Defense (DoD). ...  
[www.darpa.mil/](http://www.darpa.mil/) - 14k - [Cached](#) - [Similar pages](#)

**Grand Challenge Home**  
Latest Information... One year until DARPA Grand Challenge 2005 DARPA publishes the rules and issues a team status press release. ...  
[www.darpa.mil/grandchallenge/](http://www.darpa.mil/grandchallenge/) - 8k - [Cached](#) - [Similar pages](#)  
[ [More results from www.darpa.mil](#) ]

**DAML.org**  
The DARPA Agent Markup Language Homepage. The DARPA Agent Markup Language (DAML) Program officially began in August 2000. The goal ...  
[www.daml.org/](http://www.daml.org/) - 7k - [Cached](#) - [Similar pages](#)

**W3C Sponsorship by DARPA Sponsorship of W3C Start and Web research**  
W3C. DARPA Support of the Web. ... W3C's work on Semantic Web Development is supported by an additional grant under the DARPA Agent Markup Language (DAML) program. ...  
[www.w3.org/Consortium/Prospectus/DARPA](http://www.w3.org/Consortium/Prospectus/DARPA) - 3k - [Cached](#) - [Similar pages](#)

**IXO**  
Introduction to IXO The Information Exploitation Office (IXO) develops technologies for sensing, exploitation, command/control, and information integration. ...  
[dtsn.darpa.mil/ixo/default.asp](http://dtsn.darpa.mil/ixo/default.asp) - 20k - [Cached](#) - [Similar pages](#)

**Wired News: A Spy Machine of DARPA's Dreams**  
... Advertisement. A Spy Machine of DARPA's Dreams. ... But DARPA is currently asking businesses and universities for research proposals to begin moving LifeLog forward. ...  
[www.wired.com/news/business/0,1367,58909,00.html](http://www.wired.com/news/business/0,1367,58909,00.html) - 24k - Oct 20, 2004 - [Cached](#) - [Similar pages](#)

**DARPA Active Networks**  
Active Networks. Welcome to the Active Networks home page. Active Networks is a DARPA funded program. ... Smart Packets at BBN. Related DARPA Research Projects. ...

#2

#3

Google "darpa" on 10/21/04



# More Impact



## Intelligence Community

[6 fully-funded pilots]

Semantic Web for Intelligence Group (SWIG)

## Department of Defense

AF AMC Foreign Clearance Guide

AF AMC NOTAMs

DISA Discovery Metadata Repository

FCS SOSCOE OWL/S use in the TIN

Joint Explosive Ordinance Detection ACTD

Center for Army Lessons Learned Prototype

## Federal Government

Semantic Interoperability Community of Practice ([web-services.gov](http://web-services.gov))

SWANS conference Feb 8-9 2004

## Commercial

43 companies in SWSI working on OWL/S

19 commercial OWL implementations

## More evidence...

33 "Semantic Web" books on Amazon.com

NIH and NIST are sponsoring work to define a comprehensive protein chemistry taxonomy

LTG Boutelle (Army CIO) calls Semantic Web "a self-development imperative" at 2004 AKM conference

DARPA XG using OWL for policy language vocabulary





# 2005: DAML's Final Year



- **Financial POC: Althea Keegan ([mkeegan@snap.org](mailto:mkeegan@snap.org))**
- **Your AFRL agents are here to coordinate any financial or contractual issues**
- **2005 DARPA funding for DAML**
  - The DARPA funding well is dry
  - If you don't have 2005 funding
    - Please send me (cc Jack) a list of all commercial or Government organizations that are using technology developed under DAML funding
    - Final software goes on SemWebCentral, with documentation
    - Final briefing at this meeting
    - Remember your final report, and include a CD with funded products
    - Funds expended by 31 Dec 2004
  - If you do have 2005 funding
    - I have most of your IOWs and will be talking to you at this meeting
    - There will be a small PI meeting in May 2005
    - Final out-of-funds date for 2005 performers should be around May 2005
- **New Programs**
  - Will say more about this on Thursday, but the situation is bleak at DARPA



# DAML PI Meeting Goals



- **Understand DAML's success**
  - The core of this PI meeting is program reviews and interaction
  - Showcase what we have done, and what issues are still unsolved
  - Format is designed to yield a presentation balanced between programmatic and technical
  
- **Plan for additional 2005 work in Services and Rules**
  - DAML's story is not complete here
    - Technologies have been developed: OWL/S 1.1, SWRL FOL
    - Tools are being developed
    - Standards process is difficult
  - Dedicated sessions on each of these, plus breakouts
  
- **Showcase 2004 OWL-based tools and technologies**



# Other Workshop Details



- **Enjoy San Antonio and the Riverwalk!!**
  - Real Tex-Mex food
  - Real Tex-Mex music
  
- **802.11 Internet access during the PI meeting**
  - Not on during plenary sessions
  - Before and after, as well as during breaks
  
- **Demos at 6:30 tonight**
  - Relax over food and drink and fine company
  - Marvel at the standards-compliant tools that we have wrought
  - BoF meetings are encouraged
  
- **In case you can't get enough**
  - All presentations will be on the DAML website within 1 week of workshop end
  - I am here to interact you and available for sidebars if necessary

**Thank You**

