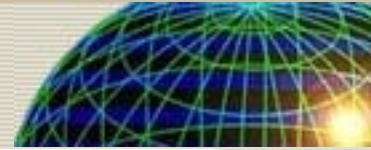


A Practical Implementation of Semantic Technologies... the Virtual Knowledge Repository (VKR)

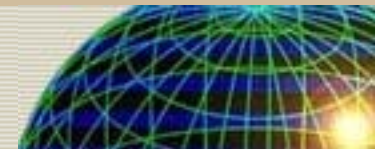
**Dr. David J. Roberts
iBaseT, San Diego, CA**



Purpose of VKR...

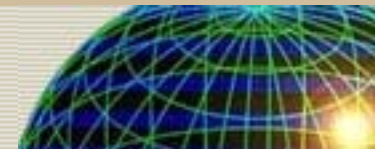
Replaces traditional methods of performing technology assessment and requirements matching:

- **Searches**
- **Comparisons (gap and overlap)**
- **Trade space analysis (how mature... who is doing what)**



VKR (V3) Features...

- **Control of multiple data sources access**
- **Consolidation of information sources in “Virtual Space” rather than a physical centralized repository**
- **Domain specific “meta views” of data and sources**
- **Dynamic views of information, allowing for new associations and “dimensions of interest” by the client-base**



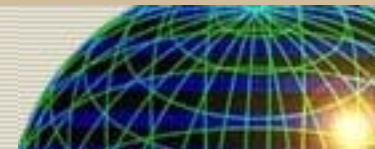
VKR (V3), How it Works...

- **VKR (V3) looks at two types of information... traditional database and more loosely associated web pages, news feeds, and published material**
- **Both database information and loosely associated information are ontologically tagged on entry, providing functional and source classification meta data.**



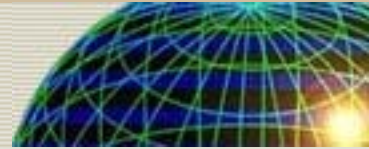
VKR (V3), How it Works (contin)...

- **Where information comes from is selected by the client by:**
 - **Key words (Domain)**
 - **Source**
- **Source Information can be:**
 - **Traditional database**
 - **News feeds parsed into a semantic store**
 - **“Harvested” web pages**
 - **Posted white papers**



VKR (V3) Details...

- **VKR (V3) also uses a sophisticated semantic store (white paper is available) to parse 600+ daily news feeds.**
- **Triple based (S-P-O model)**
- **Vocabulary was developed by VKR team (ECC) based on the Dublin Core**
- **Semantic store can be navigated in multi-dimensional space**



VKR (V3)...


VKR Home Page - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites

Address https://vkr.spawar.navy.mil/portal/page?_pageid=35,63047,35_63191&_dad=portal&_schema=PORTAL Go Links

Copernic Agent The Web Up History Track Results Bar

 **Welcome**
Virtual
Knowledge Repository

Welcome Technology News News Feeds Document Publishing

Virtual Knowledge Repository

Mission
The DON Business Innovation Office was created along the SECNAV charter to provide the Navy with a clearinghouse of best practices and serve as an import/export agent, identifying industry and government innovations, and broadcasting them DON-wide. The VKR is a web-service enabled service-oriented architecture for disseminating information relevant to present and future Navy technology and innovation.

Check out the new DON Business Innovation Office website at www.don-ebusiness.navsup.navy.mil

Contact us by email
[Business Innovation Team](mailto:Business_Innovation_Team)
ebusiness_clearinghouse@navsup.navy.mil

VKR Survey
Please take a moment to tell us what you think by taking the [VKR Survey](#)

Search the VKR

Basic Search
The Basic Search screen contains a single text box to enter a query string. Clicking the submit button returns all matches for that query string. The query string can consist of one or more words. In addition, the query string can contain special characters.

The Advanced Search screen
Lets you refine searches. Searches can be refined in the following manner:

- Restrict searches to certain data groups
- Restrict searches by search attributes
- Restrict searches to documents written in a specific language

[Advanced Search](#)

Search For

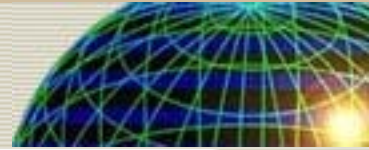
This is a Department of Defense Computer System. This computer system, including all related equipment, networks, and network devices (specifically including Internet access and access to restricted sites) are provided only for authorized U.S. Government use. DoD computer systems may be monitored for all lawful purposes, including to ensure that their use is authorized, for management of the system, to facilitate protection against unauthorized access, and to verify security procedures, survivability, and operational security. Monitoring includes active attacks by authorized DoD entities to test or verify the security of this system. During monitoring, information may be examined, recorded, copied and used for authorized purposes. All information, including personal information, placed or sent over this system may be monitored. Use of this DoD computer system, authorized or unauthorized, constitutes consent to monitoring of this system. Unauthorized use may subject you to criminal prosecution. Evidence of unauthorized use collected during monitoring may be used for administrative, criminal, or other adverse action. Use of this system constitutes consent to monitoring for these purposes.

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Effective October 1, 2004, A DOD PKI CERT is required to access the VKR.

start SSTC05 compliance.1 SWAN 2005 Presentation 1 VKR Home Page - Mic... 8:44 AM



VKR (V3)...

The screenshot shows a web browser window titled "Oracle Ultra Search - Microsoft Internet Explorer". The address bar contains the URL: https://vkr.spawar.navy.mil/vkrSearchBroker/search.jsp?usearch.p_mode=Advanced. The page features the VKR logo (Virtual Knowledge Respository) and a search form. The search term "Intelligent" is entered in the "Search For" field. The "From" section is set to "Specific Data Groups". Under "DoN Data", "DoN Pilot Projects" is selected. Under "DoD Data", "DoD Pilot Projects" is selected. The "Web Site" section includes various categories like "Acquisition", "Best Practices", "Business Intelligence", etc., with several checkboxes. The "Attribute Selection" section shows a table with columns for "Attribute Name", "Operator", and "Value", with "Equals" selected for all operators. The "Language" is set to "Any language". The browser's taskbar at the bottom shows the Start button, several open applications (SSTC05, compliance.1, SWAN 2005, Oracle Ultra Search), and the system clock showing 8:42 AM on April 2005.

Search For

From All Data Groups Specific Data Groups

DoN Data : DADMS DoN Pilot Projects Technology Exchange Clearinghouse
 DoN Documents

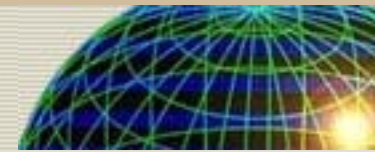
DoD Data : DoD Pilot Projects Technology News Items DOD Documents
 VKR Public Document Store

Web Site : Acquisition Best Practices Business Intelligence
 C3I Business Innovation CRM
 ERP Enterprise Forms Enterprise Information
 Executive Management Governance Knowledge Management
 Marketing Metrics Policy
 Purchase Card Security Standards
 Supply Chain Management

Attribute Selection Match All Any

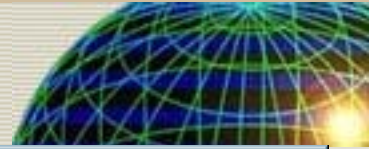
Attribute Name	Operator	Value
<input type="text"/>	Equals	<input type="text"/>
<input type="text"/>	Equals	<input type="text"/>
<input type="text"/>	Equals	<input type="text"/>
<input type="text"/>	Equals	<input type="text"/>

Language



VKR (V4), A New Direction...

- **Matching of multi-attribute system characteristics**
- **The specific application is DADMS Justification (Navy IT governance)**
- **New DADMS submissions are compared to existing records using a cluster analysis with percentage of match. The results are stored in Rich Descriptive Framework (RDF) with the provenience. Note: This area will change with V5.**



VKR (V4) GUI...

System Identification - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://localhost:7778/compliance/SystemIdentification.html> Go Links »

IT Compliance Review

System Identification *DADMS Search* *Pilot Search* *Products Search* *Review Completion*

System Name:

System Description:

FAM Selection:

Done Local intranet

DON eBusiness Operations Office
5450 Carlisle Pike,
PO Box 2050
Mechanicsburg, PA
17055-0791
(717) 605-9359
DSN# 430

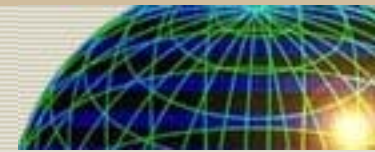


VKR (V5), The Magic...

The problem in semantic inferencing systems is typically size... or complexity. Thus, the use of GRID computing is often used in the same context as semantic technology.

Solution: “The Floor Waxing theory”... In most homes and stores 95% of the wear occurs over 5% of the floor.

In other words, don't wax the whole floor!



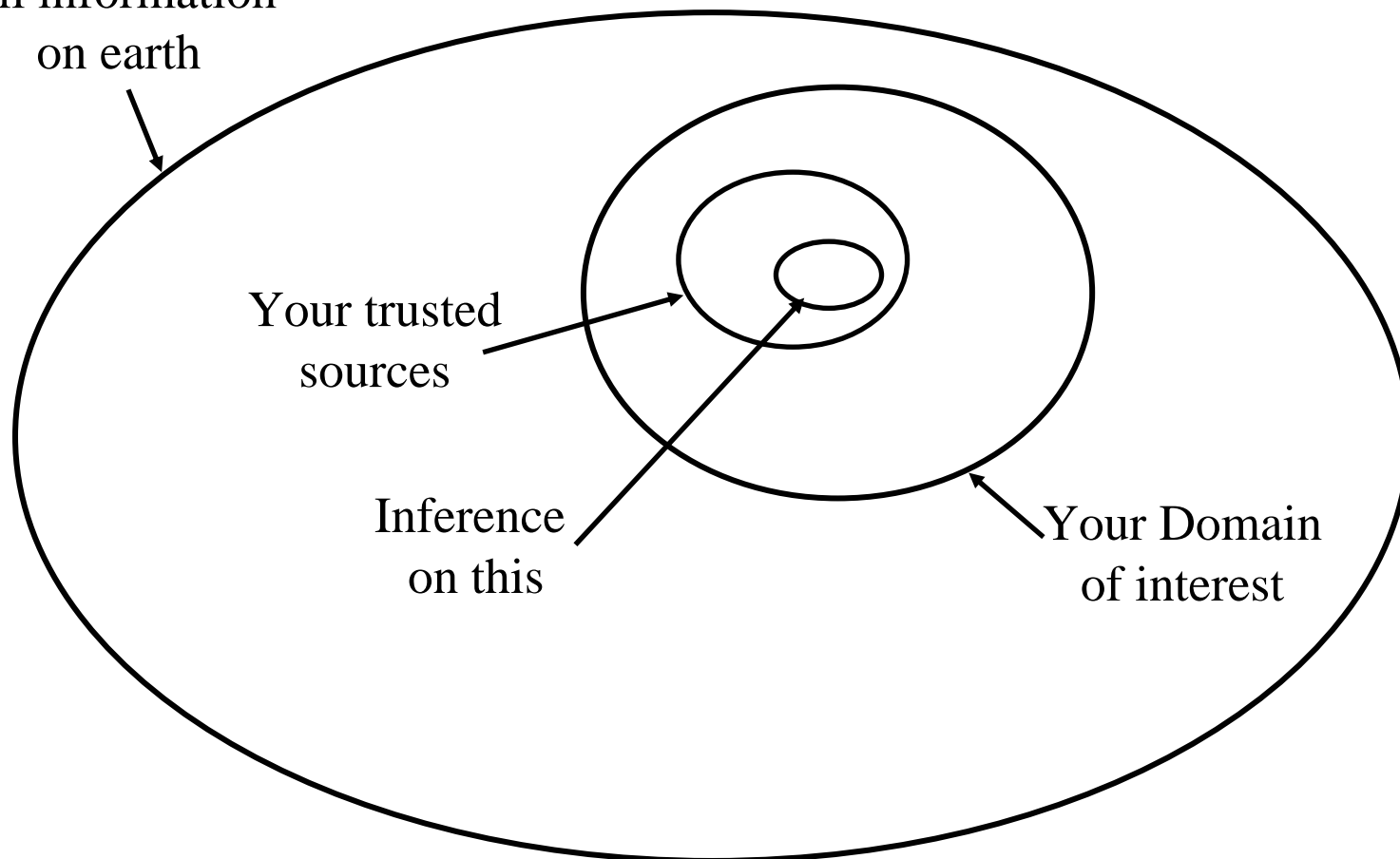
VKR (V5) Waxing the Floor...

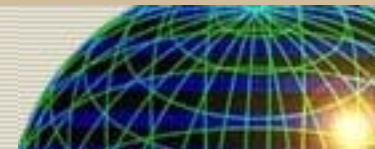
- 1. Using V3's domain and source specific extraction capability, extract only relevant information and parse that information into a semantic store.**
- 2. The results of the delimited cluster analysis will be parsed into RDF and loaded into a temporary semantic store.**
- 3. A visualization tool will then be used to view and prune data relationships, store off the temporary store, extract new relevant features and re-issue the cluster analysis.**
- 4 The results of the new and old search will be merged into a new semantic model (temporary store).**



VKR (V5) Waxing the Floor...

All information
on earth

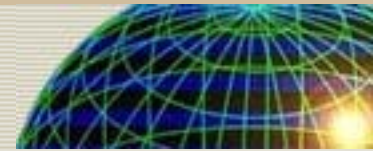




VKR Beyond V5 (Sept '05)...

Where we need to go...

- **“Comparison of content nodes by extracted features”**
- **We need to understand how content areas (i.e., systems, products, etc.) are:**
 - **Similar**
 - **Dissimilar**
 - **Overlap**



Point of Contact...

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Manager,**

roberts@spawar.navy.mil

URL of VKR... (Note: CAC is required)

<https://VKR.spawar.navy.mil>