

# blackbook2

3

Presented by:  
Buster Fields  
Program Manager

# Agenda

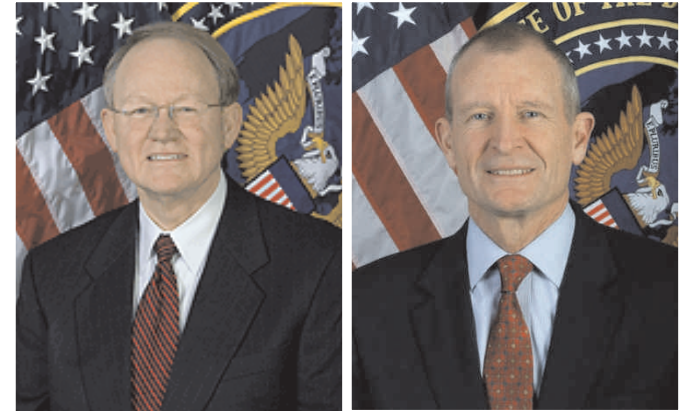
- Analytic Modernization
  - Linked Data and Semantic Web
  - What is Blackbook?
  - Blackbook 2.x - Current Capabilities
  - Blackbook 3.x - Future Capabilities
  - Timeline
  - Technology Transfer
  - Blackbook wiki
  - Q&A
-

# Analytic Modernization

## Six Focus Areas:

- Create a Culture of Collaboration
- Accelerate Information Sharing
- Foster Collection and Analytic Transformation
  - A-SPACE – *Collaborative Environment*
  - Catalyst – *“Services of Common Interest”*
  - Library of National Intelligence – *Consolidated repository containing IC-disseminated products*
- Build Acquisition Excellence and Technology Leadership
- Modernize Business Practices
- Clarify and Align DNI’s Authorities

Director of National Intelligence  
Mike McConnell      Dennis Blair



October 10<sup>th</sup>, 2007

# Linked Data

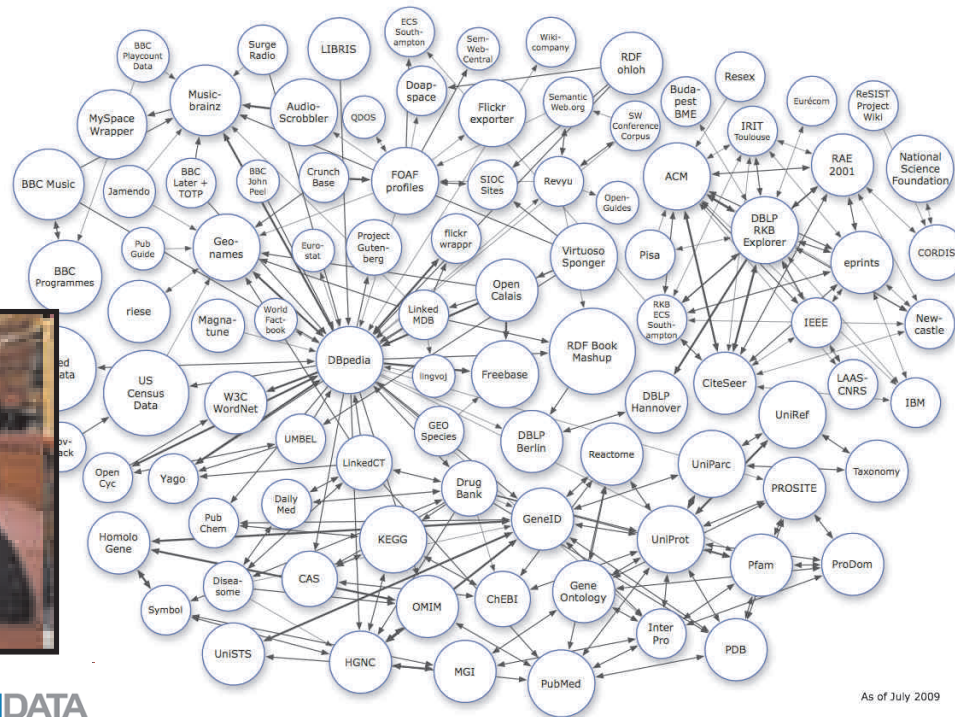
- The term Linked Data refers to a set of best practices for publishing and connecting structured data on the Web



- Key technologies that support Linked Data are:
    - URIs (a generic means to identify entities or concepts in the world)
    - HTTP (a simple yet universal mechanism for retrieving resources, or descriptions of resources)
    - RDF (a generic graph-based data model with which to structure and link data that describes things in the world)
-

# Semantic Web

- The Semantic Web is made up of Linked Data; i.e. the Semantic Web is the whole, while Linked Data is the parts



# What is Blackbook?

- Provides a graph analytic processing platform for Semantic Web
  - Based on semantic web technologies
    - RDF, OWL, SPARQL, JENA
    - Vocabulary agnostic
  - Relies on open standards and “best-of-breed” open source technologies
    - Lucene, JAAS, D2RQ, Hadoop/Map Reduce
  - Leverage cloud computing technologies
    - Hadoop/Map Reduce, HBase, Solr
  - Plug-and-Play, loosely-coupled architecture
  - SOAP & REST interfaces, SPARQL & Linked Data endpoints
  - Blackbook can run in secure environments
-

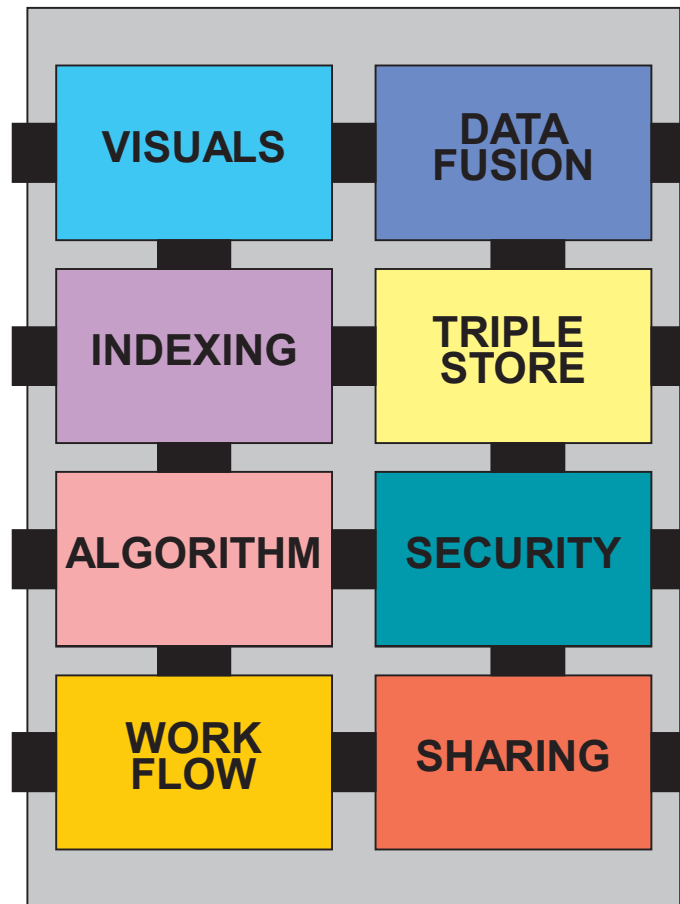
# Core Components

Visualization techniques that provide the user a rich perspective on displaying datasets

Rapid search on single keywords, complex phrases, phonetic match

Apply filters, extractors, transformation algorithms

Enable automated and semi-automated control and composition



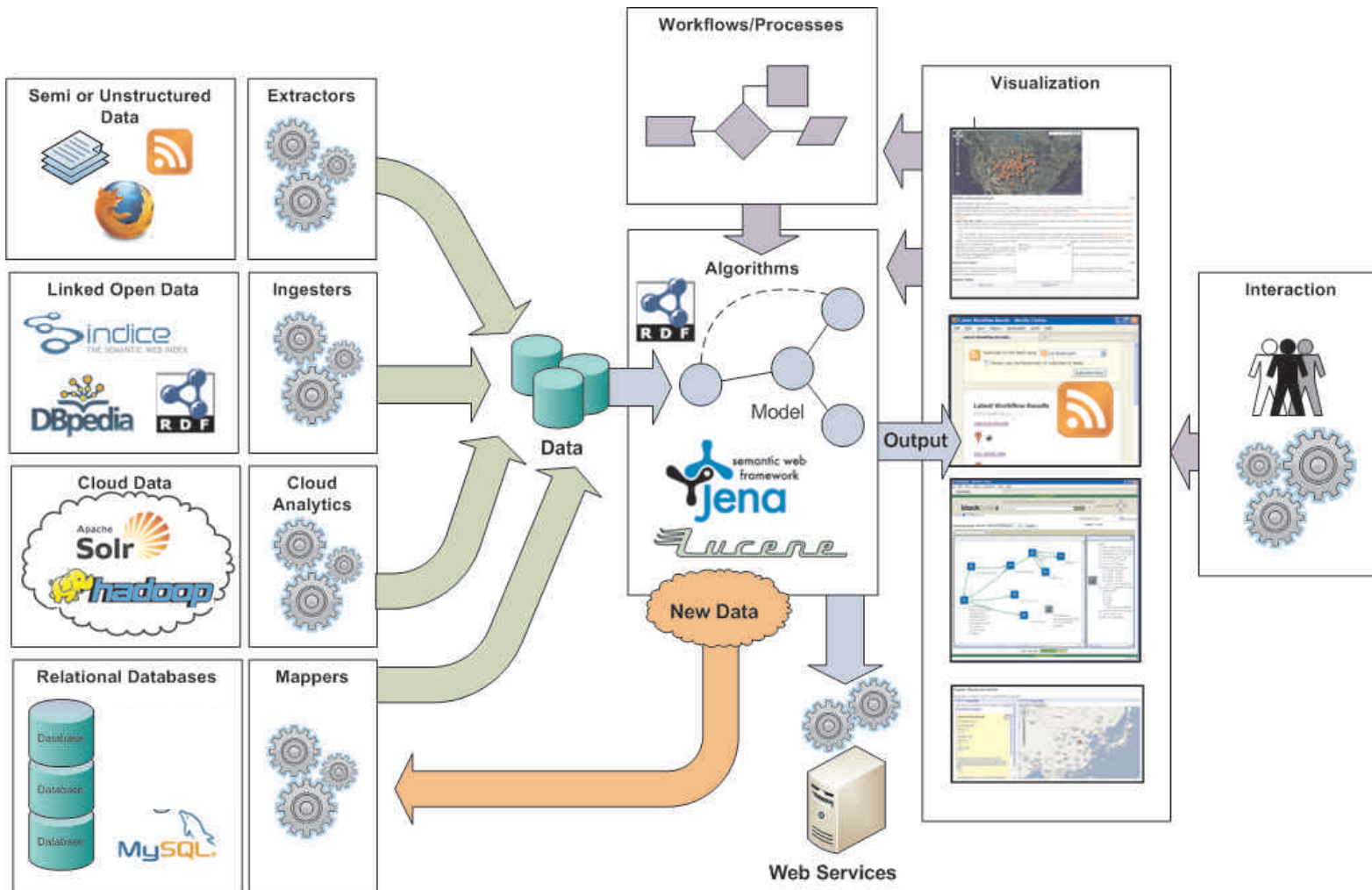
Query and merge data from many different sources, both structured and unstructured

RDF is the core data model; stores triples: Subject, Predicate, Object

The auditing and adjudication of data as it is accessed and transformed

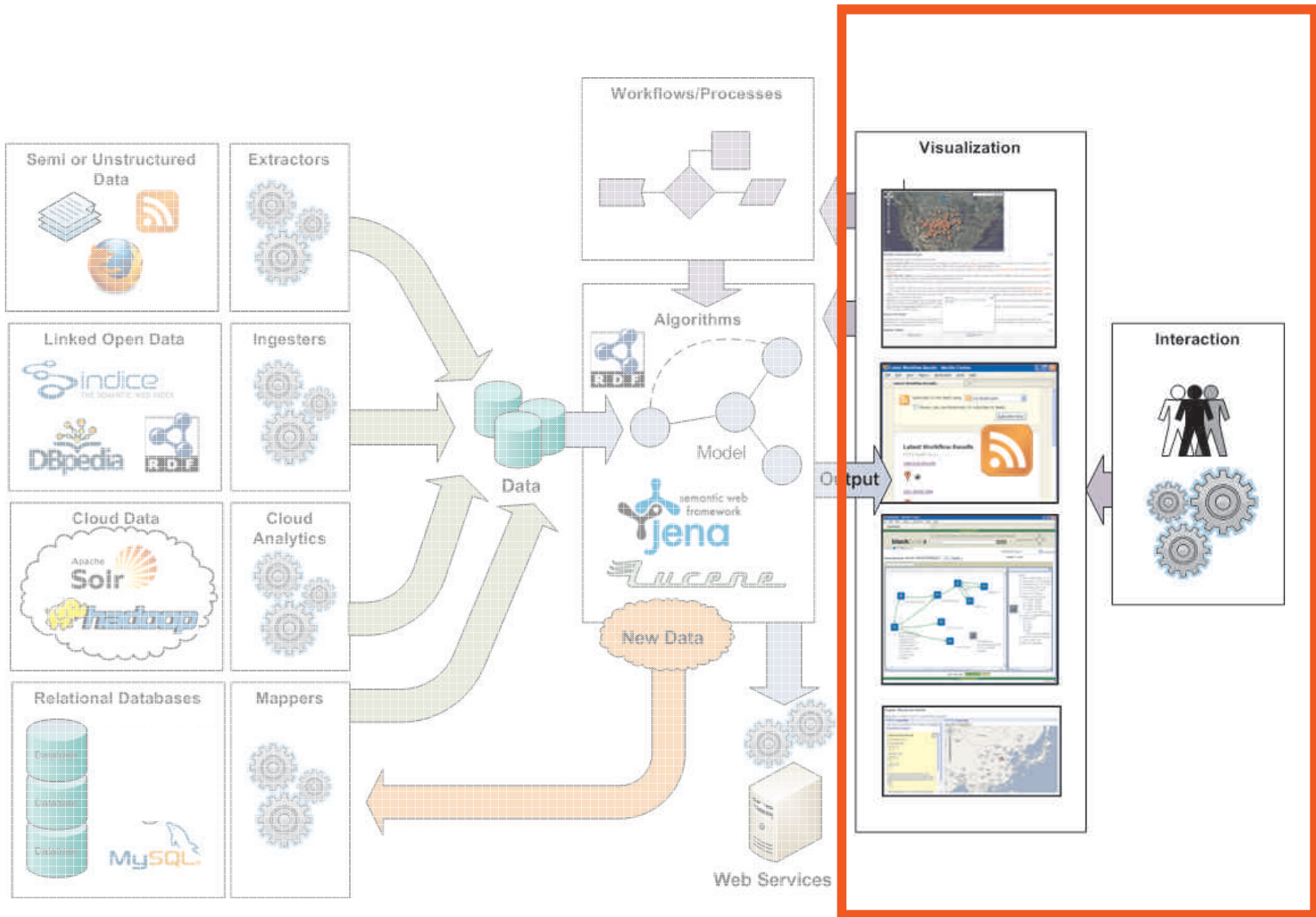
Discovery of web-services, and user workspaces

# Current Capabilities

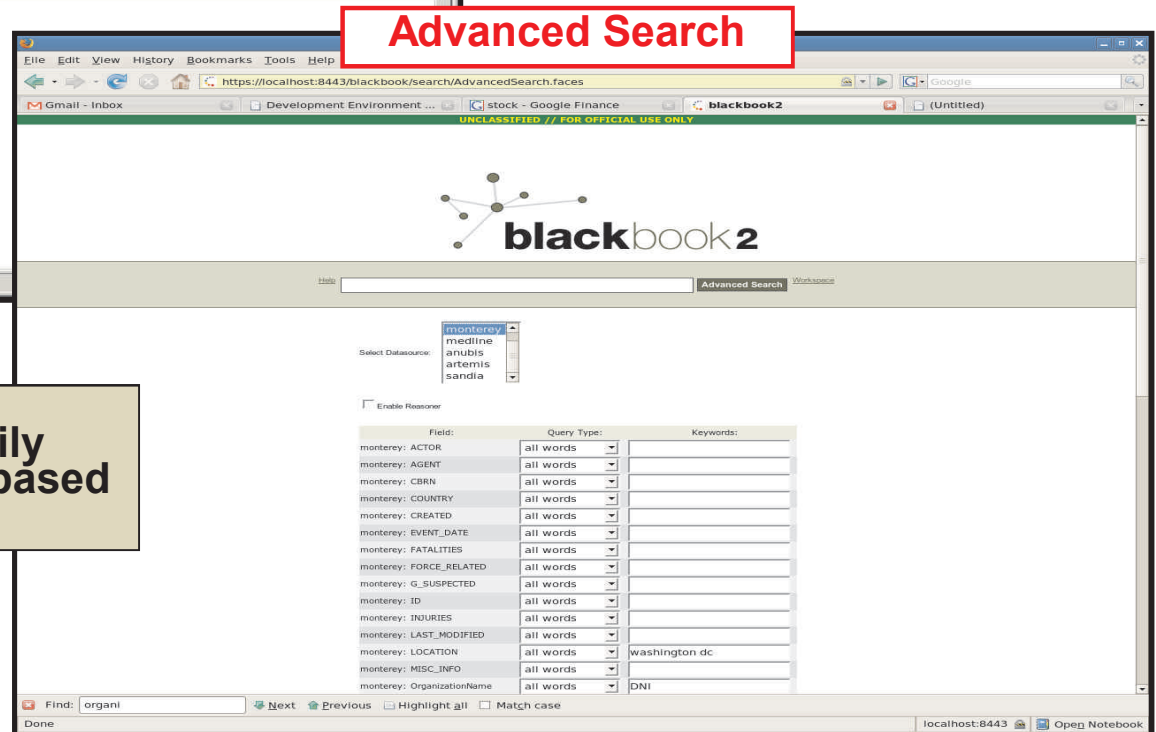
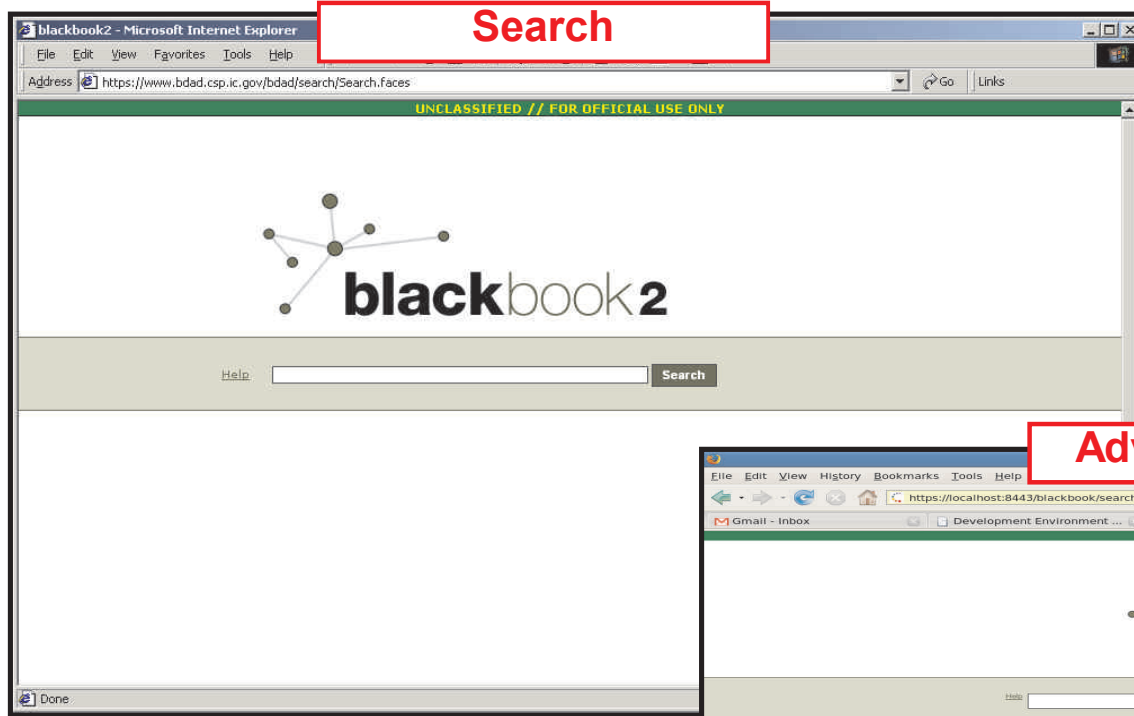




# Presentation Tier



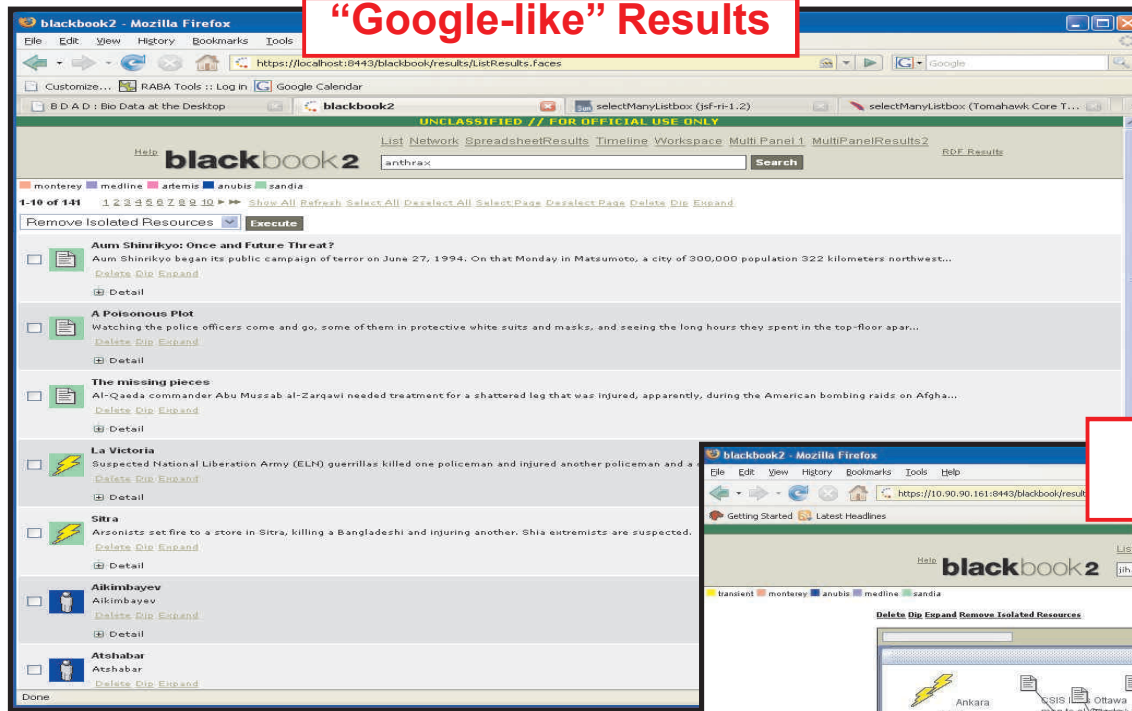
# User Interface



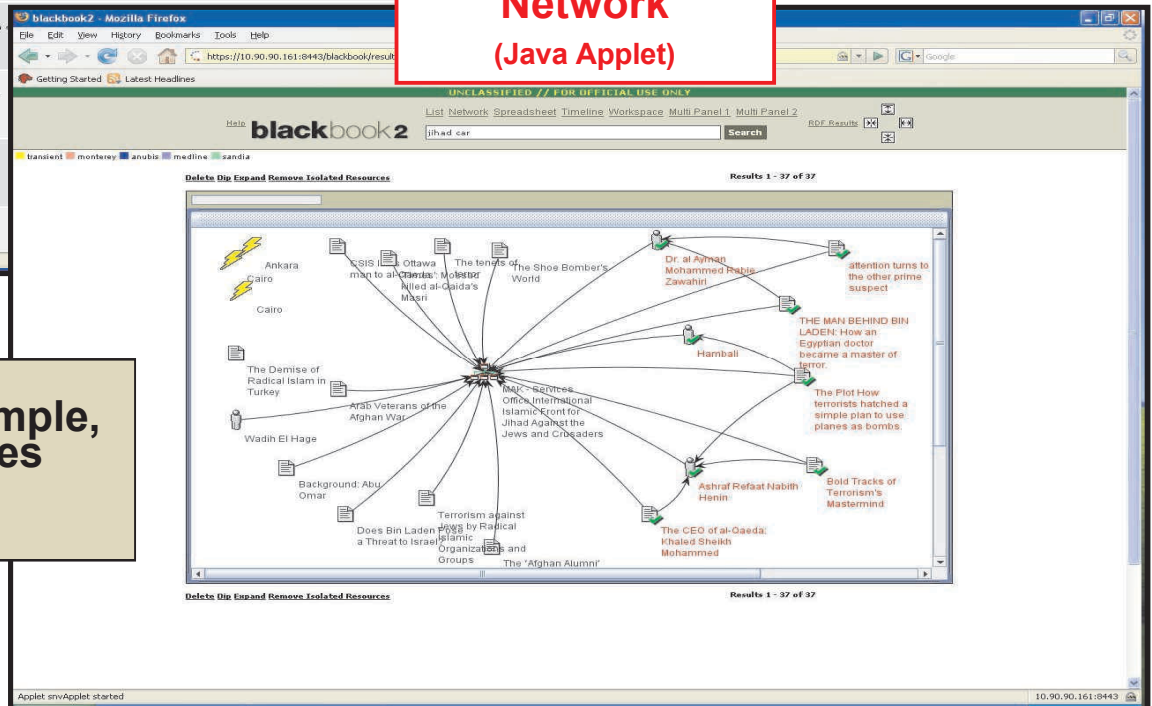
A front-end “Google-like” user interface allows analysts to easily perform keyword and attribute based searches.

# User Interface

**“Google-like” Results**



**Network  
(Java Applet)**



**Different ways to view the same information. “Network”, for example, displays entities of different types and their relationships to other entities.**

# User Interface

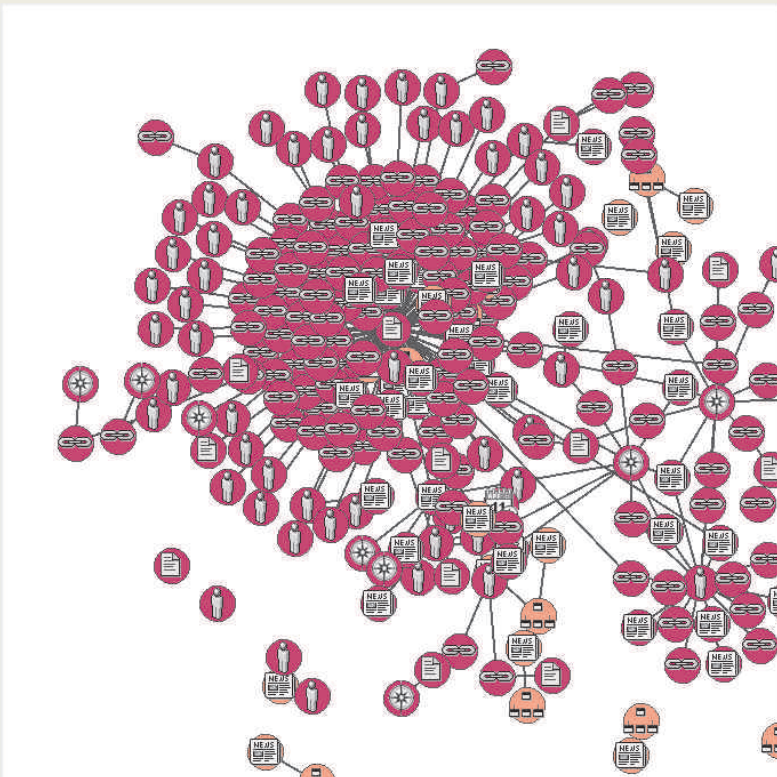
**Network (AJAX)**

Halo **blackbook2**  Search [Advanced Search](#)

monterey medline sandia the911report anubis RDF Export Export Results

Four Eyes Viewer

256 nodes and 253 edges.



**Appearance Settings:**

Width:	100	1200	680
Height:	100	1200	680
Node Size:	1	20	18
Maximum number of nodes to render client side:	0	2000	118

Show node icons.  
 Show node labels.  
 Show only materialized data.

**Server Side Layout Settings:**

Maximum Time Allowed (seconds):  
1 30 5

**Interaction Settings:**

Distance to farthest affected node:  
1 100 100

**Other Settings**

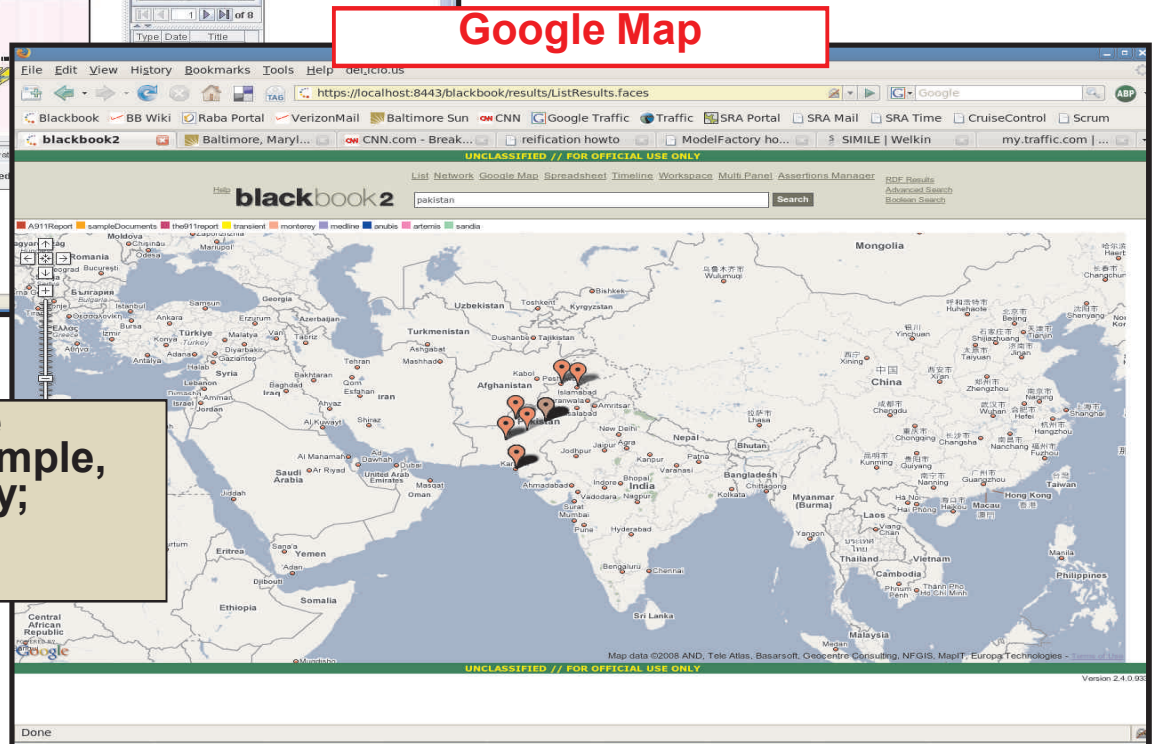
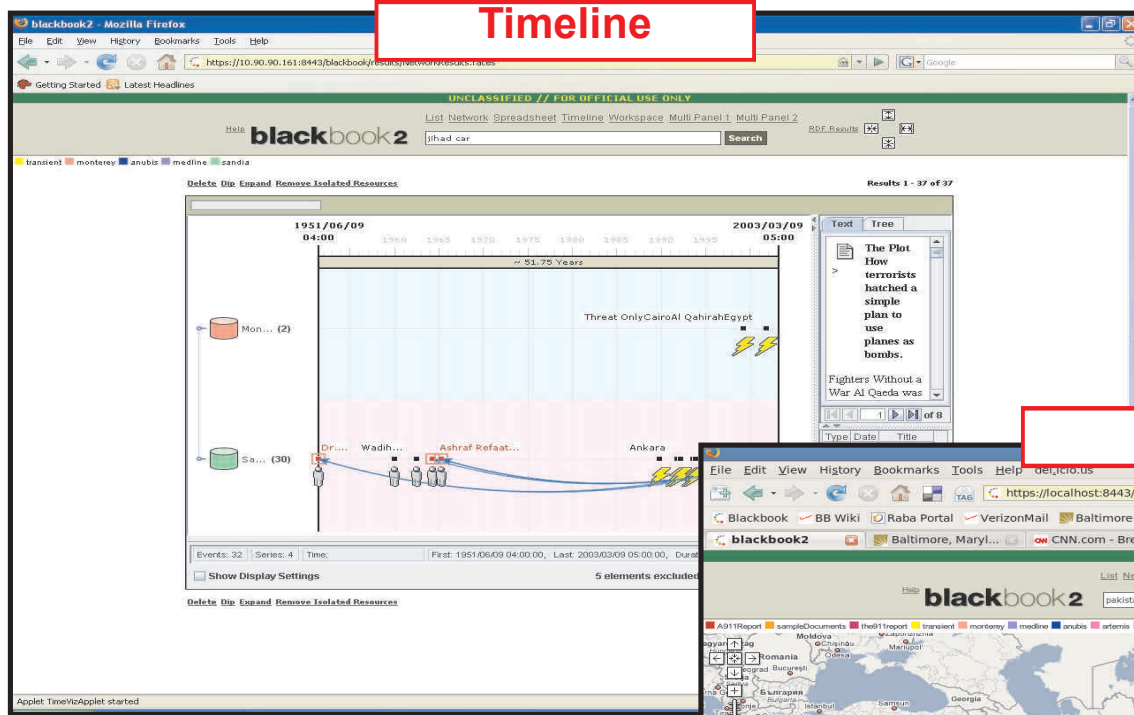
Use Blackbook Data.  
Select a graph to load:  
\_bb\_bush.dnv

Level of Detail:  
0 0.0 0

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An AJAX-based network visualization, called "WiGi", optimizes client-server processing for large graphs. Planned to be released as early as Blackbook v3.0 (Nov 2009)

# User Interface



Different ways to view the same information. "Timeline", for example, displays entities chronologically; "Google Map" displays entities geospatially.

# User Interface

## Ozone: Blackbook Widget

The screenshot shows a web browser window displaying the iGoogle Developer sandbox. The browser's address bar shows the URL `http://www.google.com/ig#`. The page features a search bar with the iGoogle logo and navigation links for 'Web', 'Images', 'Maps', 'News', 'Shopping', and 'Gmail'. Below the search bar, there are links for 'Advanced Search', 'Search Preferences', and 'Language Tools'. The main content area is divided into several sections:

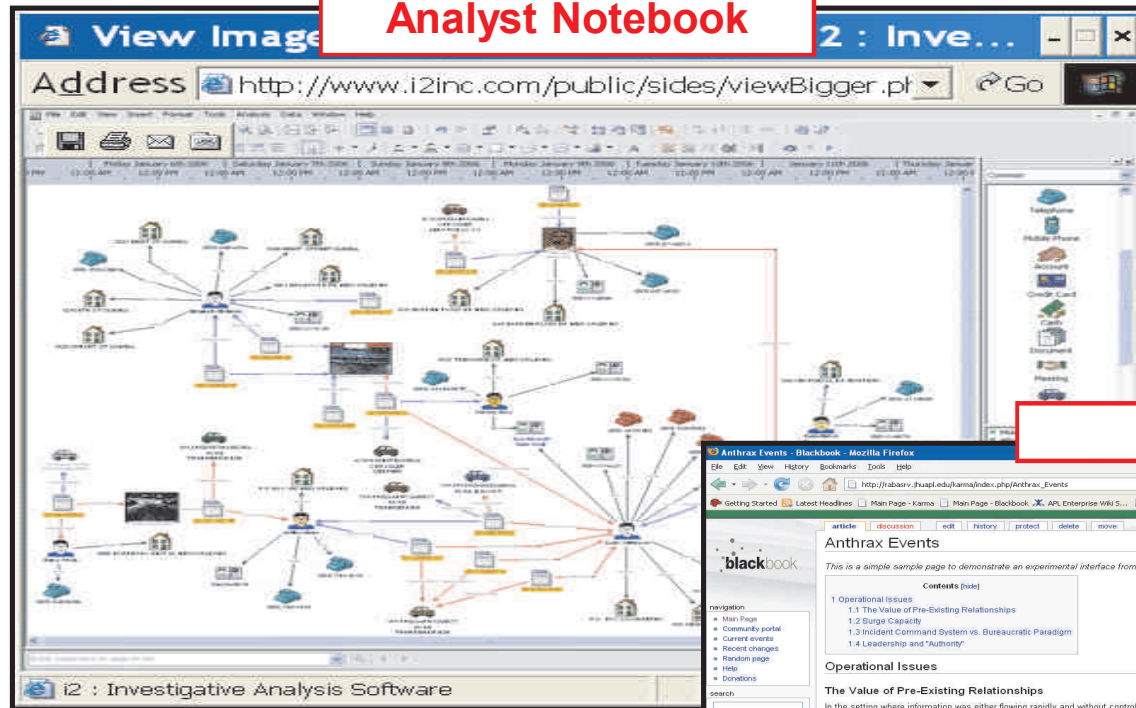
- Home:** A sidebar with links to 'Weather', 'My Entities', 'Multiple SetPref...', and 'My Gadgets'.
- My Entities:** A widget with input fields for `rss_url` (http://blackbook2/rss/), `entity_list` (vessel1,vessel2,vessel3), `process_def` (1), and `base_wiki_url` (http://blackbook2/wiki). It includes 'Save' and 'Cancel' buttons.
- Weather:** Two weather widgets. The first is for 'Halethorpe, MD' showing a current temperature of 36°F, cloudy conditions, and a 4-day forecast. The second is for 'Kill Devil Hills, NC' showing a current temperature of 37°F, clear conditions, and a 4-day forecast.
- My Gadgets:** A section for managing gadgets, including a table with columns for 'Gadget', 'Inlined', and 'Cached'. It lists gadgets like 'myAttention.xml', 'developer.xml', and 'myEntities.xml'. There is also an 'Add a gadget:' field with a placeholder 'http://' and an 'Add' button.
- Multiple SetPref - Iframe:** A section with text: 'Each page load should increment the value of each usepref.' and 'Reload page and make sure each usepref is incremented.'

At the bottom of the page, there are links for 'Add a theme' and 'Mobile - Advertising Programs - Business Solutions - Privacy Policy - Help - About Google'.

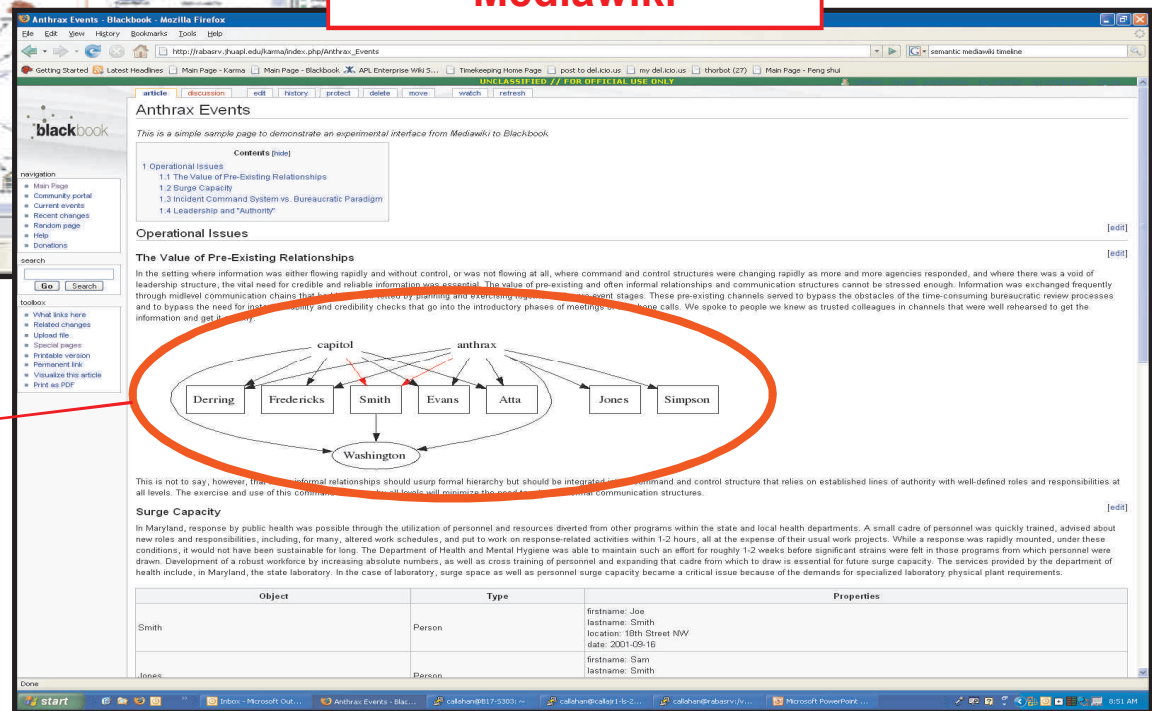
Similar to Google gadgets, Blackbook provides analysts with widgets compatible with the Ozone (an iGoogle-like) framework.

# User Interface

Analyst Notebook

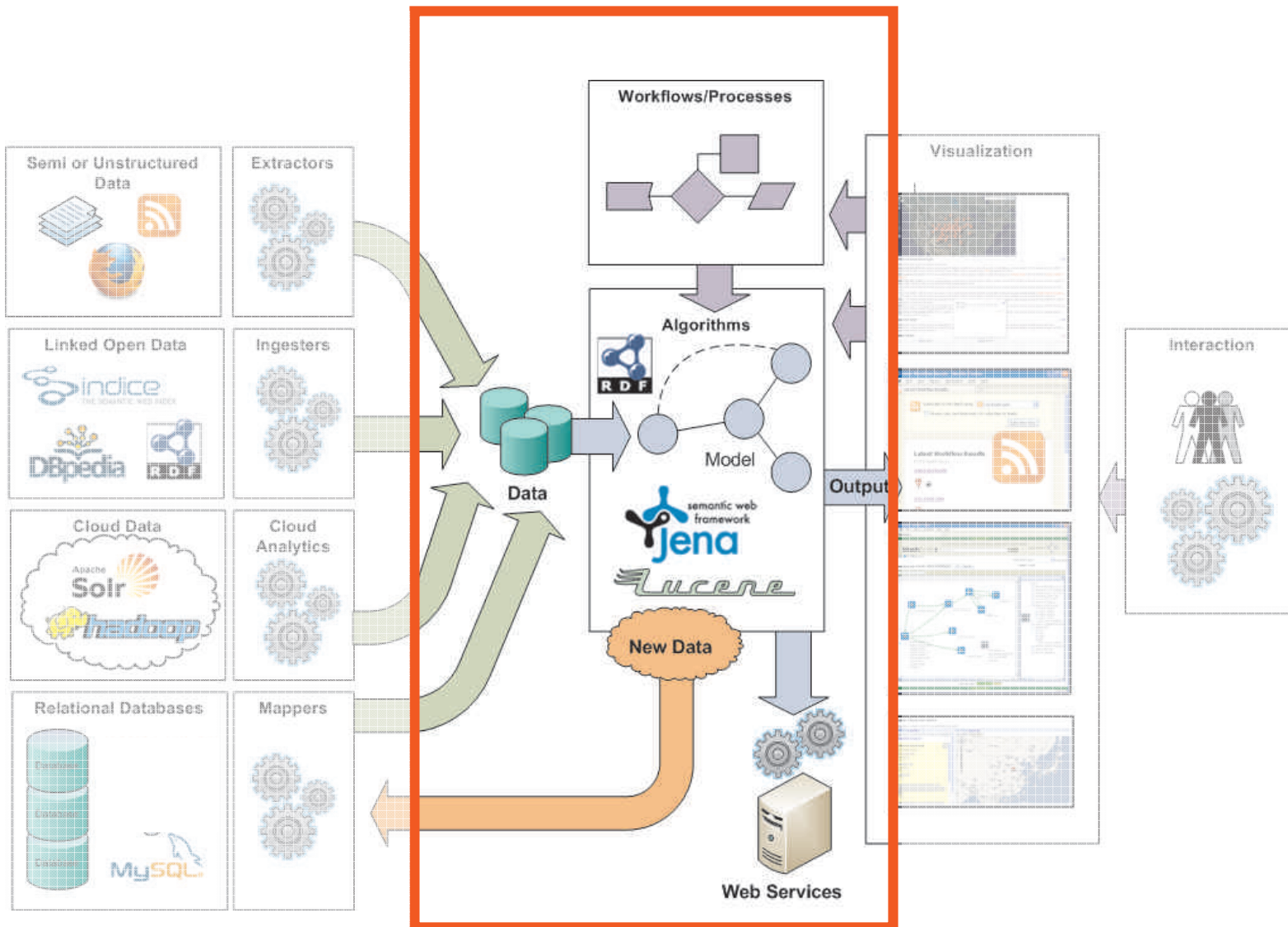


Mediawiki



Blackbook is developing a framework called "Aqueduct", allowing interoperability between ozone widgets and wikis.

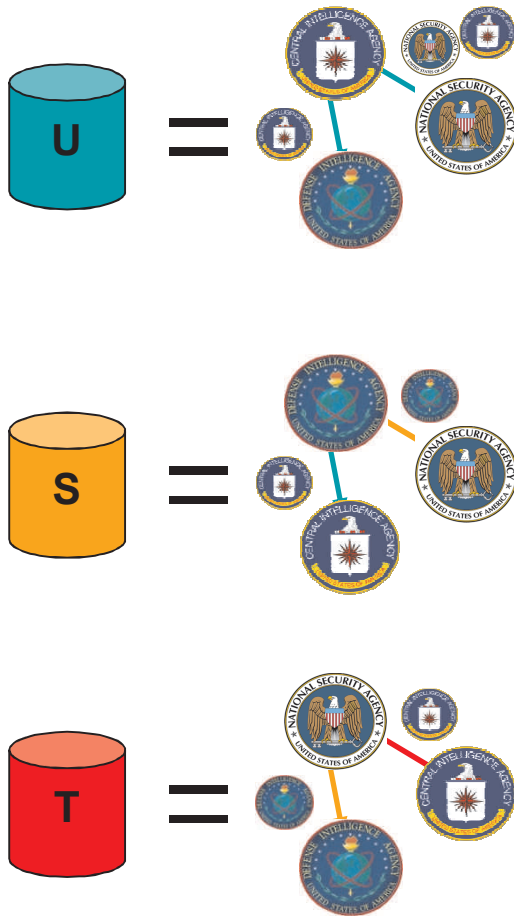
# Middle Tier



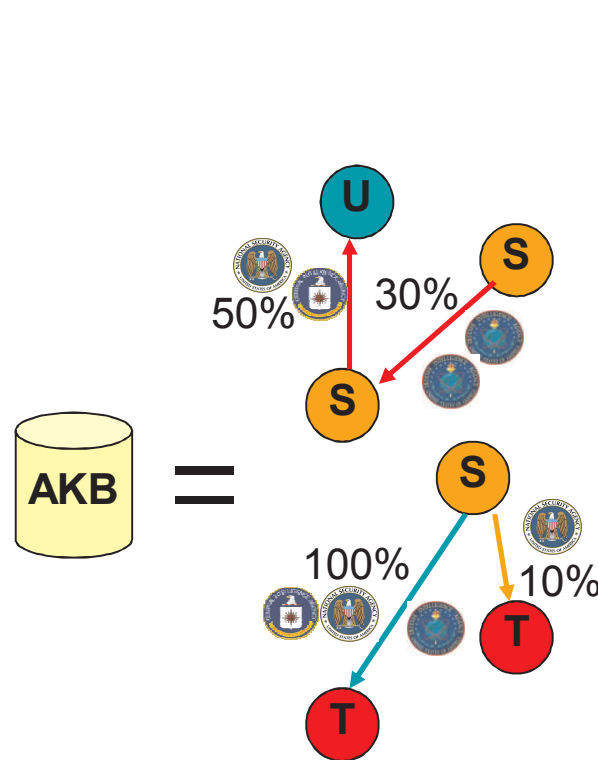


# Security, Confidence, Affiliation

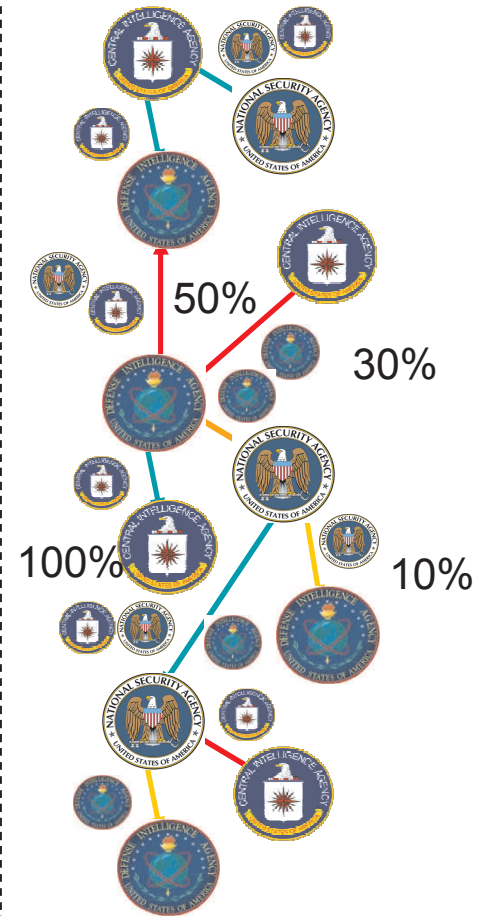
Original Datasource



Analyst Knowledge Base



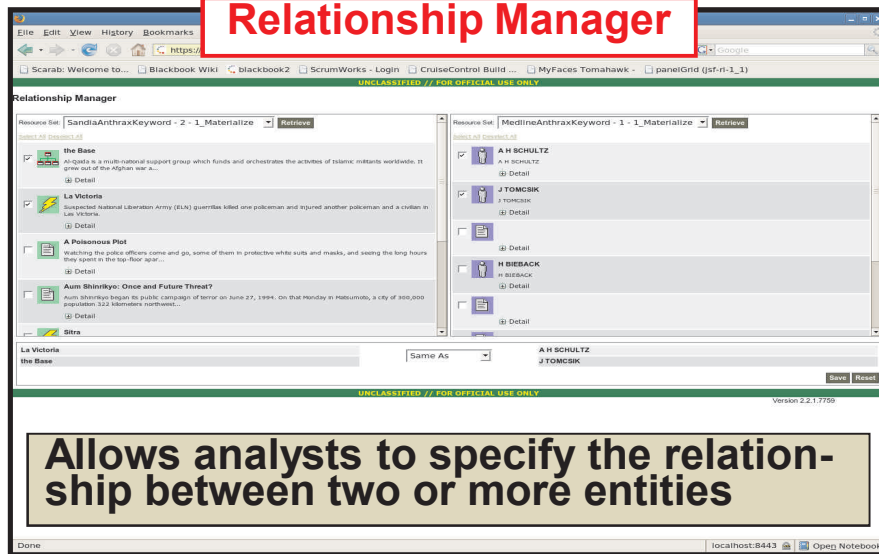
Composite Knowledge



**Blackbook uses reification for classification markings, confidence values, and affiliation. Original datasources are read-only, AKB's are read-write.**

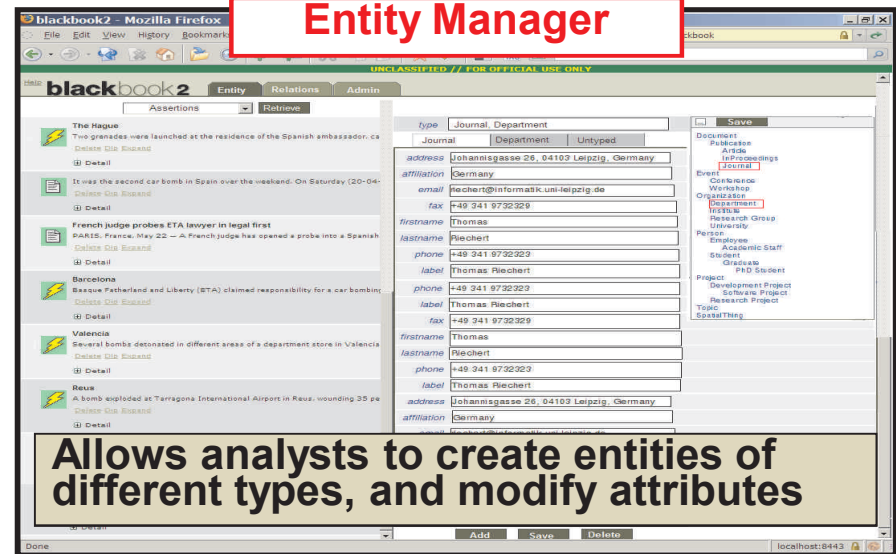
# User Interface

## Relationship Manager



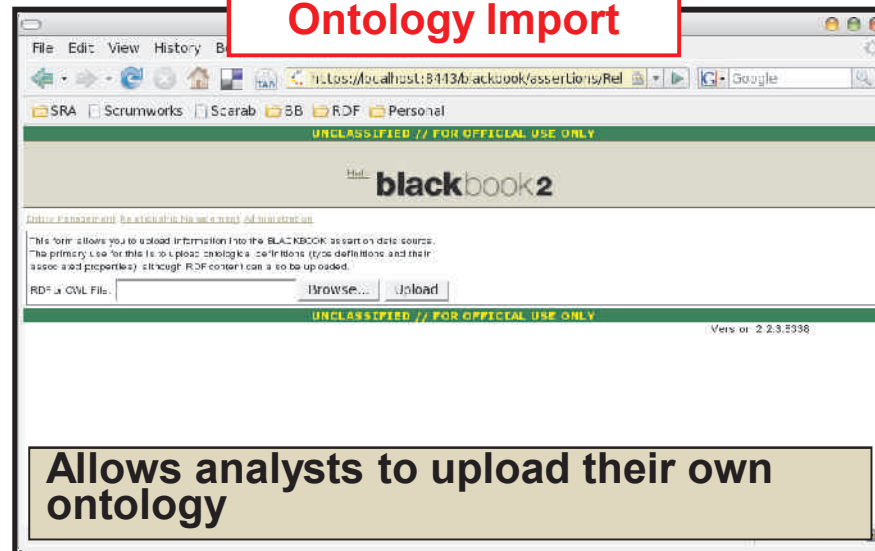
Allows analysts to specify the relationship between two or more entities

## Entity Manager



Allows analysts to create entities of different types, and modify attributes

## Ontology Import



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# User Interface

## Workflow

The screenshot displays the 'blackbook2' web application interface. At the top, a red box highlights the word 'Workflow'. The browser window shows the URL 'https://10.90.90.161:8443/blackbook/workflow/DefineWorkflow.faces'. The interface is divided into several sections:

- Algorithms:** A list of available algorithms: Dip, Expand, Jena Keyword, Lucene Keyword, and Materialize.
- Process Flow:** A table defining the sequence of tasks and their parameters.
- Process Diagram:** A visual representation of the workflow showing the flow from '1. Lucene Keyword' to '2. Materialize', which then branches into '0. Expand' and '3. Dip'.

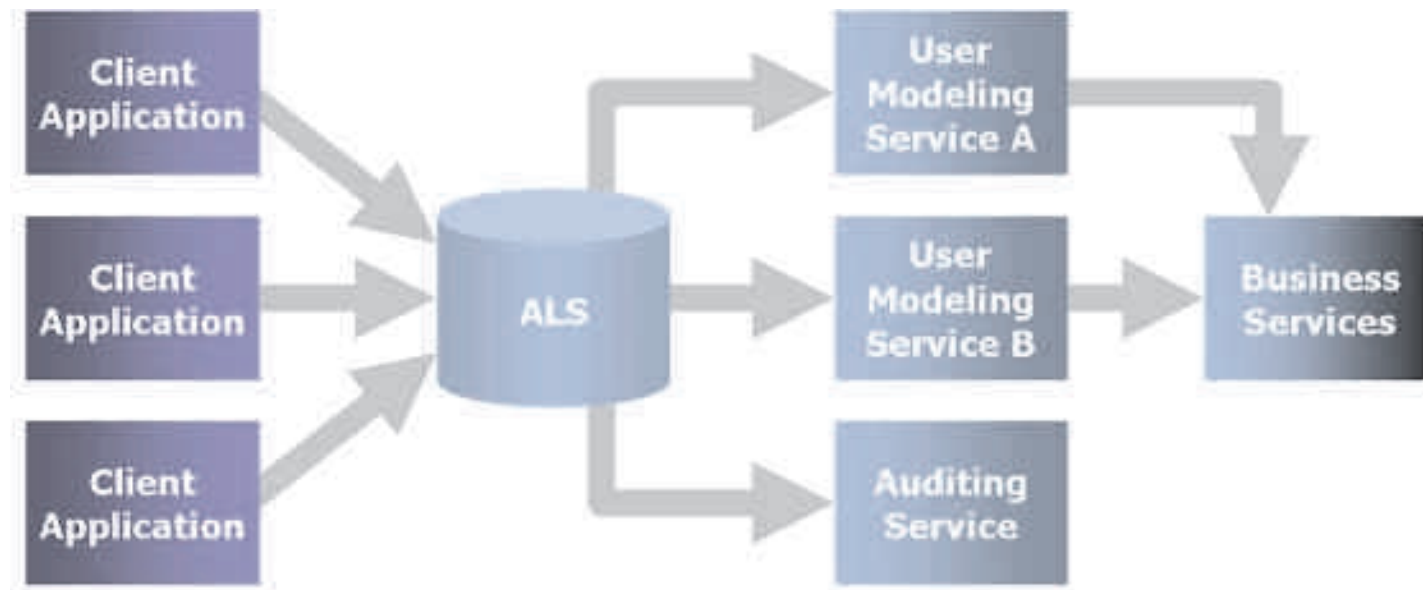
States	To States	Additional Criteria
0. Expand <input type="checkbox"/> fork	<none>	DataAccess: transient
1. Lucene Keyword <input type="checkbox"/> fork	2. Materialize	DataAccess: transient val: jihad car
2. Materialize <input checked="" type="checkbox"/> fork	0. Expand 1. Lucene Keyword	DataAccess: transient
3. Dip <input type="checkbox"/> fork	<none>	DataAccess: transient

1-4 of 4

“Workflow” allow analysts to define the order of tasks, configure algorithm parameters, and batch processes concurrently

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# Analysis Log Service



Client Applications generate ALEs as users interact with the various applications.

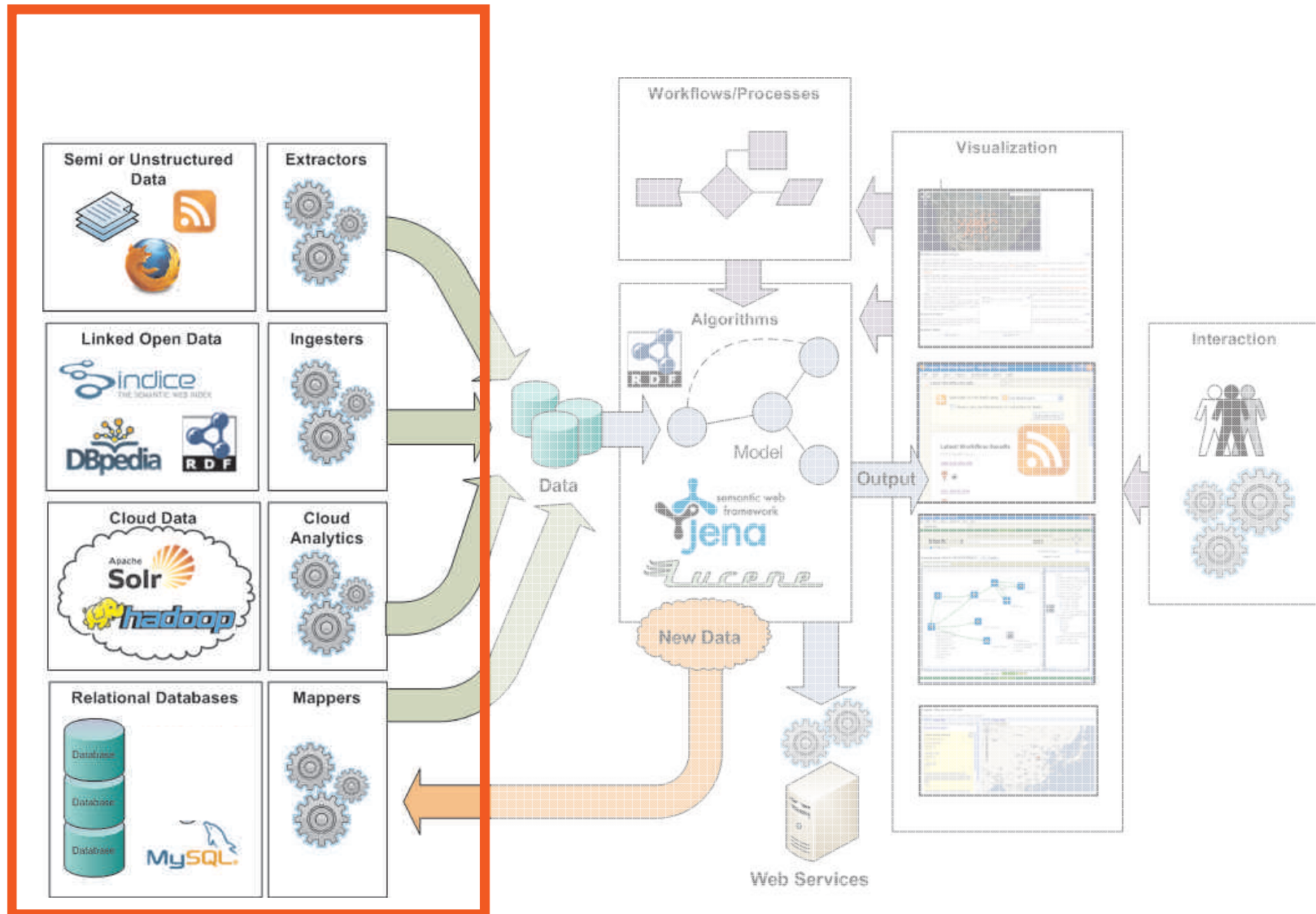
The ALEs are transmitted to the ALS.

The ALS stores the ALEs received from the client applications.

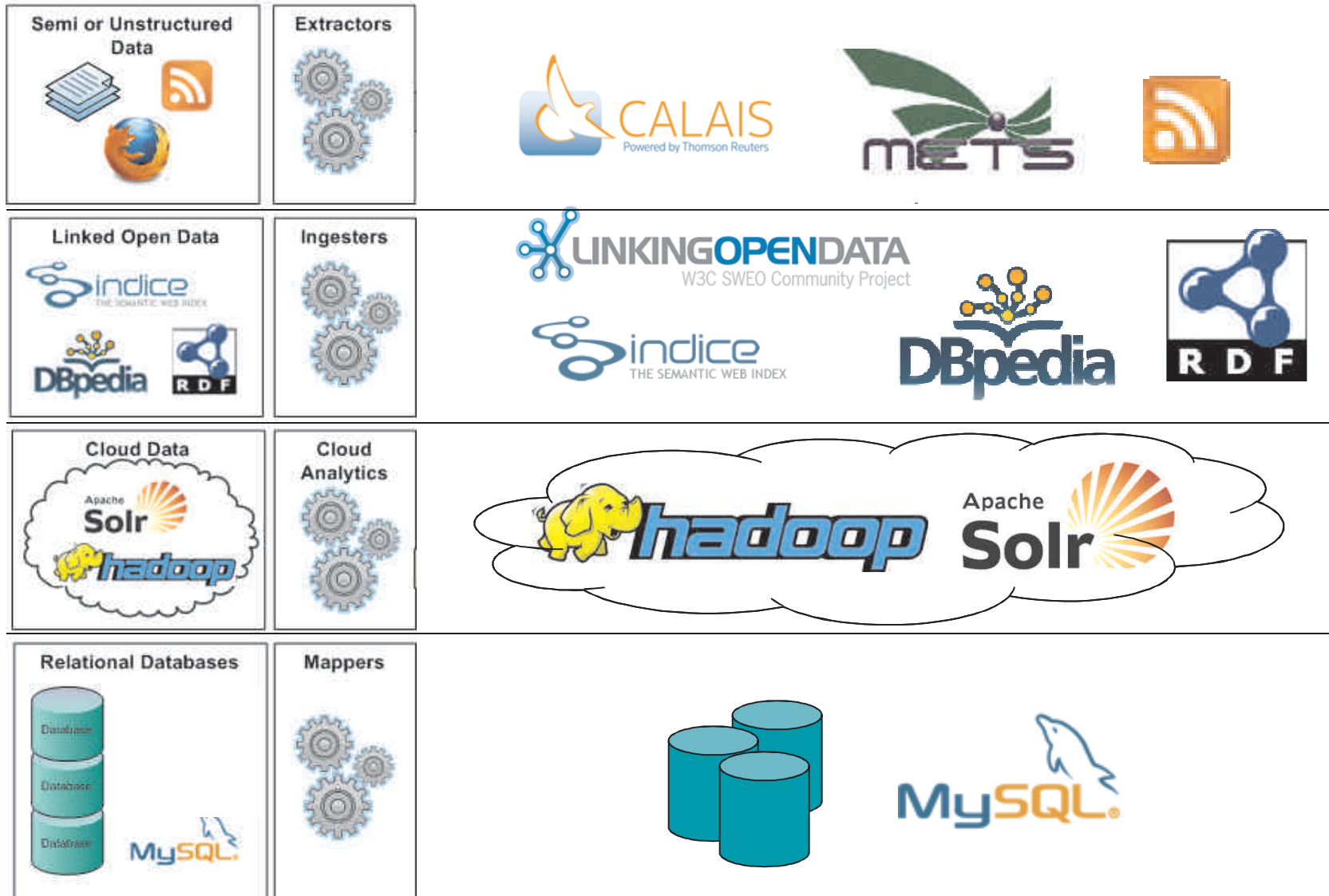
Services interested in using ALEs can query the ALS for ALEs.

Other services can consume the results of the user modeling services for their own purposes.

# Data Tier



# Data Integration Points

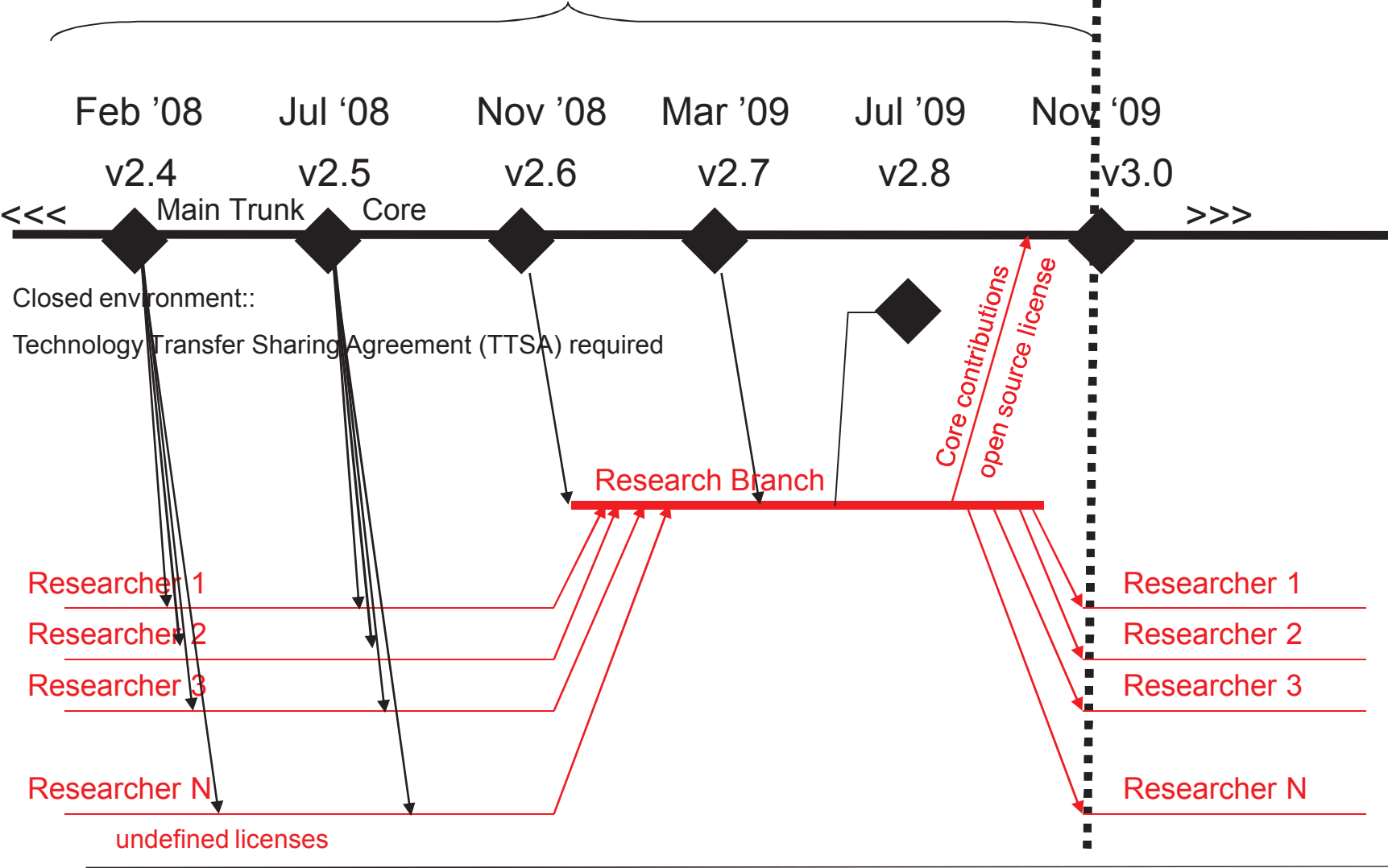


# Future Capabilities

- **Blackbook v3.0**
    - Transition to a loosely-coupled architecture
    - Improve scalability allowing handling of large graphs
    - Implement secure SPARQL and Linked Data endpoints
    - Replace Java Applets views with AJAX-based WiGi and Simile
    - Interface to an entity extraction service (METS, Open Calais)
  - **Blackbook v3.1**
    - Implement OSGI technology for algorithm “hot-deployment”
    - Demonstrate the mobile analytic concept
    - Improve visualization with rich interface
  - **Blackbook v3.2**
    - Peer-to-Peer connectivity for Blackbook platforms
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# Timeline

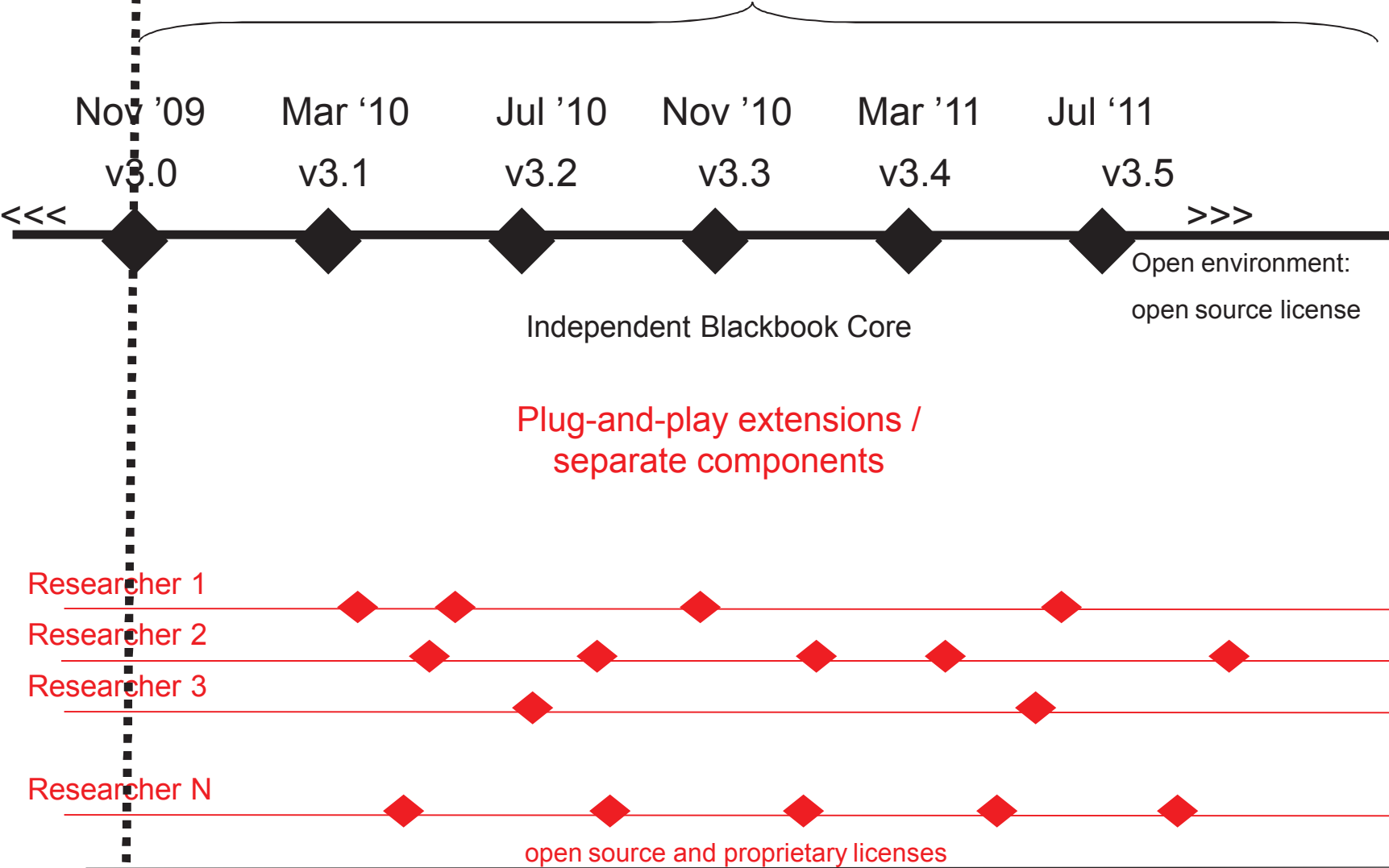
Blackbook 2.x core is a "tightly-coupled" architecture





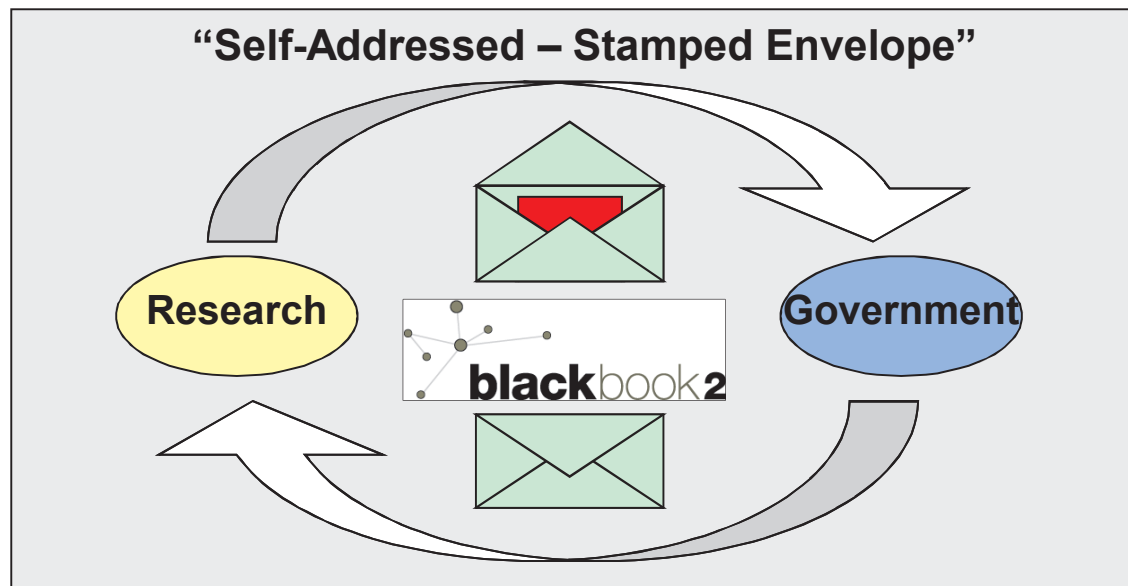
# Timeline

Blackbook 3.x core is a “loosely-coupled” architecture



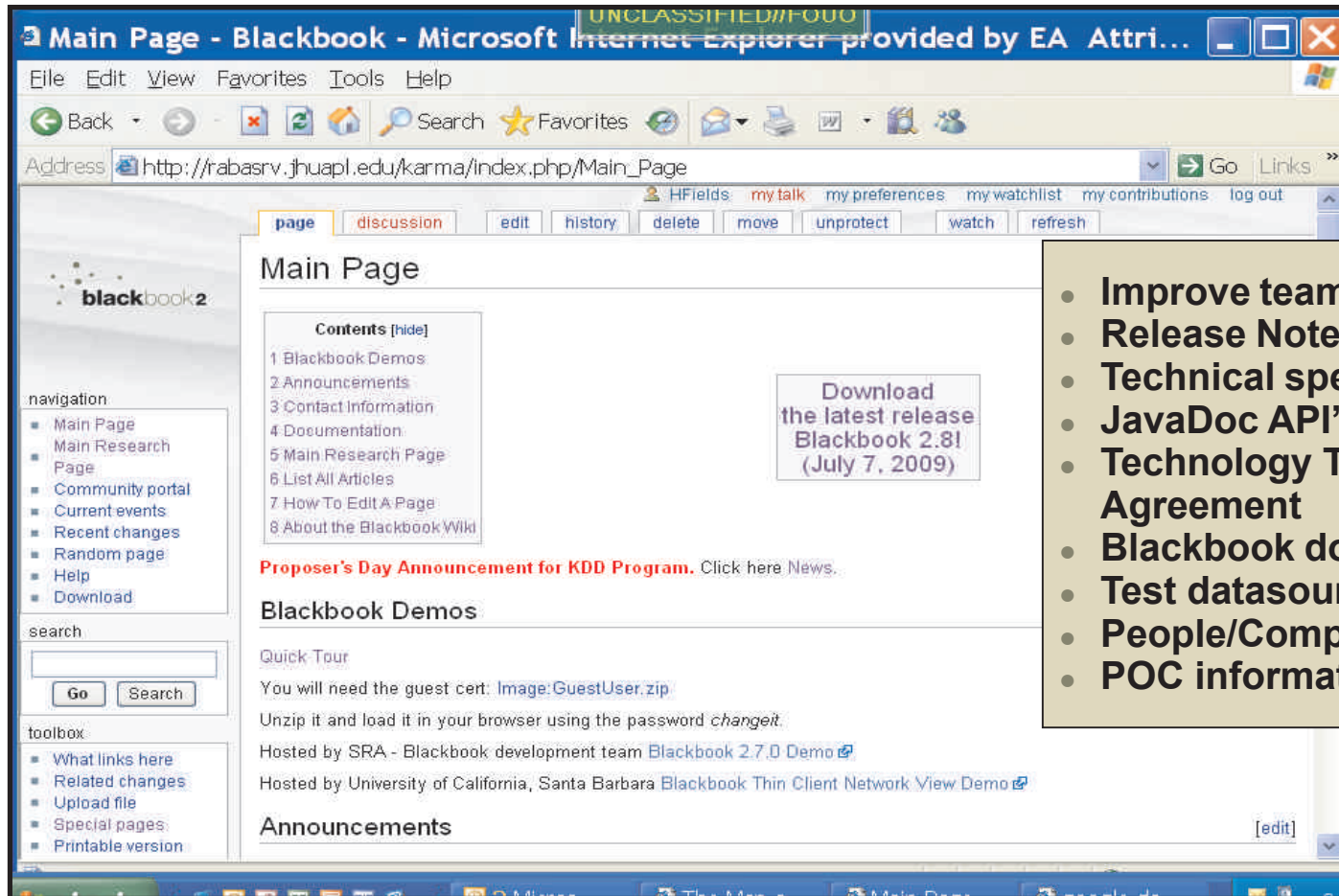
# Technology Transfer

- Knowledge Discovery and Dissemination (KDD) program
  - Led by Dr Art Becker
- Blackbook provides a common integration framework for technology transfer



A research product (red), such as a new and improved algorithm or visualization, can easily be transferred from research to government using the Blackbook “envelope”.

# Blackbook Wiki



- Improve team collaboration
- Release Notes
- Technical specs, documentation
- JavaDoc API's
- Technology Transfer Sharing Agreement
- Blackbook download access
- Test datasources
- People/Company list
- POC information

**Blackbook wiki can be accessed from the internet:  
<http://blackbook.jhuapl.edu>**

# Process: Blackbook wiki account

## Step 1:

Requester sends an email to the KDD Program Management Office (PMO), with the following information:

- First Name
- Last Name
- Affiliation (Company Name, Academic Institution, Government Agency)
- Work Phone
- Unclassified email address

-KDD PMO email: [dni-iarpa-baa-09-10@ugov.gov](mailto:dni-iarpa-baa-09-10@ugov.gov)

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# Process: Blackbook wiki account

## Step 2:

KDD PMO will verify that a valid Technology Transfer Sharing Agreement (TTSA) form is on file for ALL companies and academic institutions. A TTSA is not required for government agencies.

- Blackbook software is not open source licensed – yet!
- A TTSA protects government's intellectual property

If a TTSA is not on file, the KDD PMO will email a TTSA to the requester

If a TTSA is on file, then Step 5

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# Process: Blackbook wiki account

## Step 3:

Requester has a company representative sign the TTSA

- The TTSA is an agreement between the Government and the requester's company or academic institution
- The TTSA is NOT an agreement between the Government and the requester as an individual

Requester emails a signed TTSA to the KDD PMO

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# Process: Blackbook wiki account

## Step 4:

KDD PMO will sign the TTSA and will archive

KDD PMO will email a signed copy of the TTSA to the requester

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# Process: Blackbook wiki account

## Step 5:

KDD PMO will create a Blackbook wiki account for the requestor, as an individual

He/she may download the Blackbook software

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**Thank You**

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