

blackbook2

3

Presented by:
Buster Fields
Program Manager

Agenda

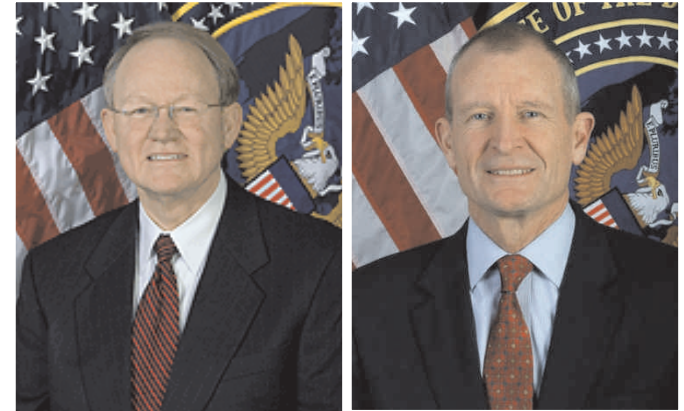
- Analytic Modernization
 - Linked Data and Semantic Web
 - What is Blackbook?
 - Blackbook 2.x - Current Capabilities
 - Blackbook 3.x - Future Capabilities
 - Timeline
 - Technology Transfer
 - Blackbook wiki
 - Q&A
-

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 10th, 2007

Linked Data

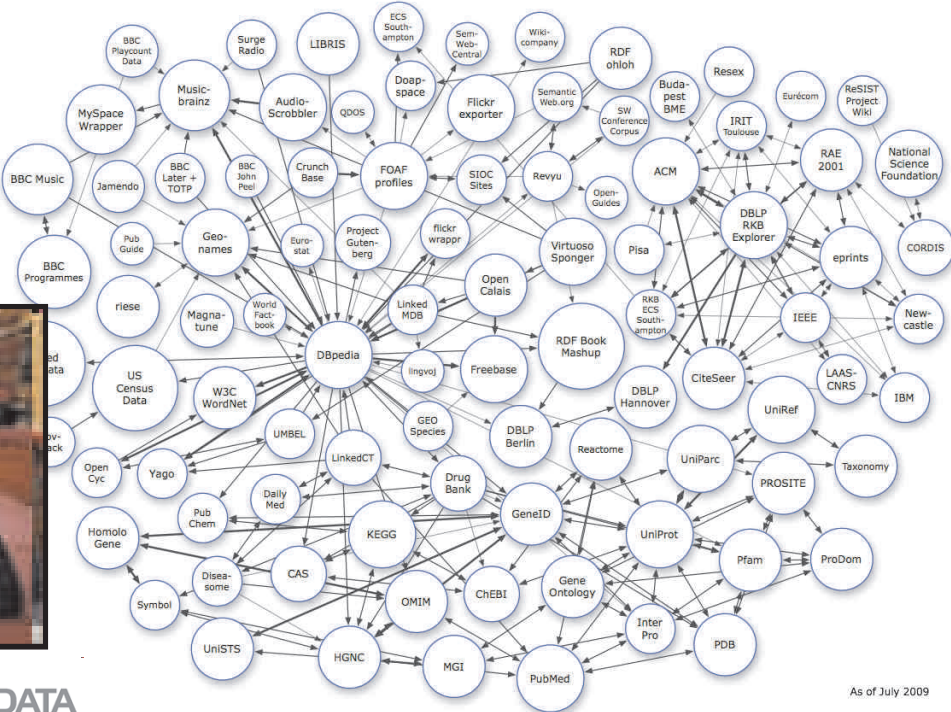
- The term Linked Data refers to a set of best practices for publishing and connecting structured data on the Web



- 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



As of July 2009



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
-

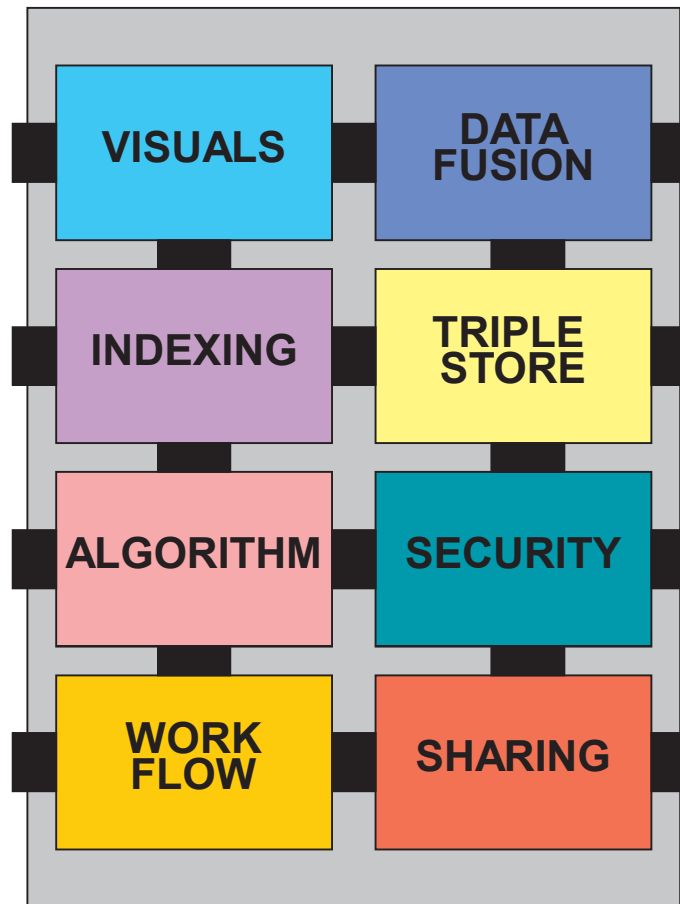
Core Components

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



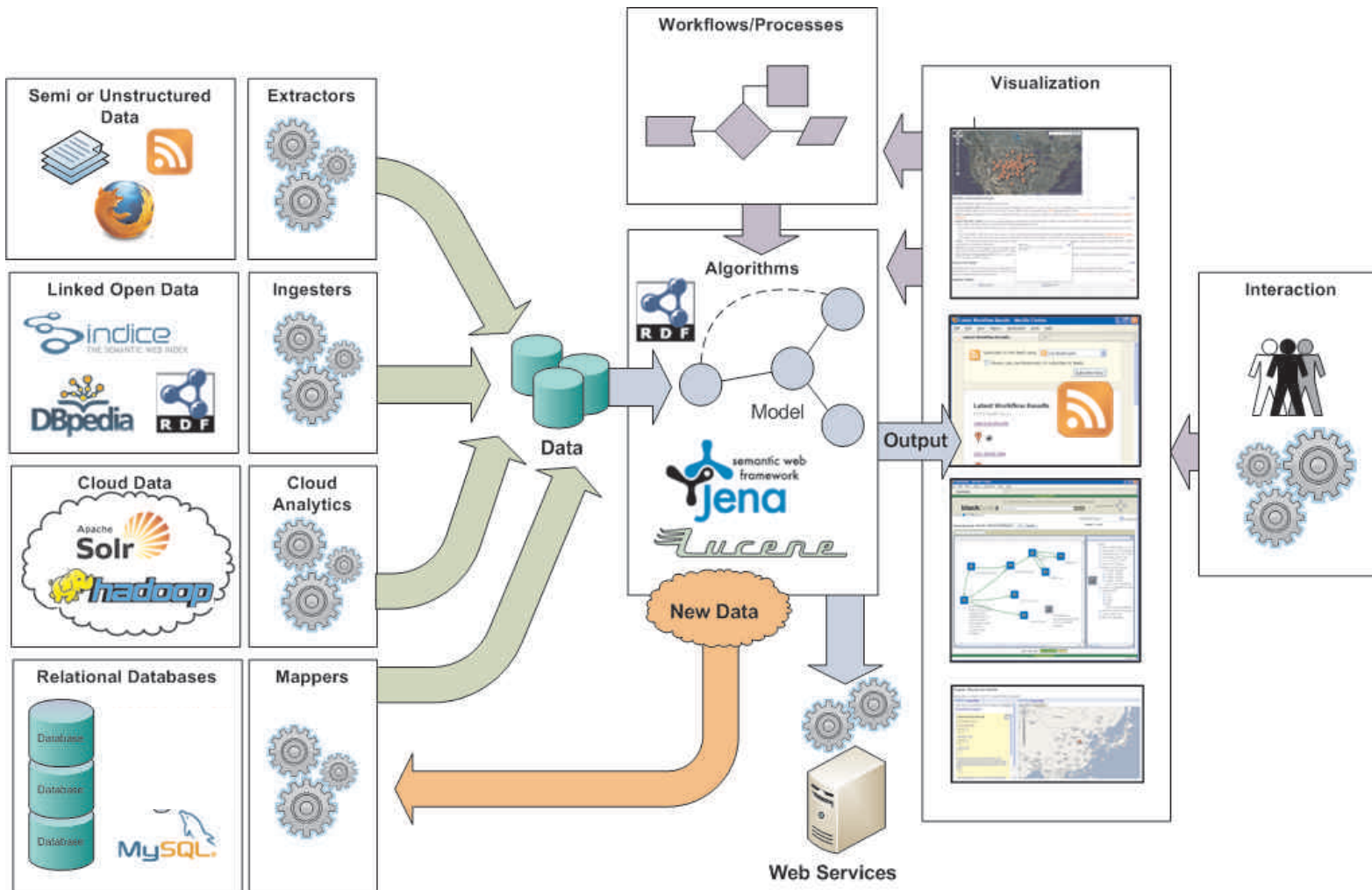
Query and merge data from many different sources, both structured and unstructured

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

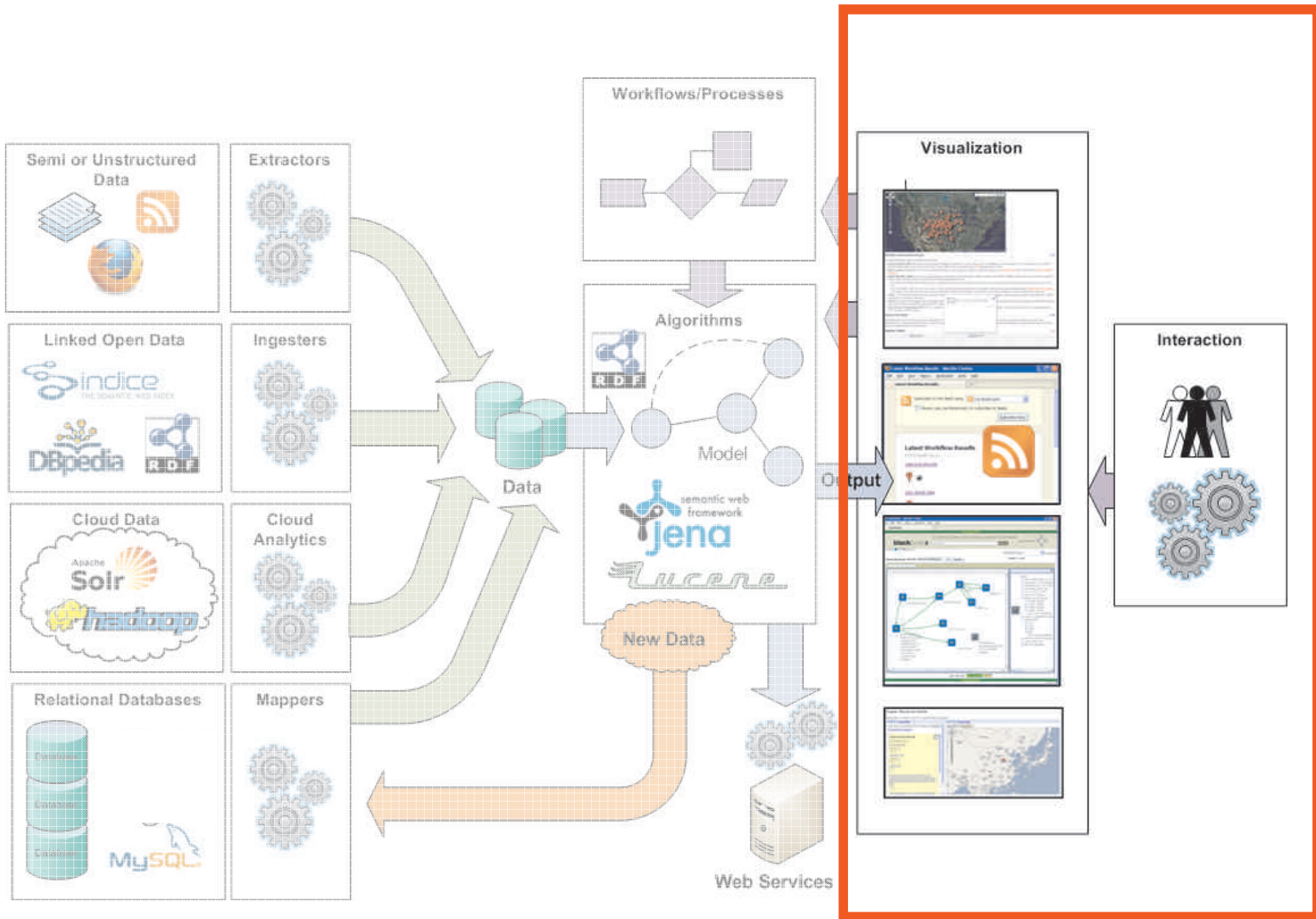
The auditing and adjudication of data as it is accessed and transformed

Discovery of web-services, and user workspaces

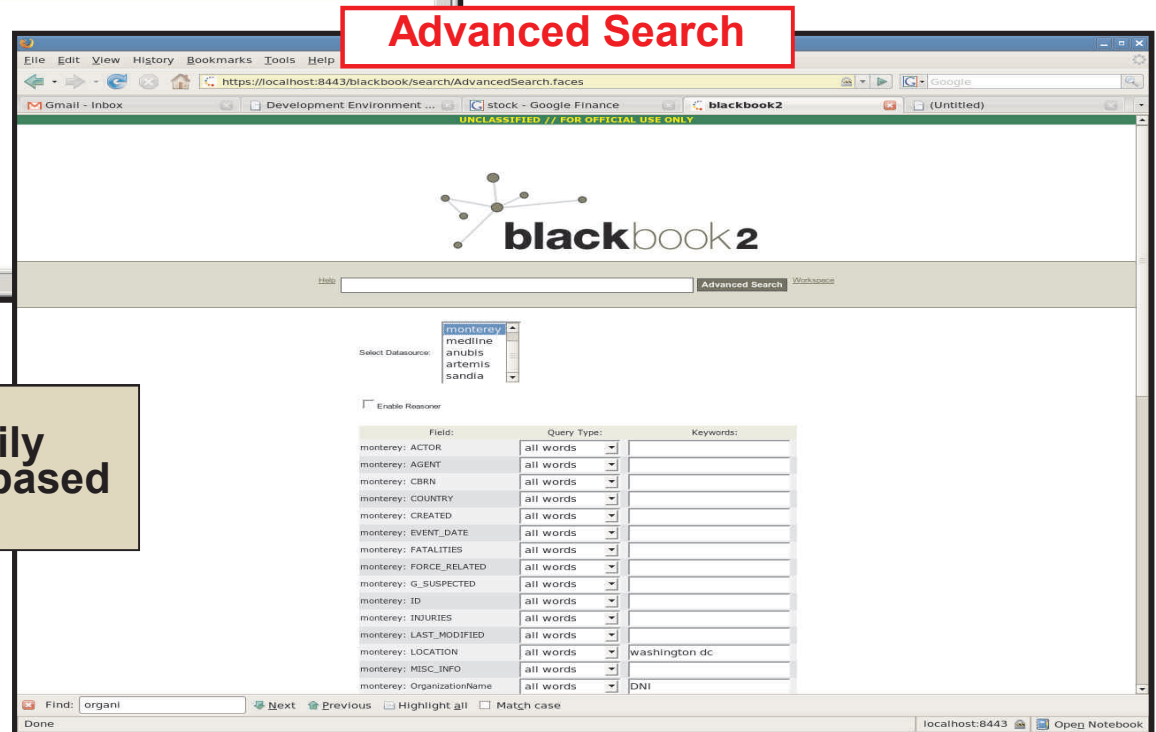
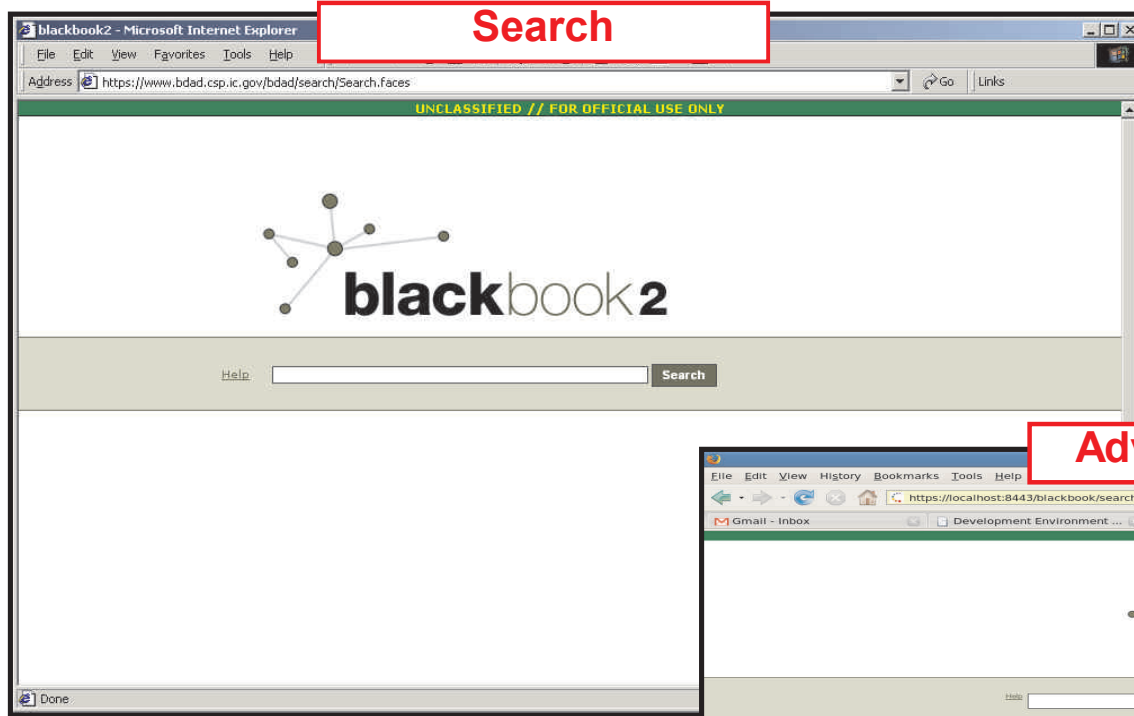
Current Capabilities



Presentation Tier



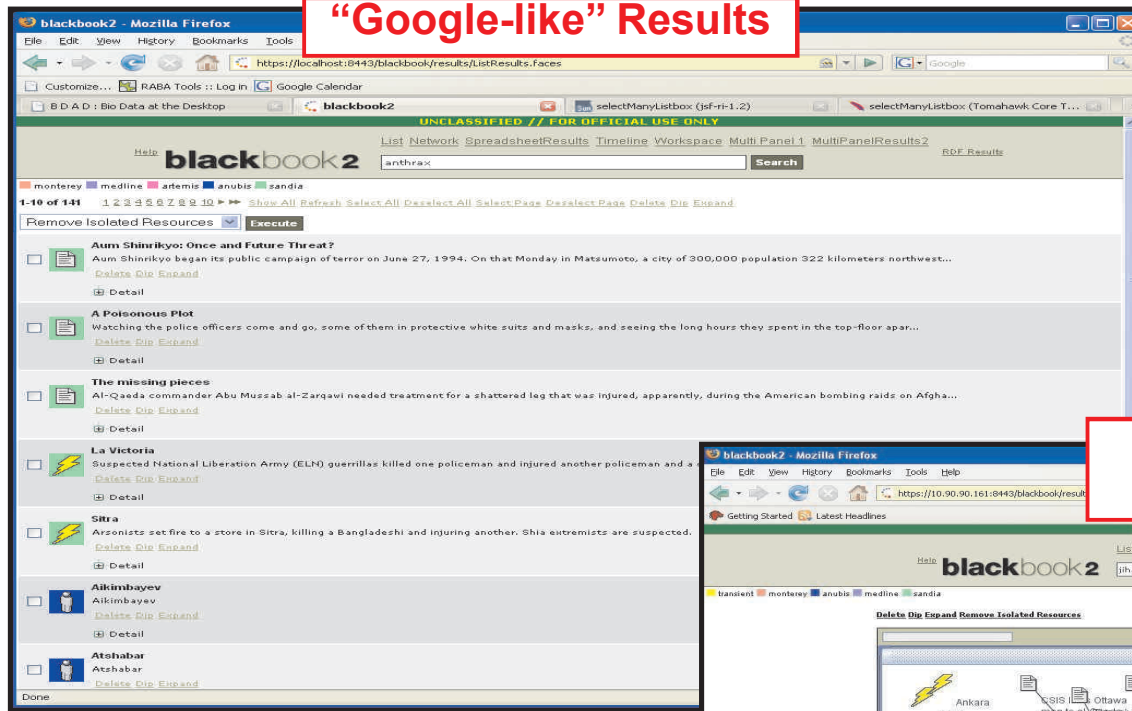
User Interface



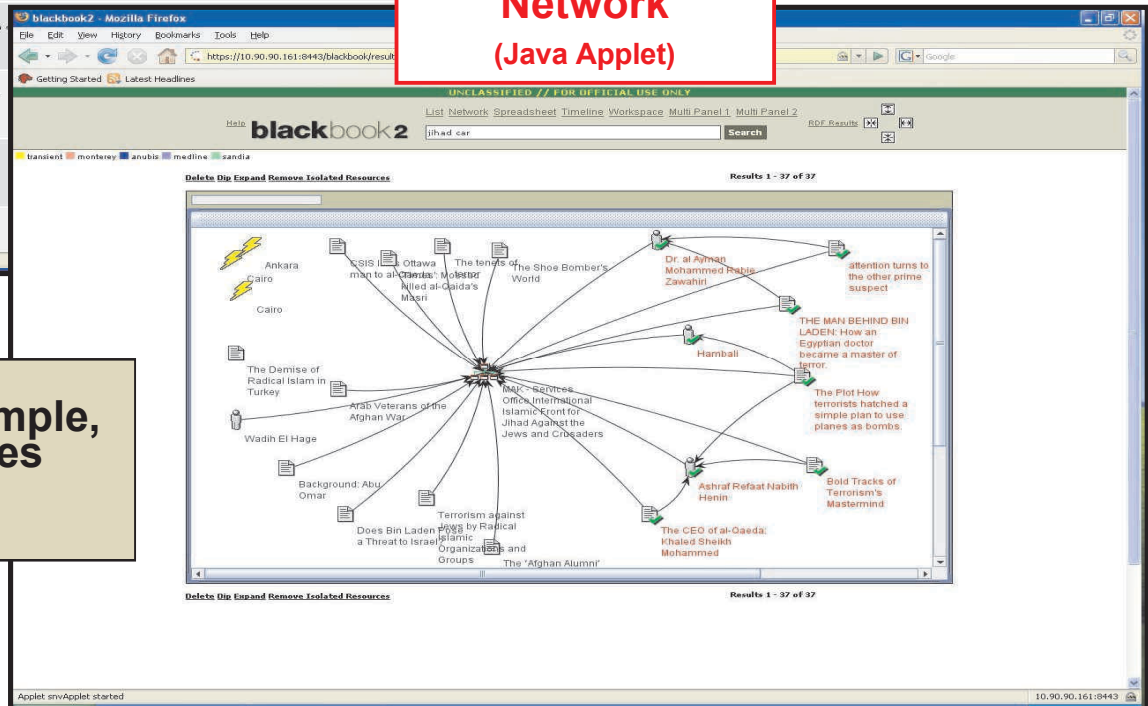
A front-end “Google-like” user interface allows analysts to easily perform keyword and attribute based searches.

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** List Network Four Eyes Viewer Google Map Timeline Workspace Assertions Manager Advanced Search

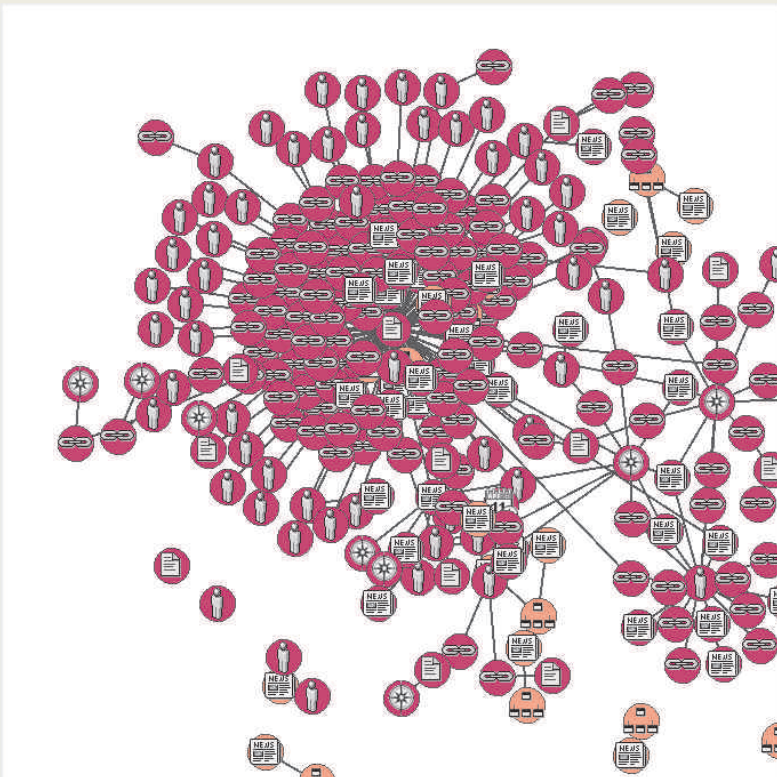
al qaeda Search

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

Run Layout (Server side)

Interaction Settings:

Distance to farthest affected node:
1 100 100

Other Settings

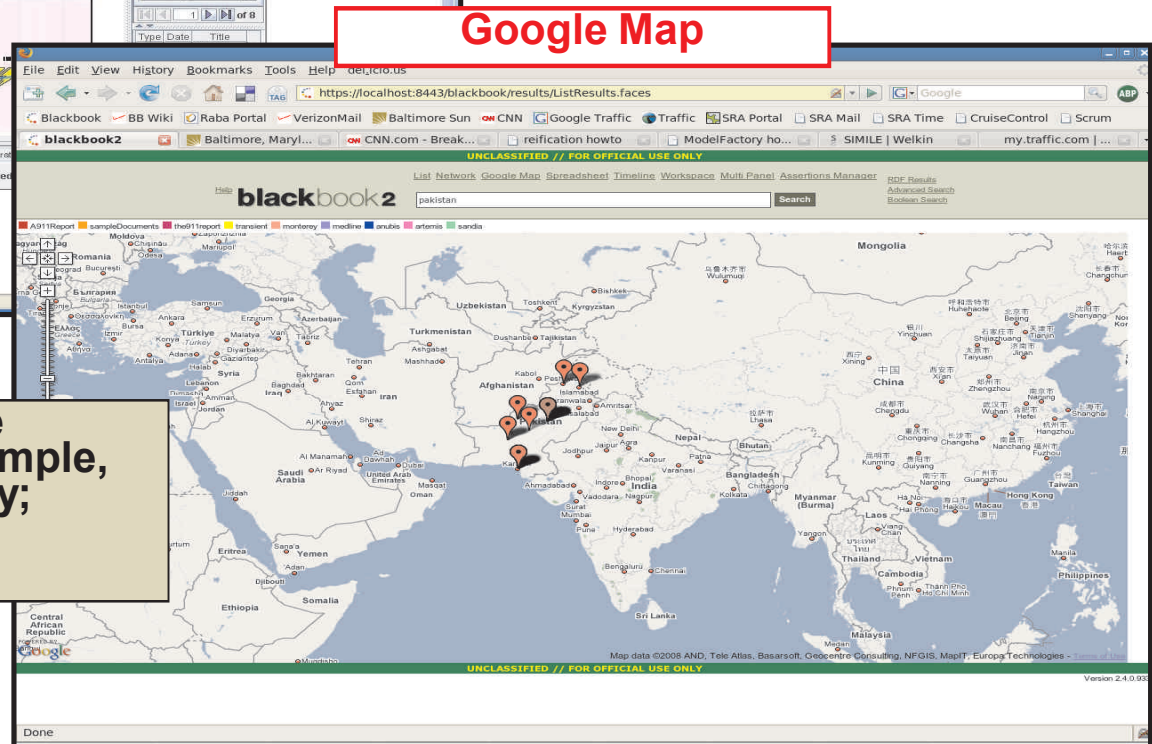
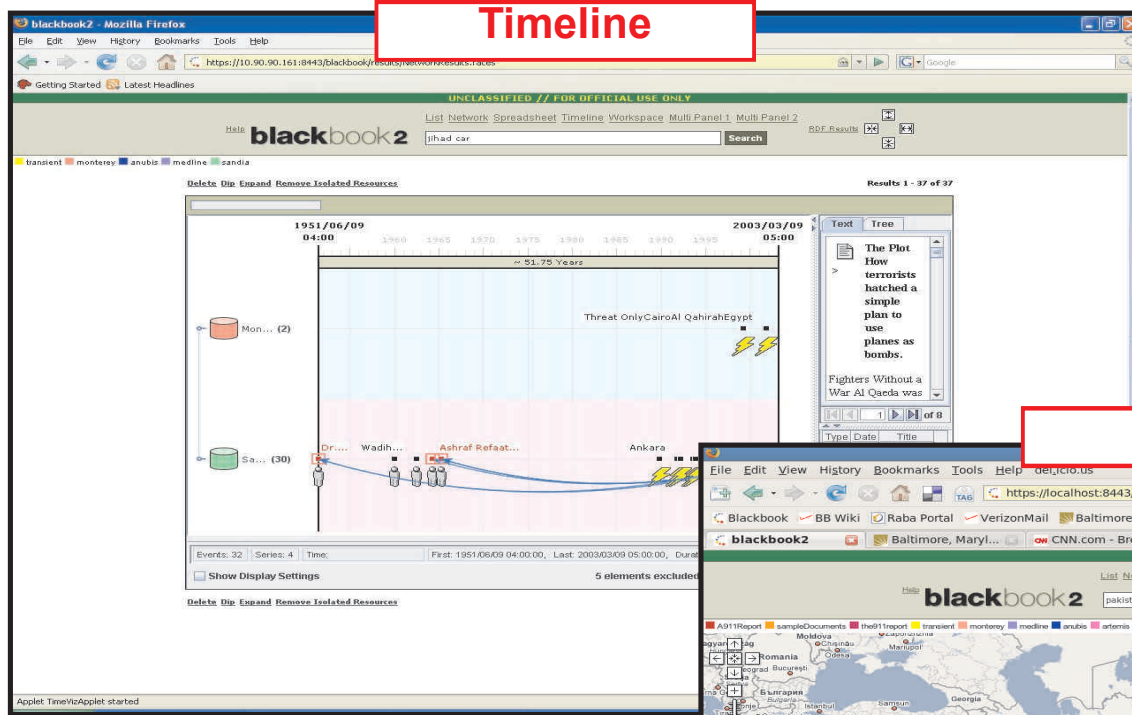
Use Blackbook Data.
Select a graph to load:
_bb_bush.dnv

Level of Detail:
0 0.0 0

fas

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 the iGoogle logo and a search bar. Below the search bar, there are navigation links for "Web", "Images", "Maps", "News", "Shopping", "Gmail", and "more". The user's email address, "2byrds@gmail.com", and links for "Classic Home", "My Account", and "Sign out" are visible in the top right.

The main content area is divided into several sections:

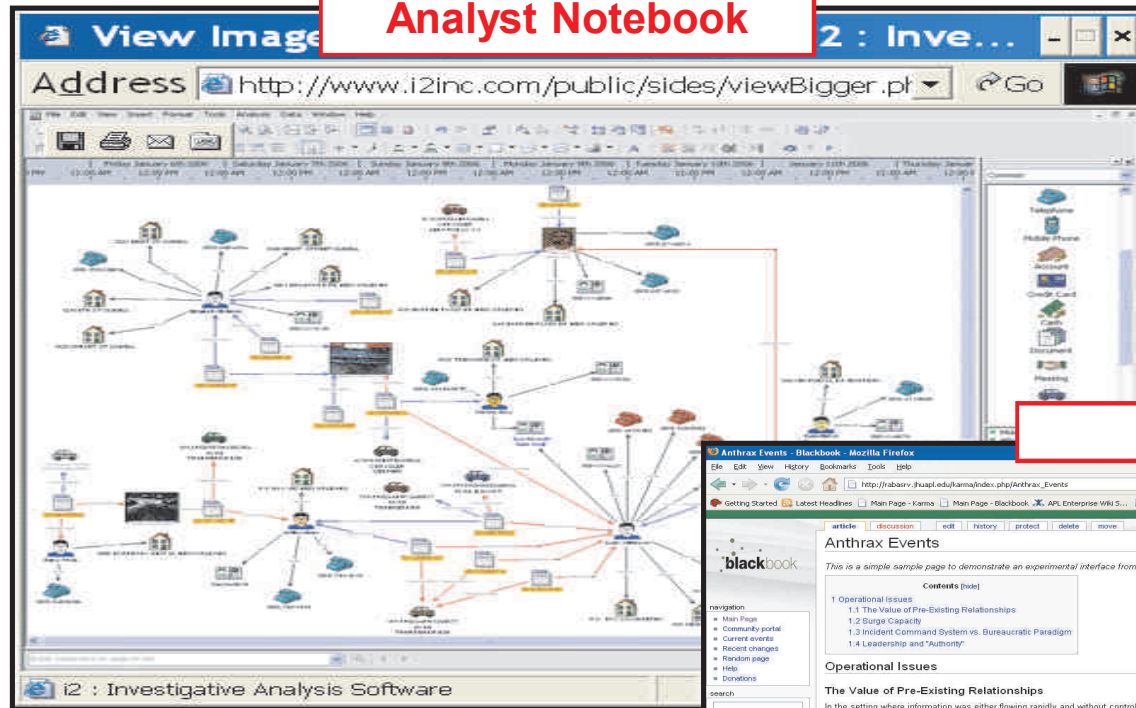
- Home:** A sidebar menu with options like "Weather", "My Entities", "Multiple SetPref...", and "My Gadgets".
- My Entities:** A widget with input fields for `rss_url` (http://blackbook2/rss/), `entity_list` (vessel1,vessel2,vessel3), `process_def` (1), and `base_wiki_url` (http://blackbook2/wiki). It 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`.
- Chat:** A sidebar chat window with a search bar and a user named "Lance Byrd".
- HotList:** A news widget titled "HotList:" featuring a story about an Indian navy sinking a suspected pirate ship.
- Multiple SetPref - Iframe:** A widget containing text: "Each page load should increment the value of each usepref. 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



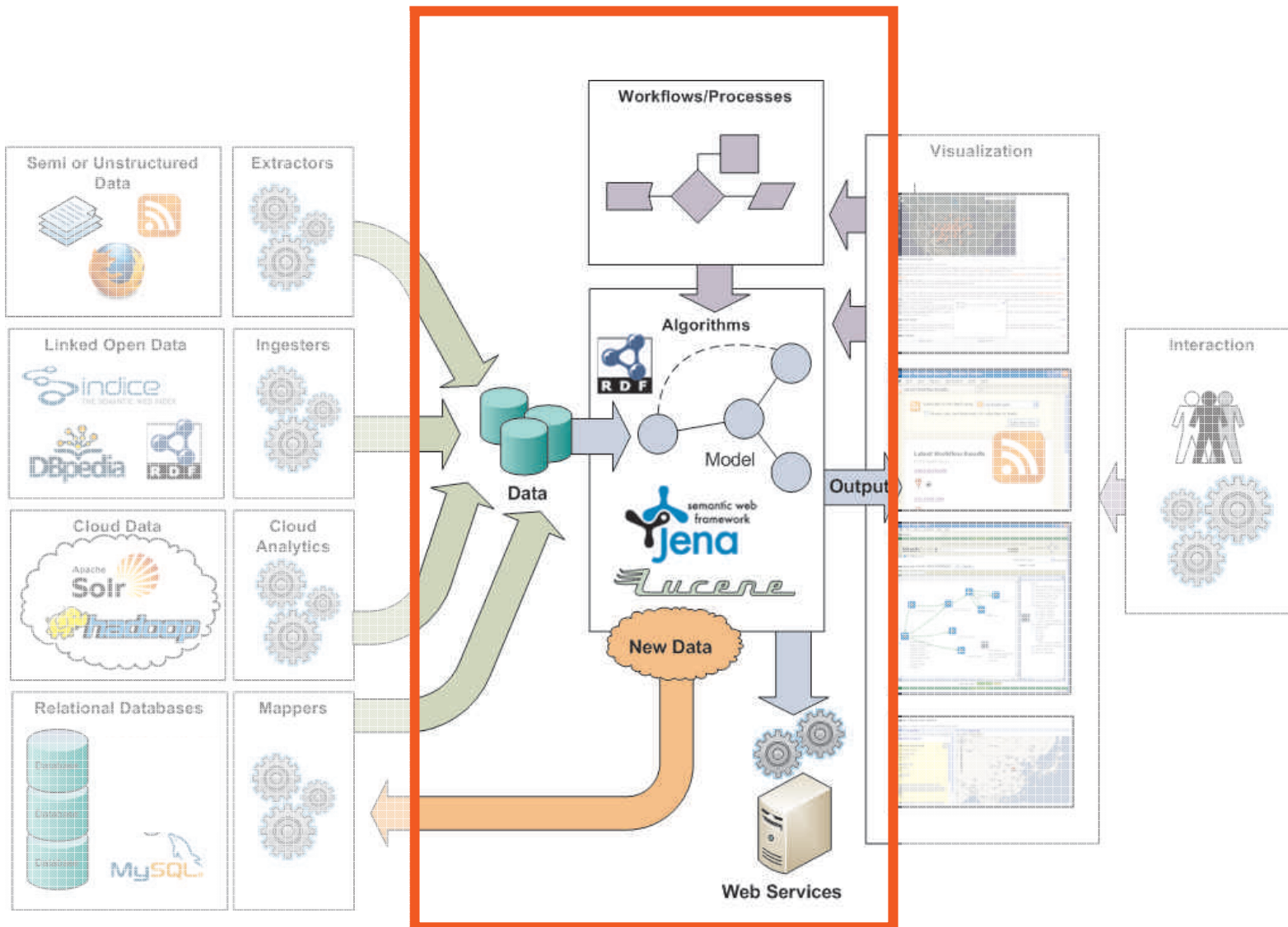
Mediawiki

The screenshot shows a Mediawiki page titled "Anthrax Events" within the Blackbook application. The page content includes a table of contents, a section on "Operational Issues" with sub-sections like "The Value of Pre-Existing Relationships", and a section on "Surge Capacity". A diagram is overlaid on the page, showing a network of relationships between individuals and locations. The diagram includes nodes for "capitol", "anthrax", "Derring", "Fredericks", "Smith", "Evans", "Atta", "Jones", "Simpson", and "Washington". Arrows indicate connections between these nodes. A red oval highlights the diagram area. Below the diagram is a table with columns for "Object", "Type", and "Properties".

| Object | Type | Properties |
|--------|--------|---|
| Smith | Person | firstname: Joe lastname: Smith location: 18th Street NW date: 2001-09-16 |
| Jones | Person | firstname: Sam lastname: Smith |

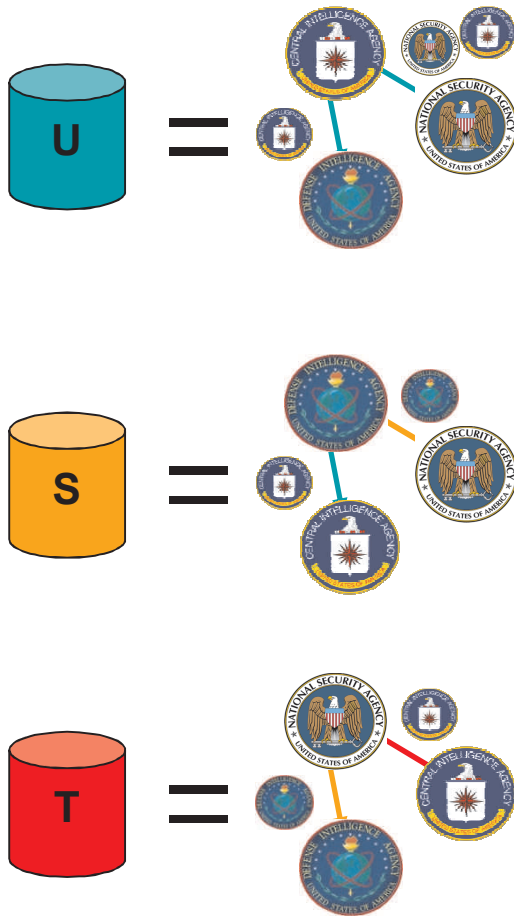
Blackbook is developing a framework called "Aqueduct", allowing interoperability between ozone widgets and wikis.

Middle Tier

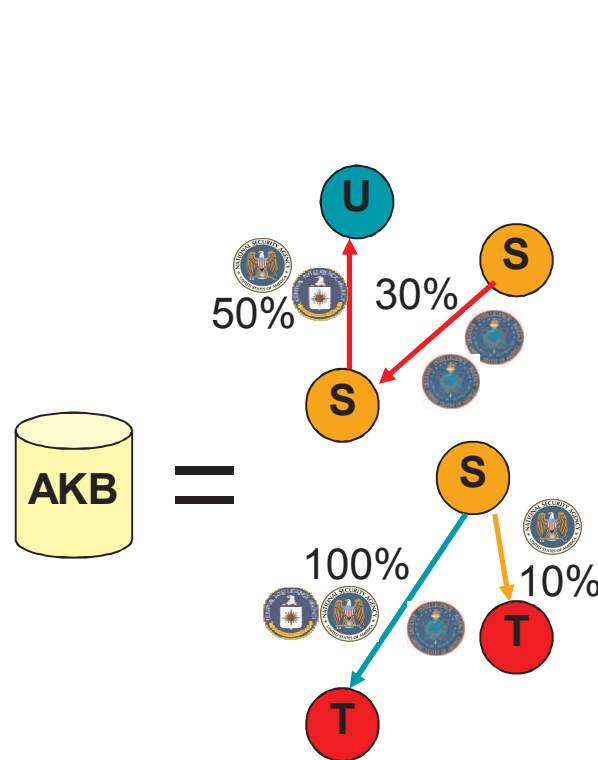


Security, Confidence, Affiliation

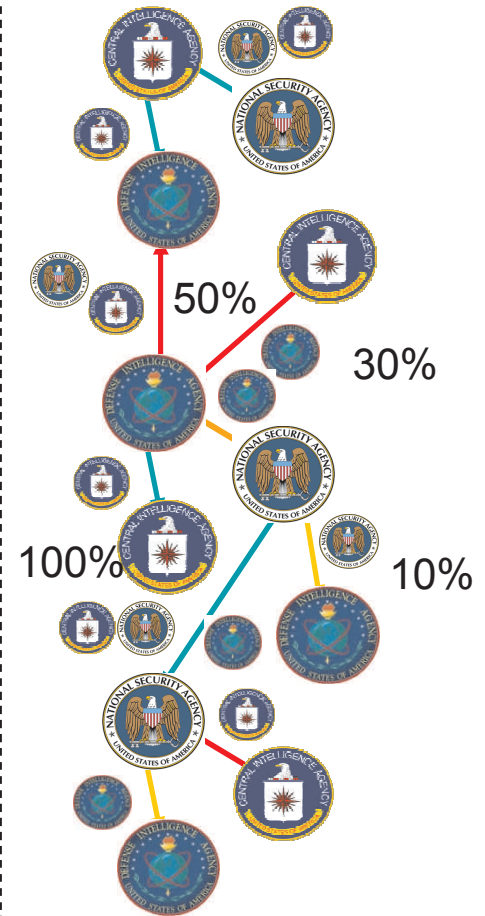
Original Datasource



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

Relationship Manager

Resource Set: SandiaAnthraxKeyword - 2 - 1_Materialize Retrieve

Resource Set: MedlineAnthraxKeyword - 1 - 1_Materialize Retrieve

the Base
an organization is a multi-national support group which funds and orchestrates the activities of Islamic militants worldwide. It grew out of the Afghan war a...

La Victoria
suspected National Liberation Army (ELA) guerrillas killed one policeman and injured another policeman and a civilian in La Victoria.

A Poisonous Plot
watching the police officers come and go, some of them in protective white suits and masks, and seeing the long hours they spent in the top-floor apart...

Aum Shinrikyo: Once and Future Threat?
Aum Shinrikyo began its public campaign of terror on June 27, 1994. On that Monday in Haboromo, a city of 300,000 population, 323 identities were...

La Victoria
the Base

Same As

A H SCHULTZ
J TOMCSIK

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Version 2.2.1.7759

Allows analysts to specify the relationship between two or more entities

Entity Manager

blackbook2 Mozilla Firefox

Entity Relations Admin

Assertions Retrieve

The Hague
Two grenades were launched at the residence of the Spanish ambassador, cs

It was the second car bomb in Spain over the weekend. On Saturday (20-04-04)...

French judge probes ETA lawyer in legal first
PARIS, France, May 22 — A French judge has opened a probe into a Spanish...

Barcelona
Basque Fatherland and Liberty (ETA) claimed responsibility for a car bombing...

Valencia
Several bombs detonated in different areas of a department store in Valencia...

Raus
A bomb exploded at Terragona International Airport in Raus, wounding 35 pe...

type Journal, Department
Journal Department Untyped

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affiliation Germany

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Save

Document Publication Article Introduction Event Calendar Workshop Organization Website Research Group University Person Employee Academic Staff Student Graduate PhD Student Project Development Project Software Project Research Project Topic SpatialThing

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

Ontology Import

File Edit View History B

http://localhost:8443/blackbook/asset/ontologies/Rel

SRA Scrumworks Scerab BB RDF Personal

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blackbook2

This form allows you to upload information into the BLACKBOOK as start or data source. The primary use for this is to upload ontologies, definitions, definitions and their associated properties. (through RDF content) can also be uploaded.

RDF or OWL File: Browse... Upload

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Vers 2.2.3.5338

Allows analysts to upload their own ontology

fas

User Interface

Workflow

The screenshot shows the blackbook2 web interface in Microsoft Internet Explorer. The browser address bar shows the URL: <https://10.90.90.161:8443/blackbook/workflow/DefineWorkflow.faces>. The page title is "blackbook2".

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 | <none> 0. Expand 1. Lucene Keyword | DataAccess: transient |
| 3. Dip <input type="checkbox"/> fork | <none> | DataAccess: transient |

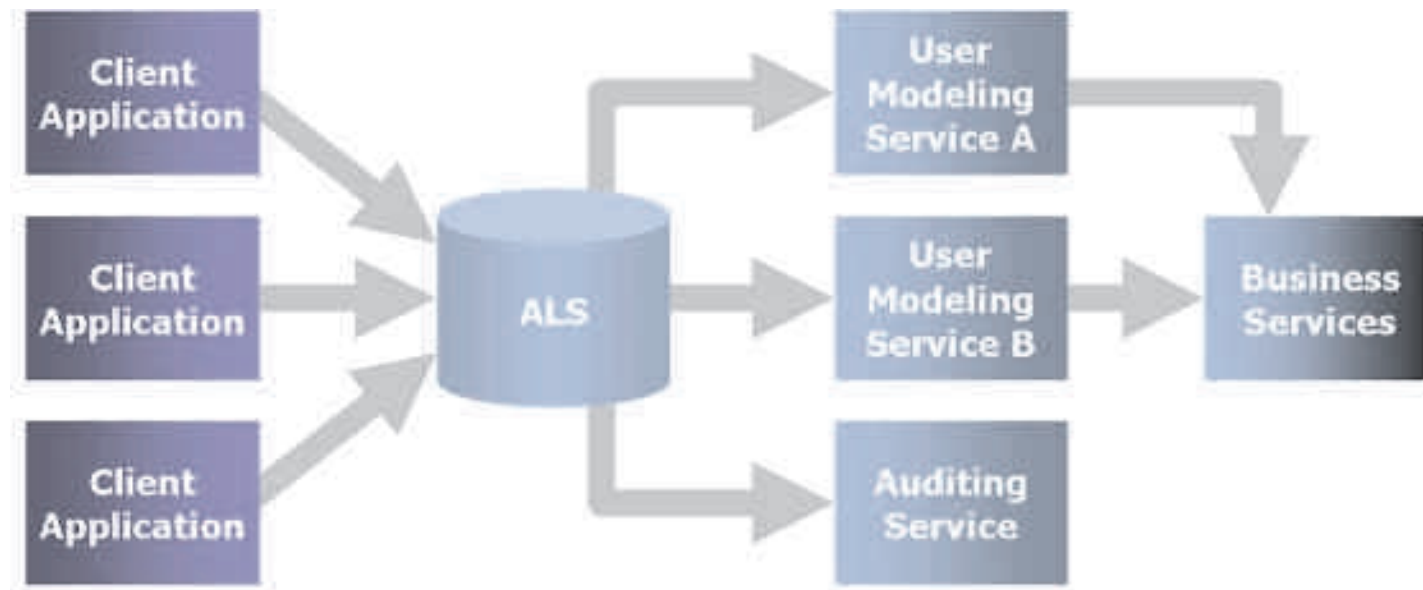
1-4 of 4

The Process Diagram shows a flow starting with "1. Lucene Keyword", which leads to "2. Materialize". From "2. Materialize", the flow branches into two paths: one leading to "0. Expand" and another leading to "3. Dip".

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

fas

Analysis Log Service



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

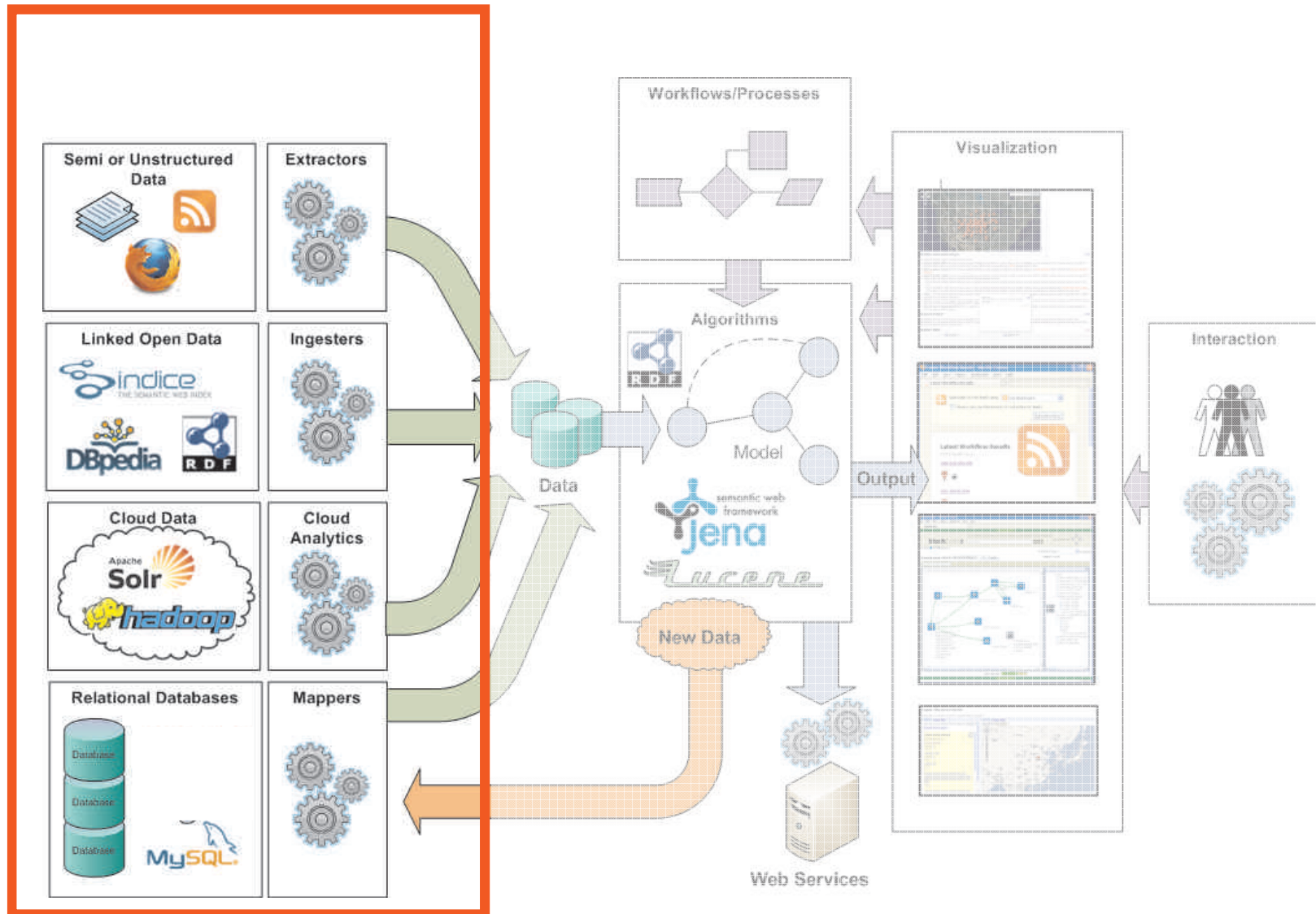
The ALEs are transmitted to the ALS.

The ALS stores the ALEs received from the client applications.

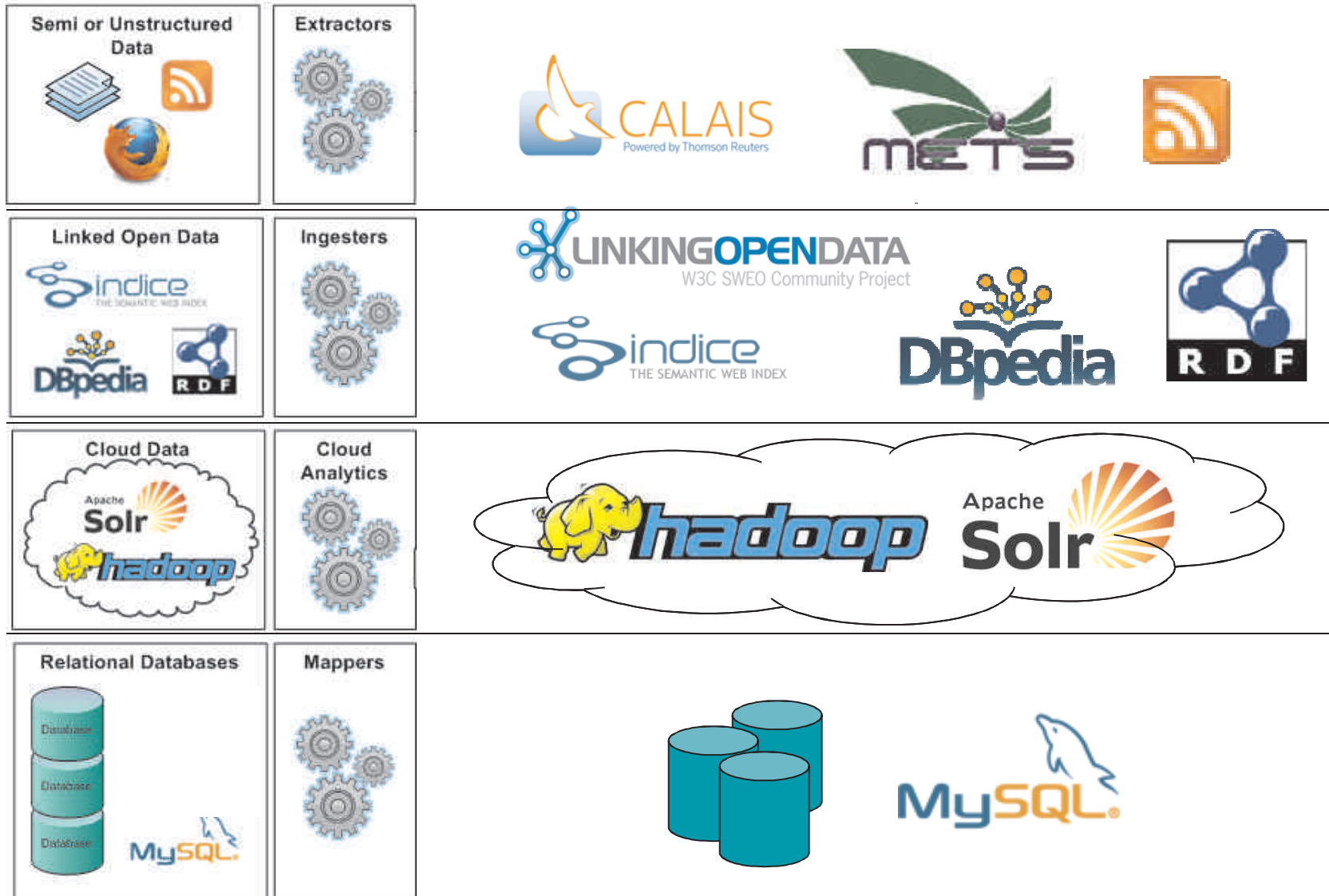
Services interested in using ALEs can query the ALS for ALEs.

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

Data Tier



Data Integration Points

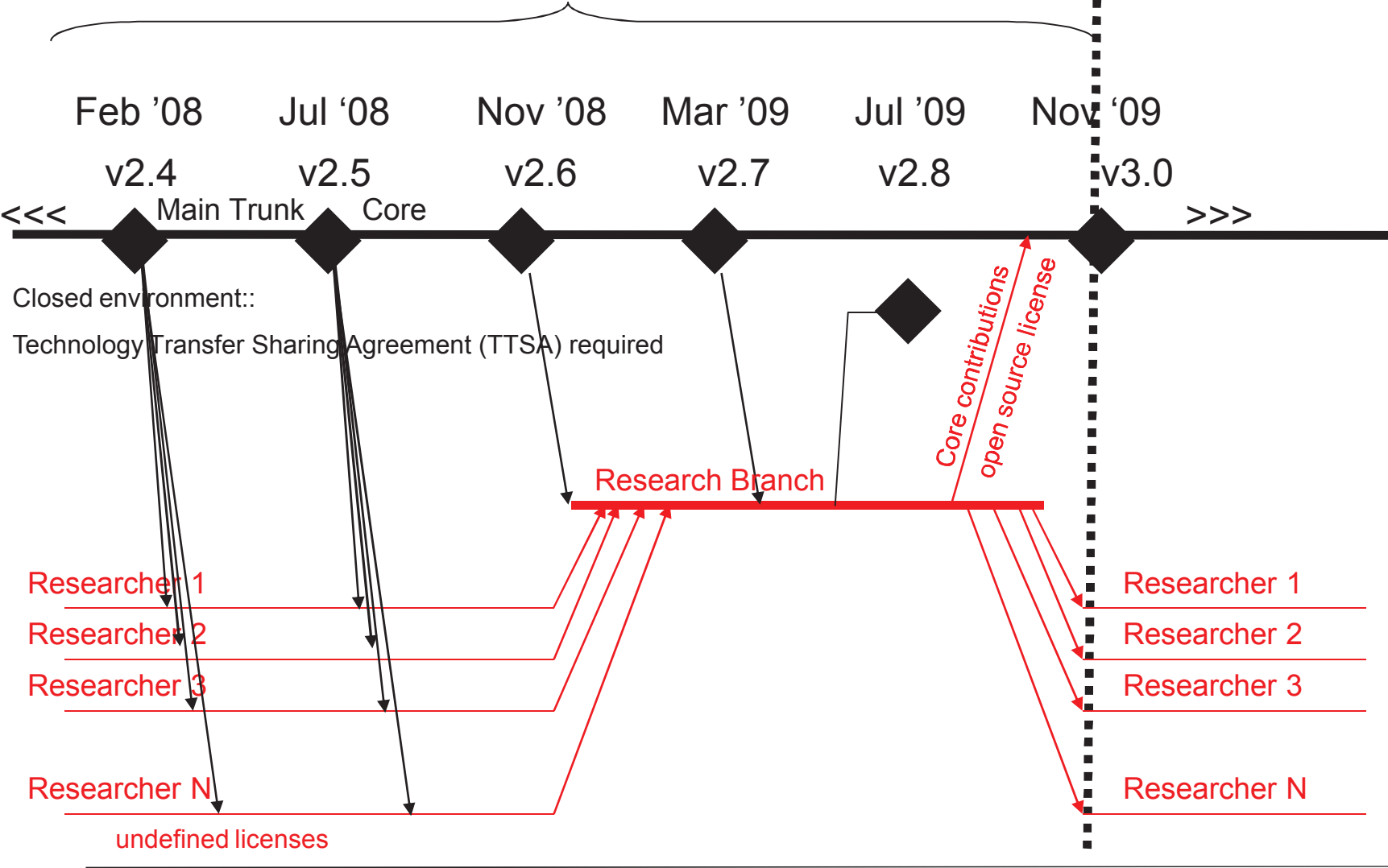


Future Capabilities

- **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
-

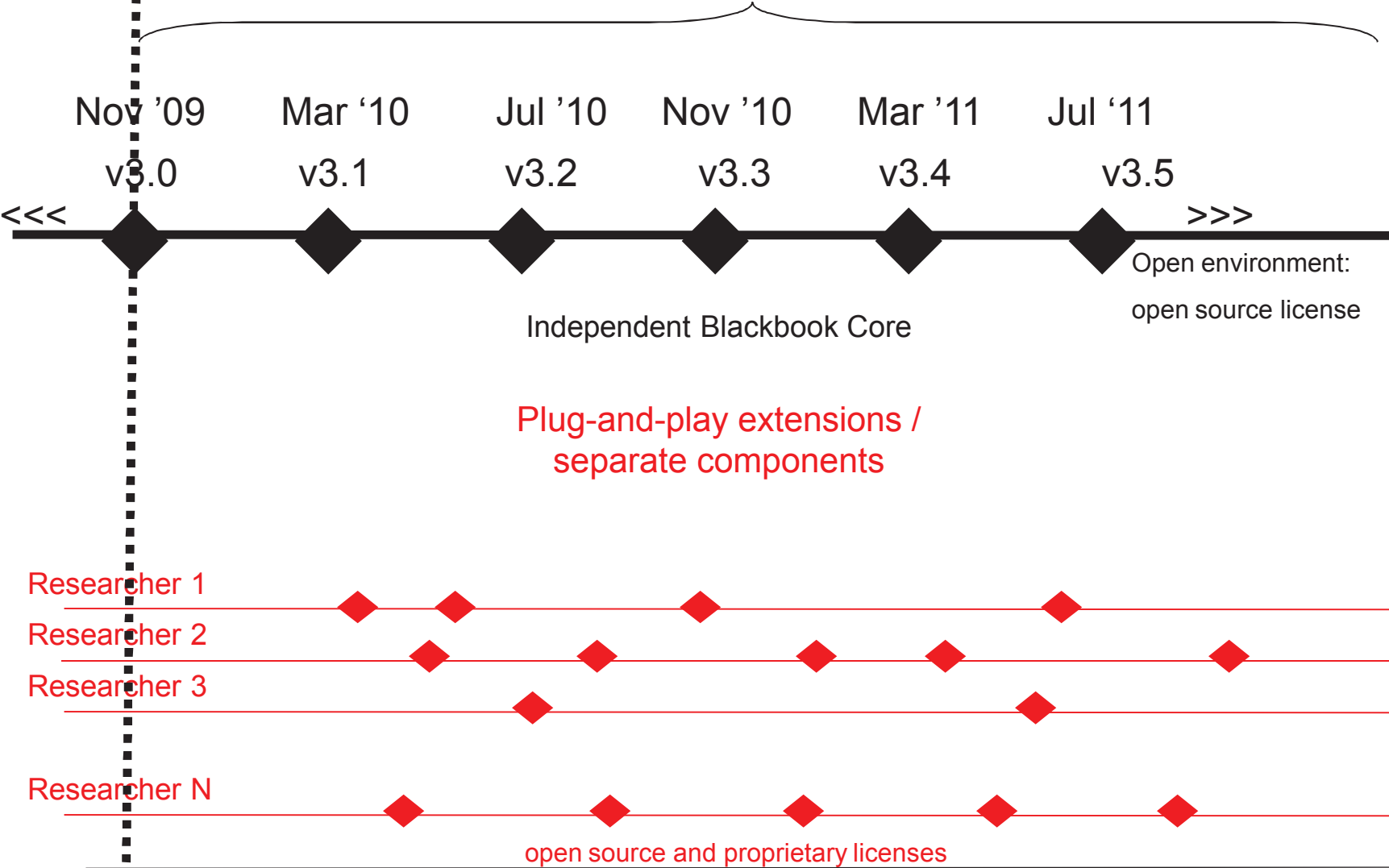
Timeline

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



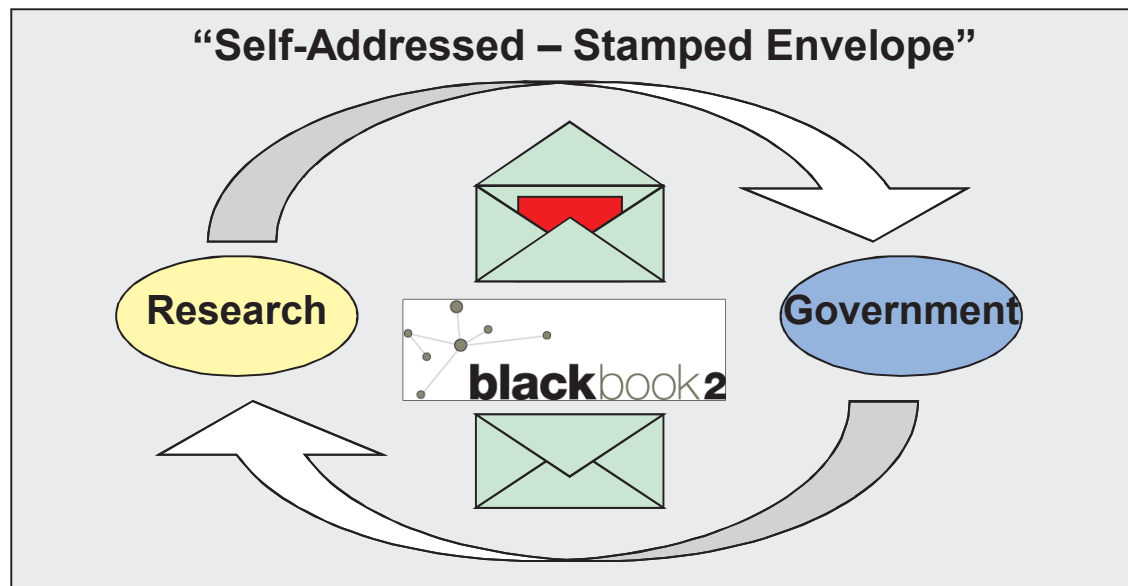
Timeline

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



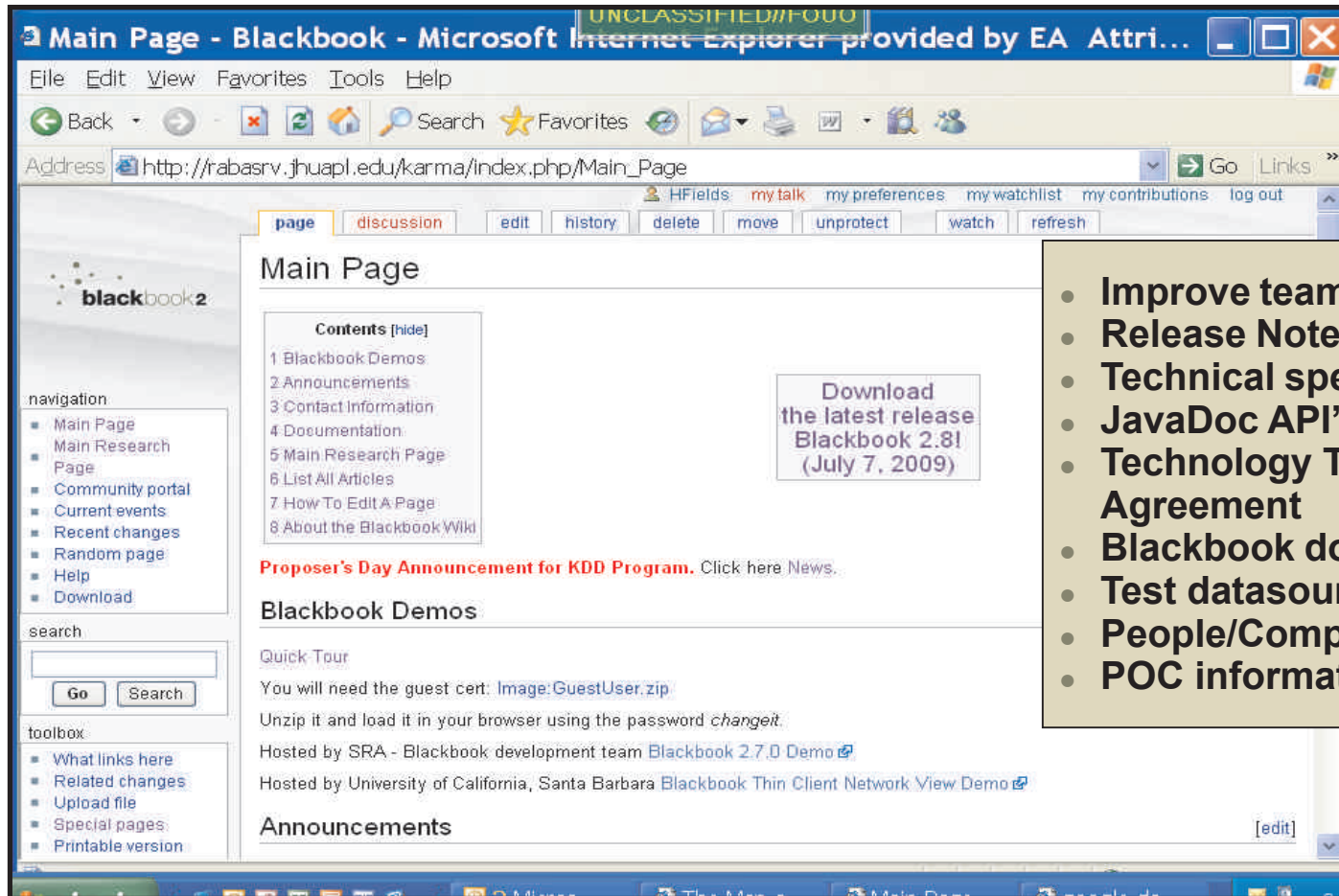
Technology Transfer

- 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

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

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

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

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



Thank You

