

blackbook2

3

Original slides created by:

Buster Fields Program Manager

Slides modified by:

Set Cruz and Lance Byrd

Contact Information

- Marathon Minds
 - Lance Byrd
 - lancebyrd@marathonminds.com
- Set Cruz
 - setcruz1@umbc.edu

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
-

Linked Data

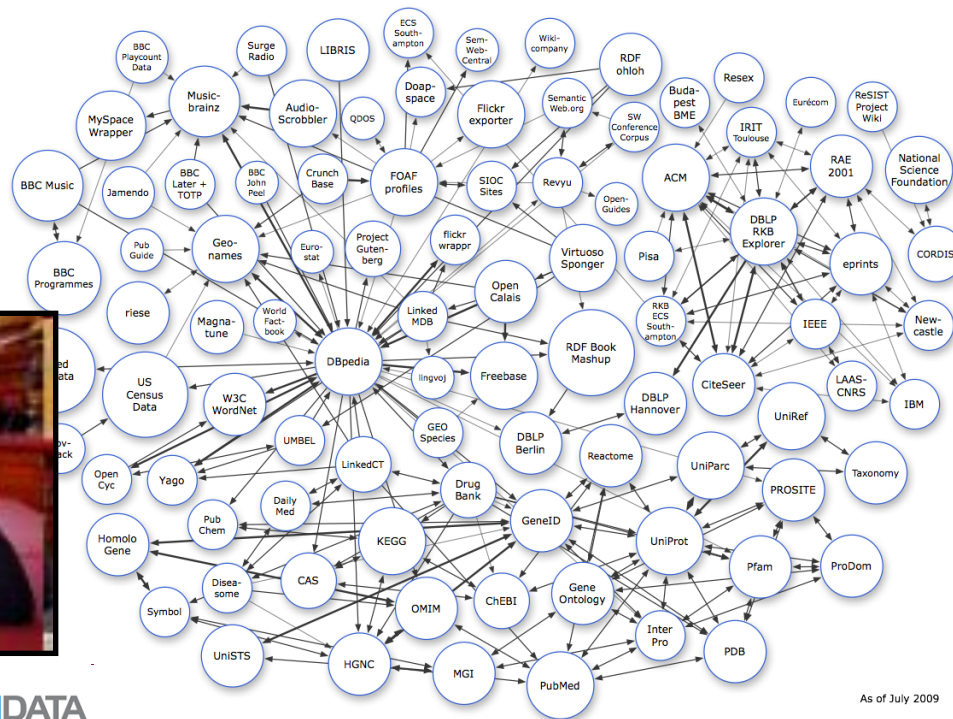
- The term Linked Data refers to a set of best practices for publishing and connecting structured data on the Web



- 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

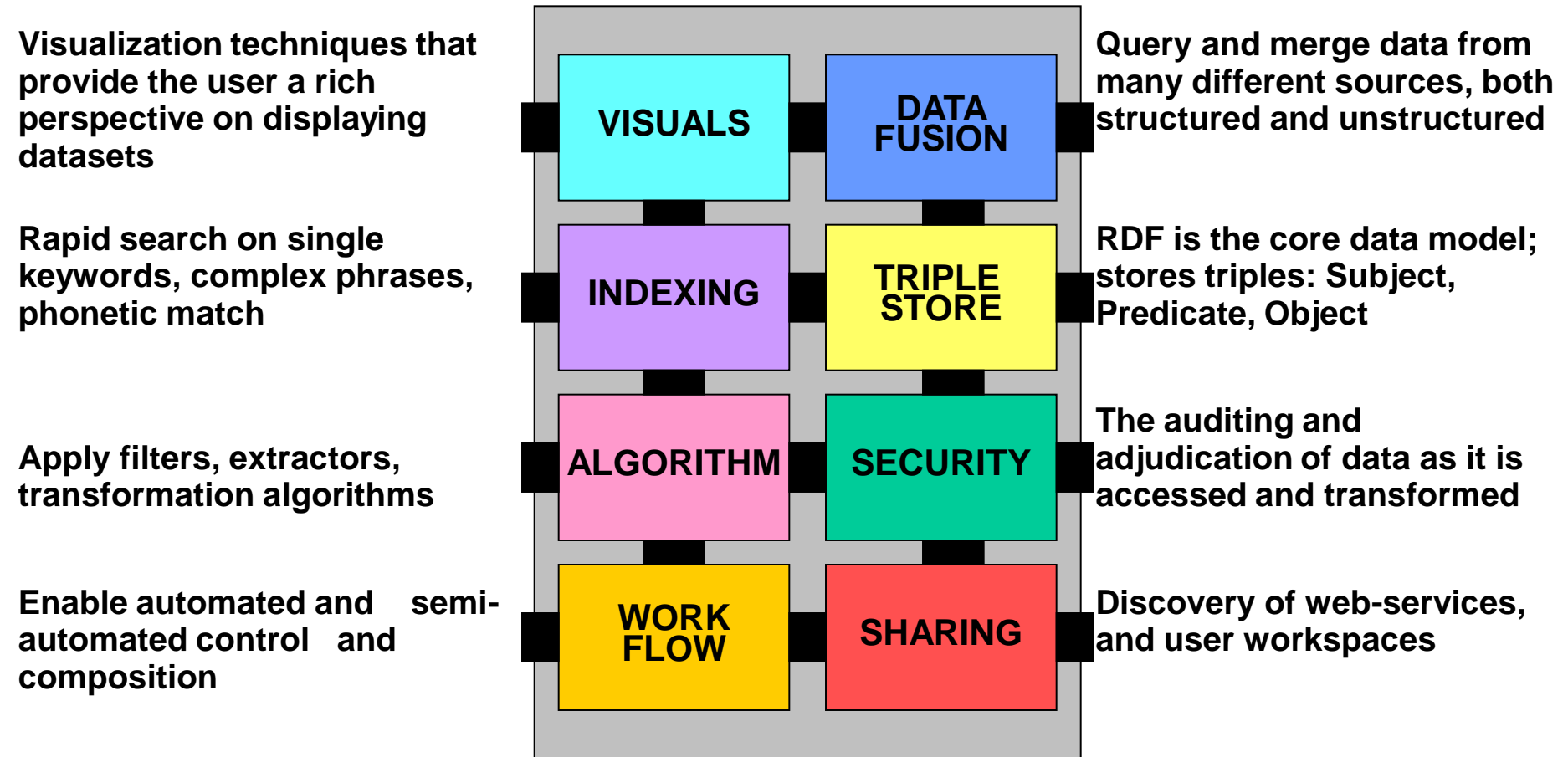
- The Semantic Web is made up of Linked Data; i.e. the Semantic Web is the whole, while Linked Data is the parts



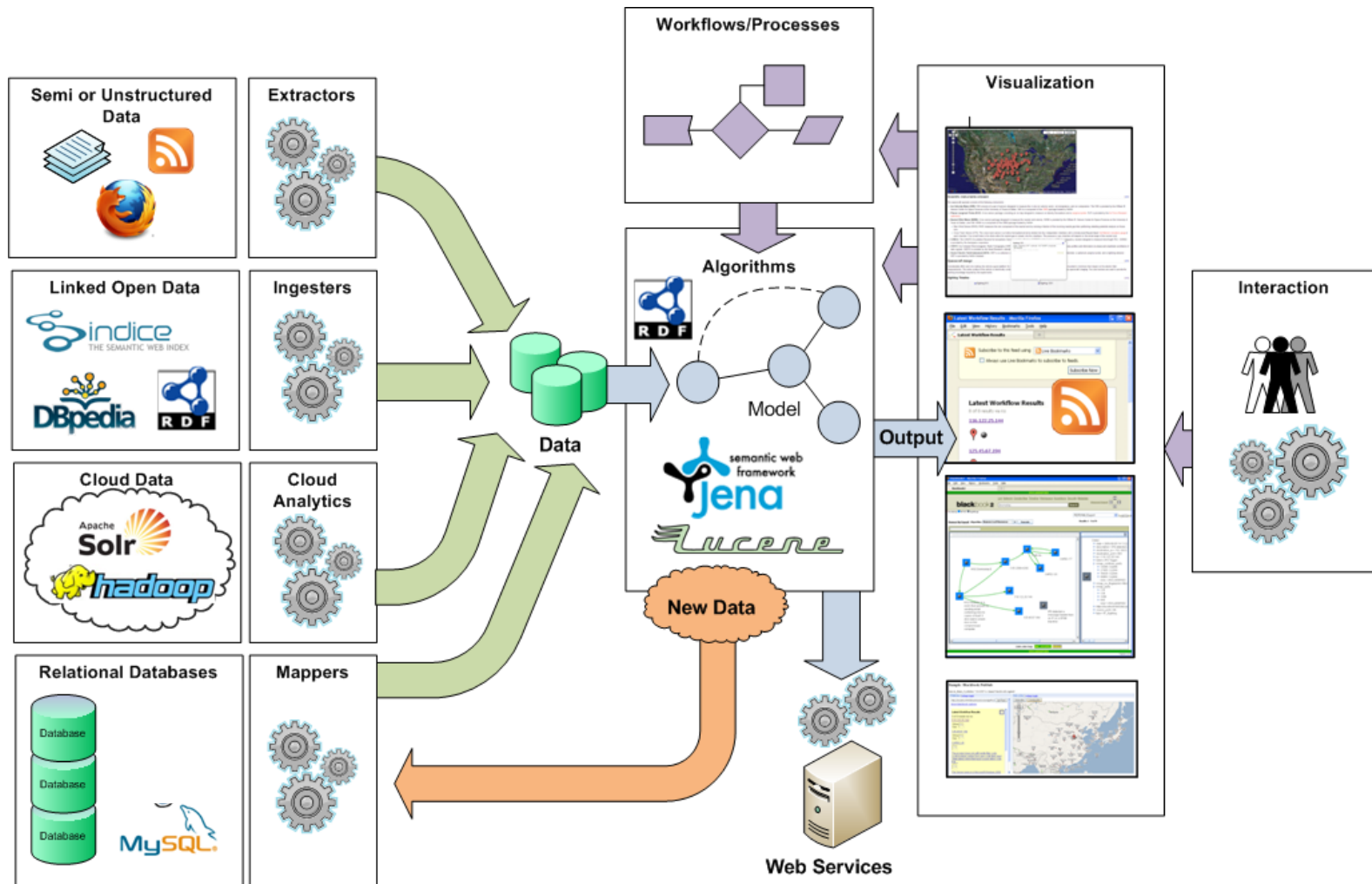
What is Blackbook?

- 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
-

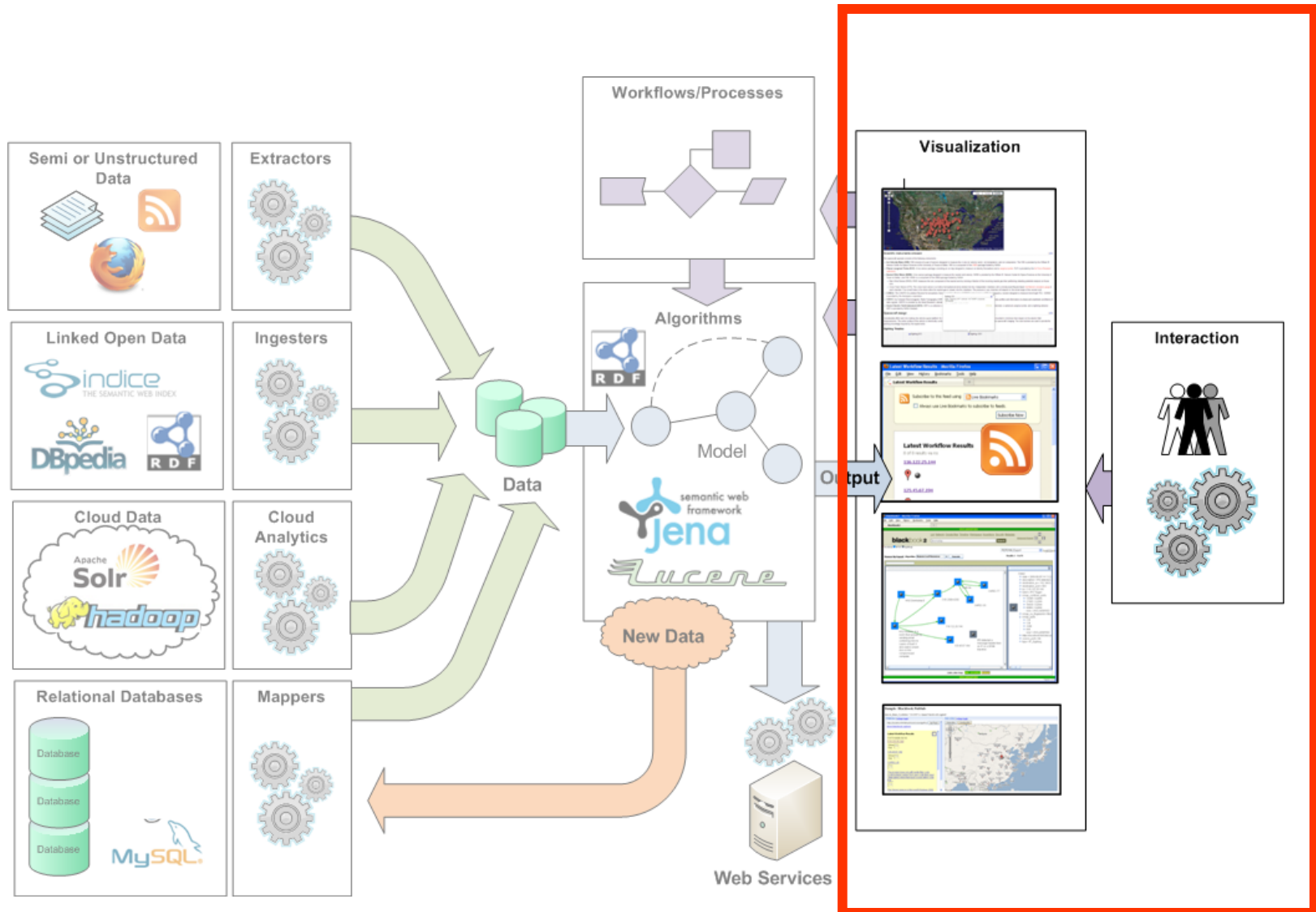
Core Components



Current Capabilities

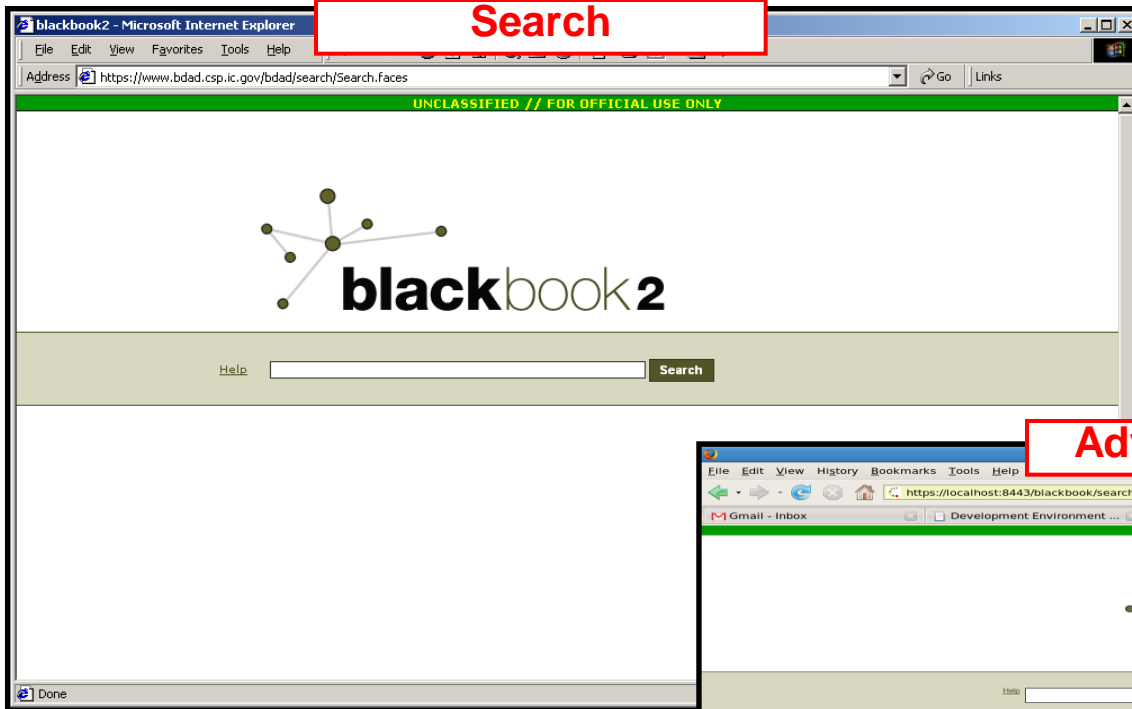


Presentation Tier

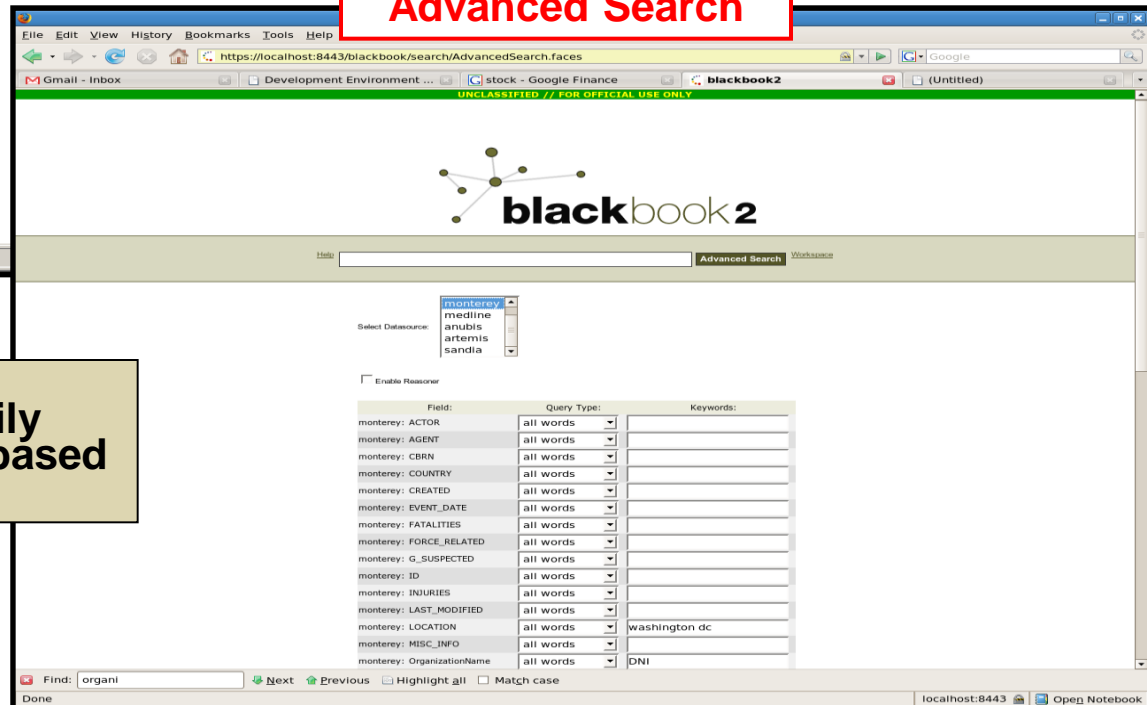


User Interface

Search



Advanced Search



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

User Interface

“Google-like” Results

The screenshot shows the blackbook2 web interface in a Mozilla Firefox browser. The address bar displays the URL `https://localhost:8443/blackbook/results/ListResults.Faces`. The page header includes navigation tabs like 'List', 'Network', 'SpreadsheetResults', 'Timeline', 'Workspace', 'Multi Panel 1', and 'MultiPanelResults2'. A search bar contains the term 'anthrax'. Below the header, there is a list of search results, each with a document icon and a title. The results include:

- Aum Shinrikyo: Once and Future Threat?** - Aum Shinrikyo began its public campaign of terror on June 27, 1994. On that Monday in Matsumoto, a city of 300,000 population 322 kilometers northwest...
- 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 apar...
- The missing pieces** - Al-Qaeda commander Abu Muzab al-Zarqawi needed treatment for a shattered leg that was injured, apparently, during the American bombing raids on Afgha...
- La Victoria** - Suspected National Liberation Army (ELN) guerrillas killed one policeman and injured another policeman and a...
- Sitra** - Arizonans set fire to a store in Sitra, killing a Bangladeshi and injuring another. Shia extremists are suspected.
- Aikimbayev** - Aikimbayev
- Atshabar** - Atshabar

**Network
(Java Applet)**

The screenshot shows the blackbook2 web interface displaying a network diagram. The address bar displays the URL `https://10.90.90.161:8443/blackbook/resul...`. The page header is similar to the previous screenshot, but the search bar contains 'ihhad car'. The network diagram is a complex web of nodes and edges. The nodes represent various entities and events, including:

- Ankara
- Cairo
- The Demise of Radical Islam in Turkey
- Wadh El Hage
- Background: Abu Omar
- Does Bin Laden pose a Threat to Israel?
- Terrorism against Jews by Radical Islamic Organizations and Groups
- The 'Afghan Alumni'
- Arab Veterans of the Afghan War
- ISIS
- man to al-Qaeda
- Ottawa
- Al-Qaeda's
- The Shoe Bomber's World
- Dr. al-Ayman Mohammed Rabie Zawahiri
- attention turns to the other prime suspect
- The MAN BEHIND BIN LADEN: How an Egyptian doctor became a master of terror.
- The Plot How terrorists hatched a simple plan to use planes as bombs.
- Hambali
- Ashraf Rifaat Nabith Henin
- Bold Tracks of Terrorist's Mastermind
- The CEO of al-Qaeda: Khaled Sheikh Mohammed

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

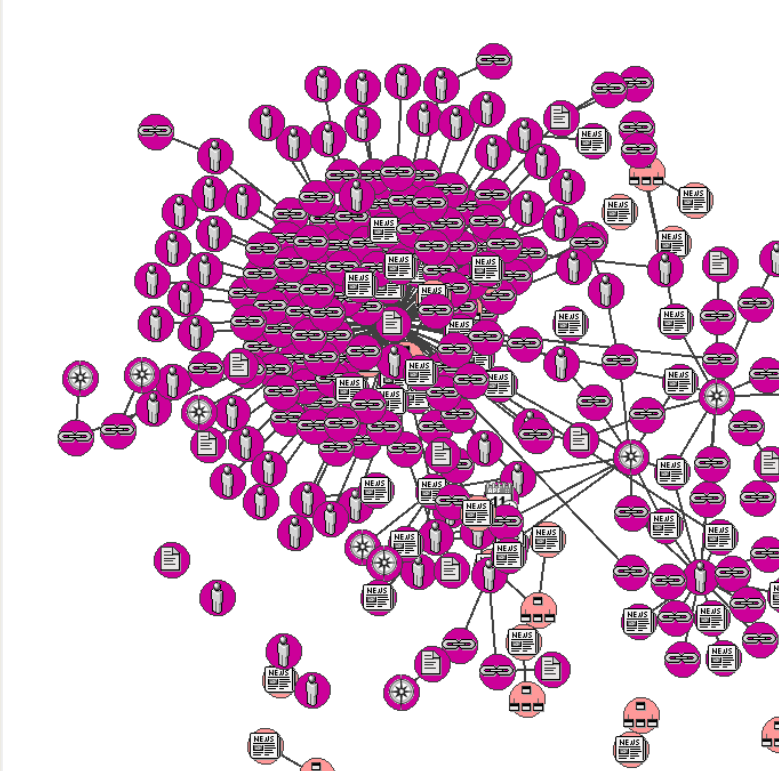
User Interface

Network (AJAX)

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

[monterey](#) [medline](#) [sandia](#) [the911report](#) [anubis](#) RDF Export

Four Eyes Viewer
256 nodes and 253 edges.



Appearance Settings:

Width:	<input type="text" value="100"/>	<input type="text" value="1200"/>	<input type="text" value="680"/>
Height:	<input type="text" value="100"/>	<input type="text" value="1200"/>	<input type="text" value="680"/>
Node Size:	<input type="text" value="1"/>	<input type="text" value="20"/>	<input type="text" value="18"/>
Maximum number of nodes to render client side:	<input type="text" value="0"/>	<input type="text" value="2000"/>	<input type="text" value="118"/>

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

Server Side Layout Settings:

Maximum Time Allowed (seconds):	<input type="text" value="1"/>	<input type="text" value="30"/>	<input type="text" value="5"/>
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Interaction Settings:

Distance to farthest affected node:	<input type="text" value="1"/>	<input type="text" value="100"/>	<input type="text" value="100"/>
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Other Settings

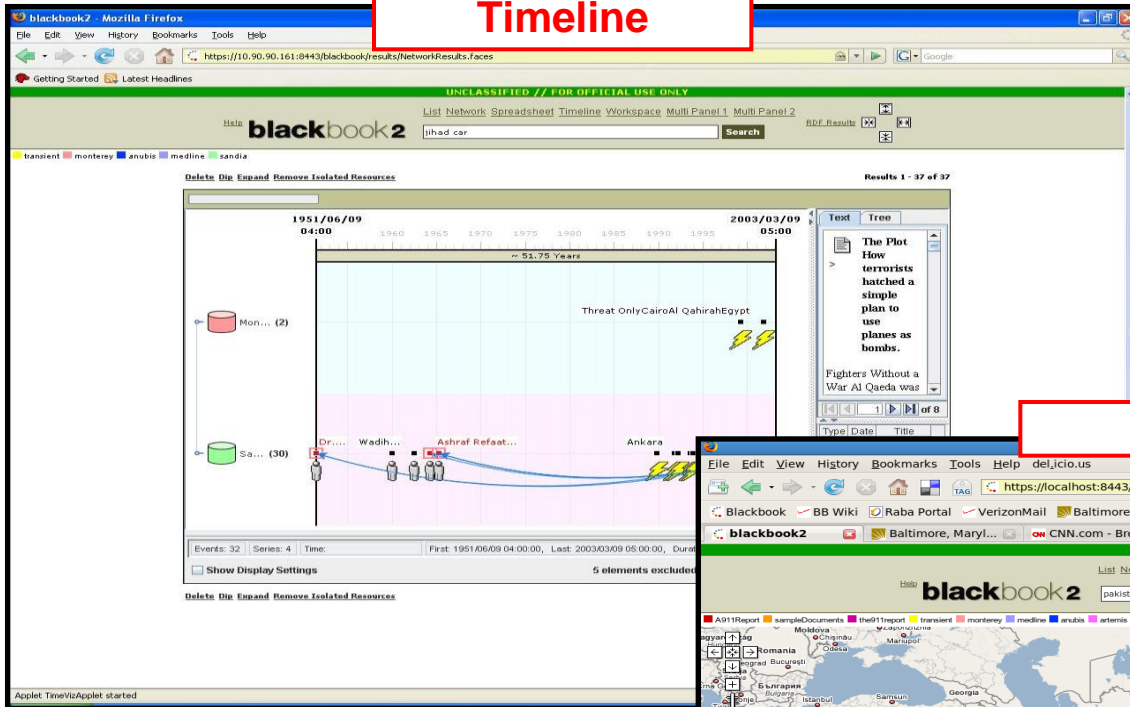
Use Blackbook Data.
Select a graph to load:

Level of Detail:

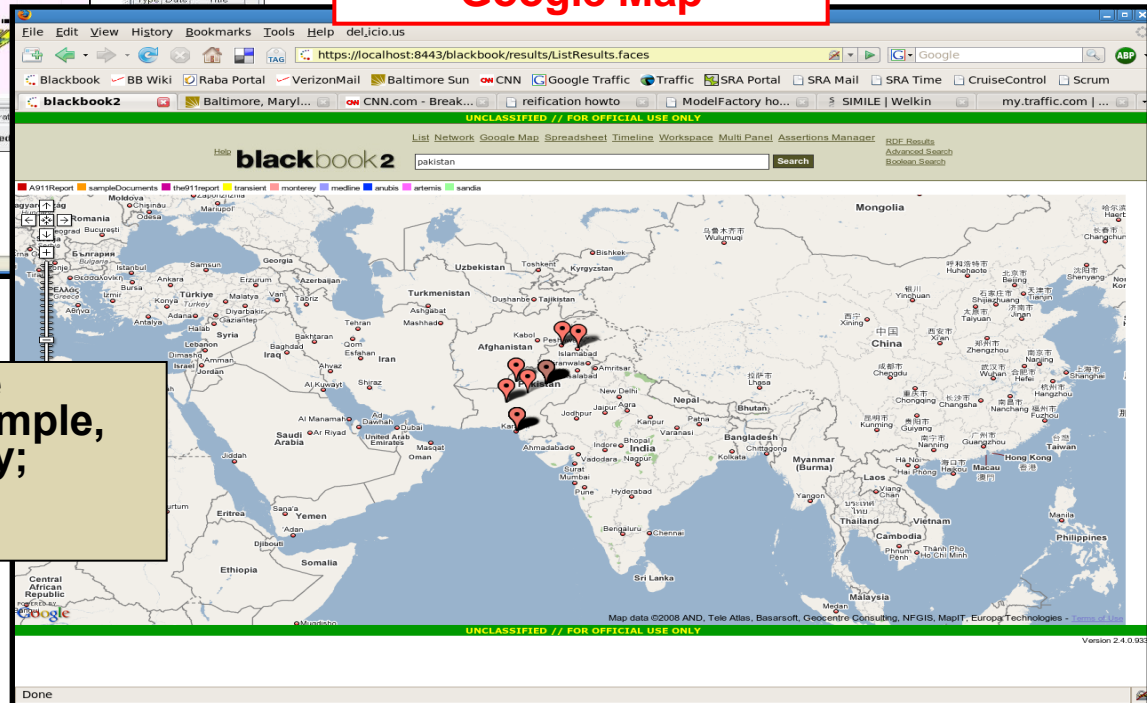
An AJAX-based network visualization, called "WiGi", optimizes client-server processing for large graphs. Planned to be released as early as Blackbook v3.0 (Nov 2009)

User Interface

Timeline



Google Map



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 the iGoogle Developer sandbox interface. At the top, there's a navigation bar with links like 'Web', 'Images', 'Maps', 'News', 'Shopping', 'Gmail', and 'more'. Below that is the Google search bar with the text 'Welcome to the iGoogle Developer sandbox'. The main content area is divided into several sections:

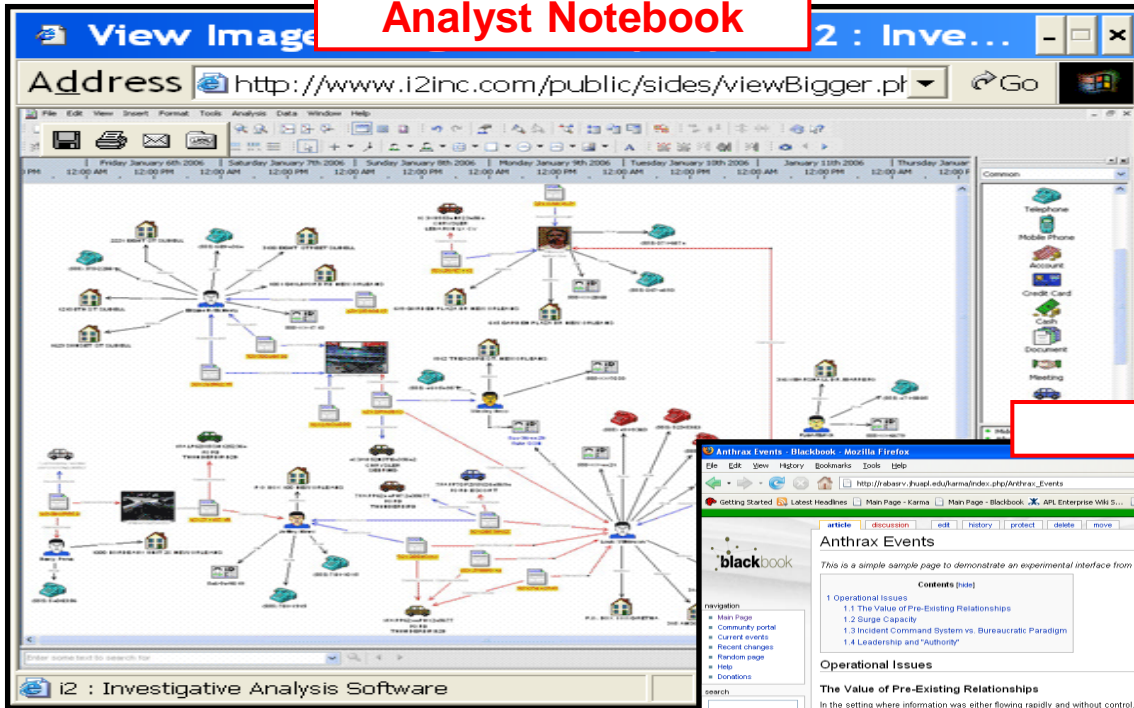
- Home:** A sidebar with links to 'Weather', 'My Entities', 'Multiple SetPref...', and 'My Gadgets'. Below this is a 'Chat' section with a search bar and a user 'Lance Byrd'.
- My Entities:** A widget with input fields for 'rss_url' (http://blackbook2/rss/), 'entity_list' (vessel1,vessel2,vessel3), 'process_def' (1), and 'base_wiki_url' (http://blackbook2/wiki). It has 'Save' and 'Cancel' buttons. Below the fields is a 'HotList' section with a news snippet about an Indian navy sinking a suspected pirate ship.
- Weather:** Two weather widgets. The first is for 'Halethorpe, MD' showing a current temperature of 36°F and a forecast for the next four days. The second is for 'Kill Devil Hills, NC' showing a current temperature of 37°F and a forecast for the next four days.
- My Gadgets:** A section for managing gadgets. It shows a list of gadgets with columns for 'Gadget', 'Inlined', and 'Cached'. Below this is an 'Add a gadget:' section with a text input field and an 'Add' button.
- Multiple SetPref - Iframe:** A section with a text area containing the instruction: 'Each page load should increment the value of each usepref. Reload page and make sure each usepref is incremented.'

At the bottom of the interface, 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



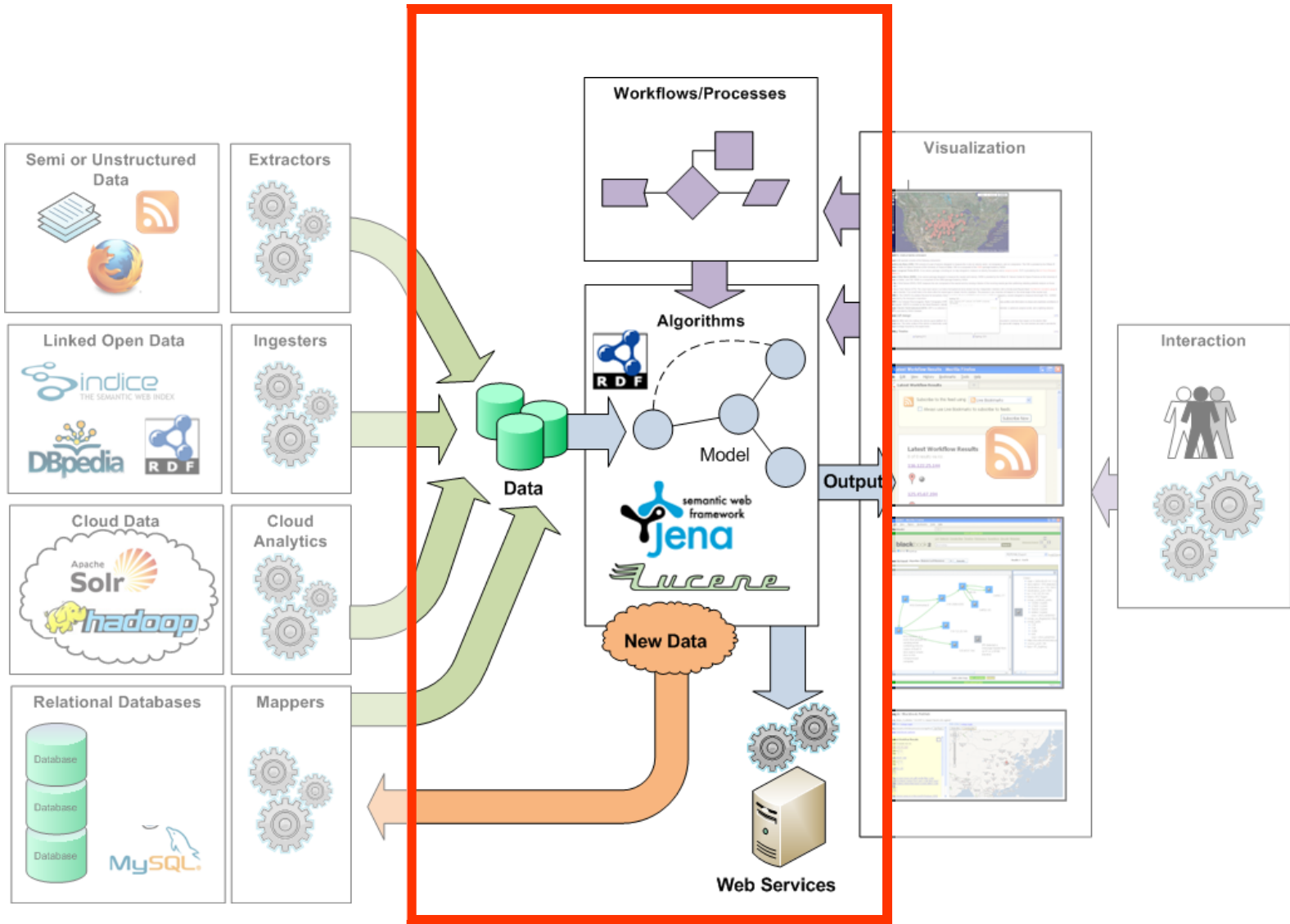
Mediawiki

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-points, and a section on "The Value of Pre-Existing Relationships" with a paragraph of text. Below the text is a diagram showing relationships between names and locations. The diagram has 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. Below the diagram is a table with columns for "Object", "Type", and "Properties".

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

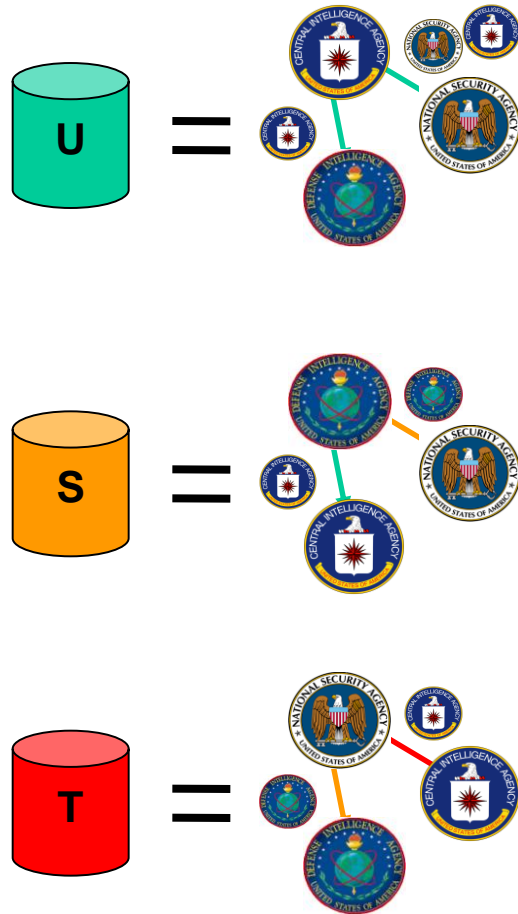
Blackbook is developing a framework called "Aqueduct", allowing interoperability between ozone widgets and wikis.

Middle Tier

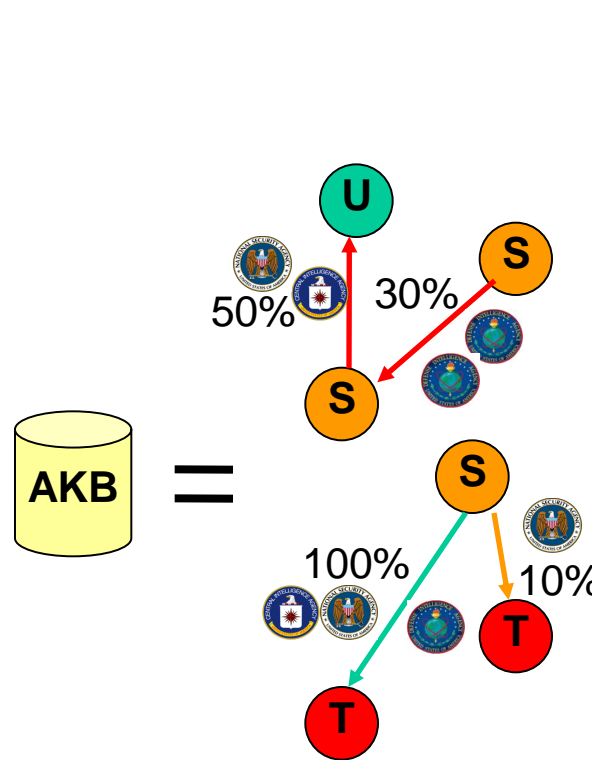


Security, Confidence, Affiliation

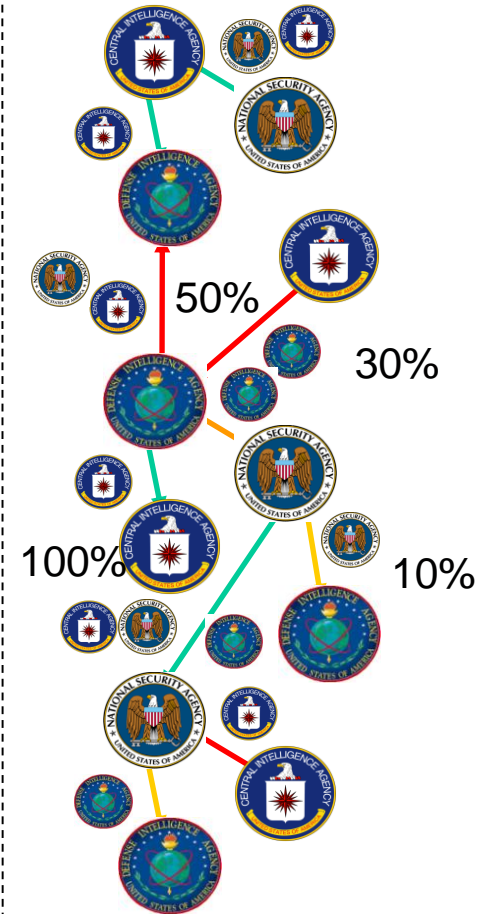
Original Datasource



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

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

Allows analysts to upload their own ontology

User Interface

Workflow

Algorithms

- Dip
- Expand
- Jena Keyword
- Lucene Keyword
- Materialize

Process Diagram

Refresh Clear

MyNewProcess Save

```
graph LR; A[1. Lucene Keyword] --> B[2. Materialize]; B --> C[3. Dip]; B --> D[0. Expand];
```

Process Flow

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

Refresh

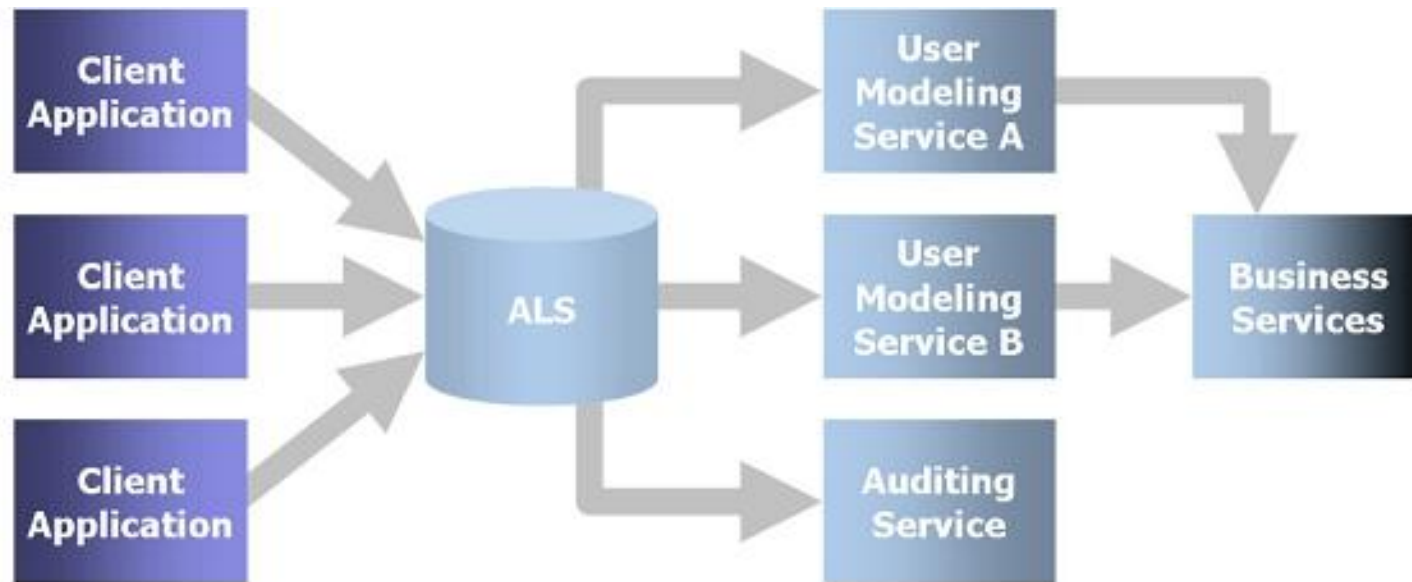
Refresh Clear

MyNewProcess Save

Done Internet

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

Analysis Log Service



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

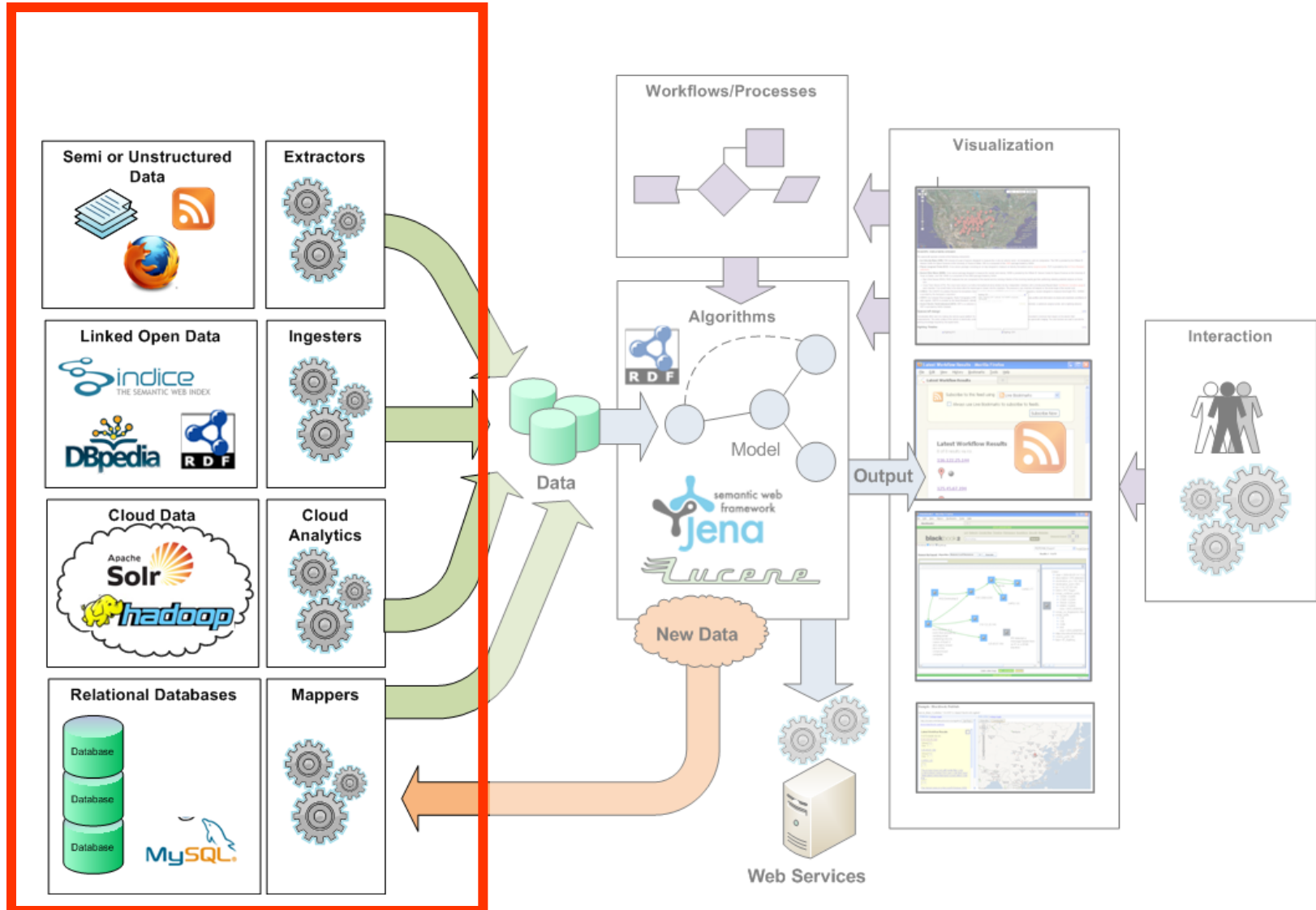
The ALEs are transmitted to the ALS.

The ALS stores the ALEs received from the client applications.

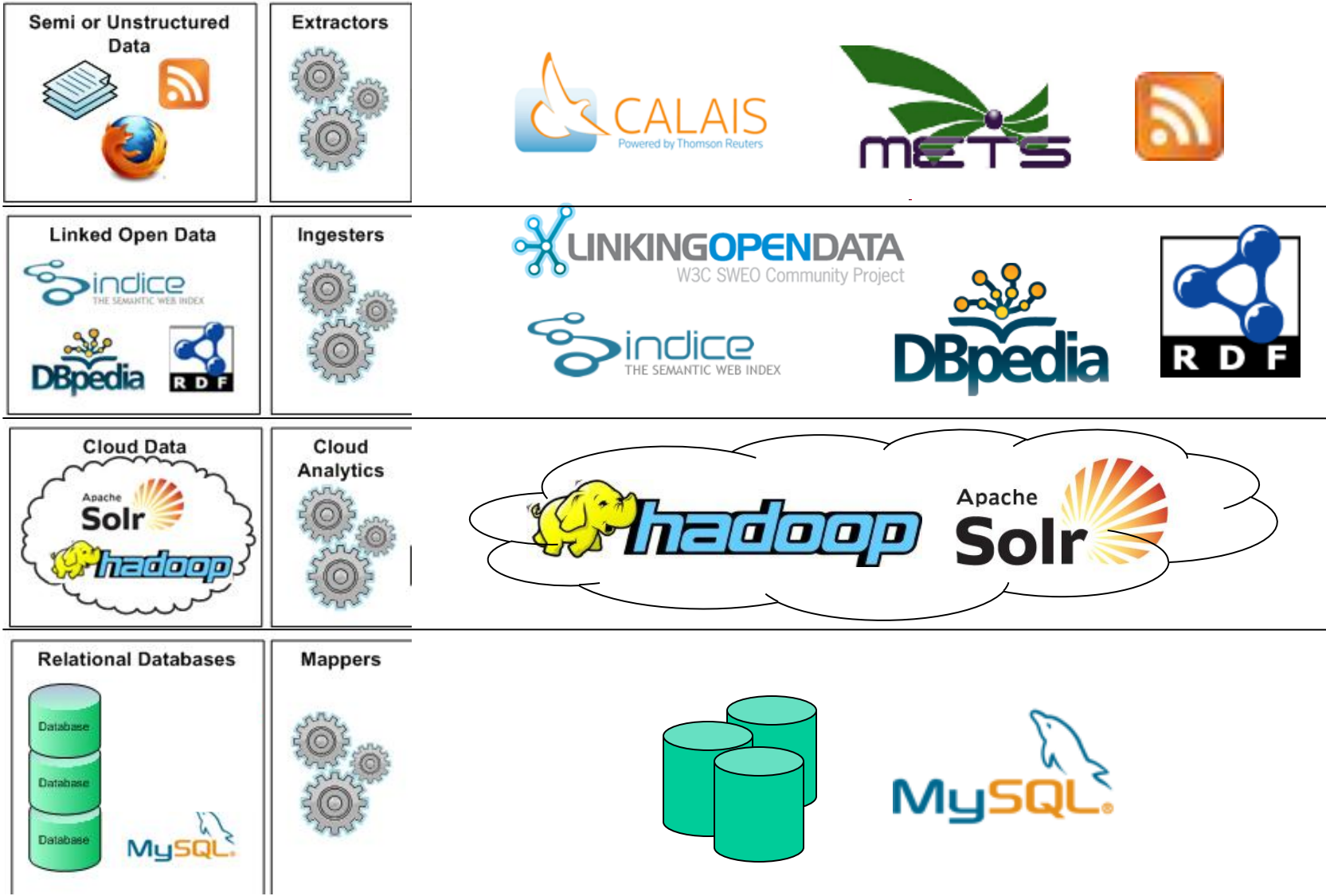
Services interested in using ALEs can query the ALS for ALEs.

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

Data Tier



Data Integration Points

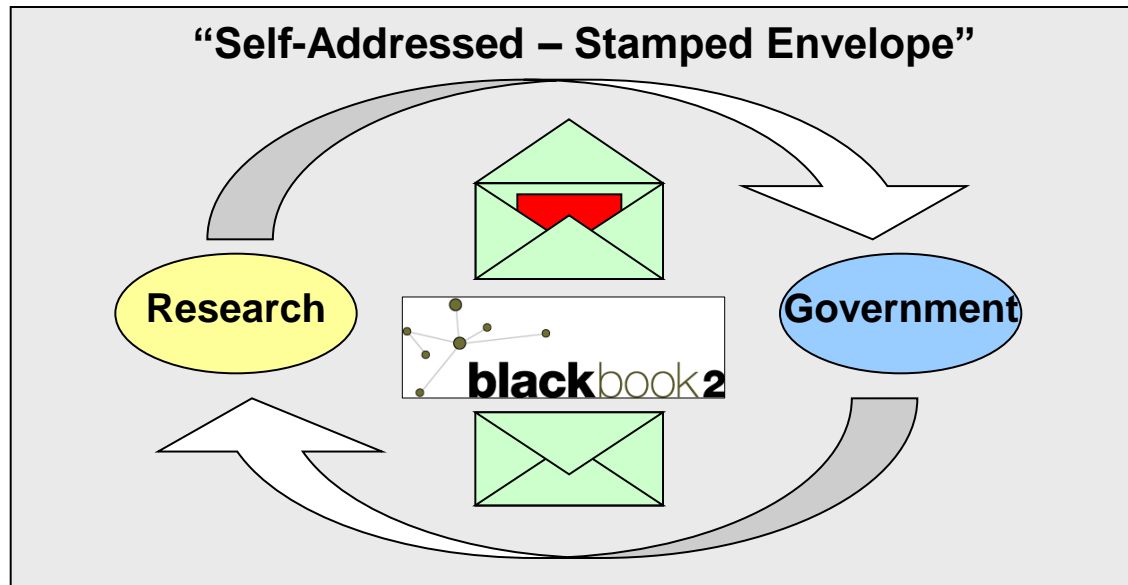


Future Capabilities

- **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)
-

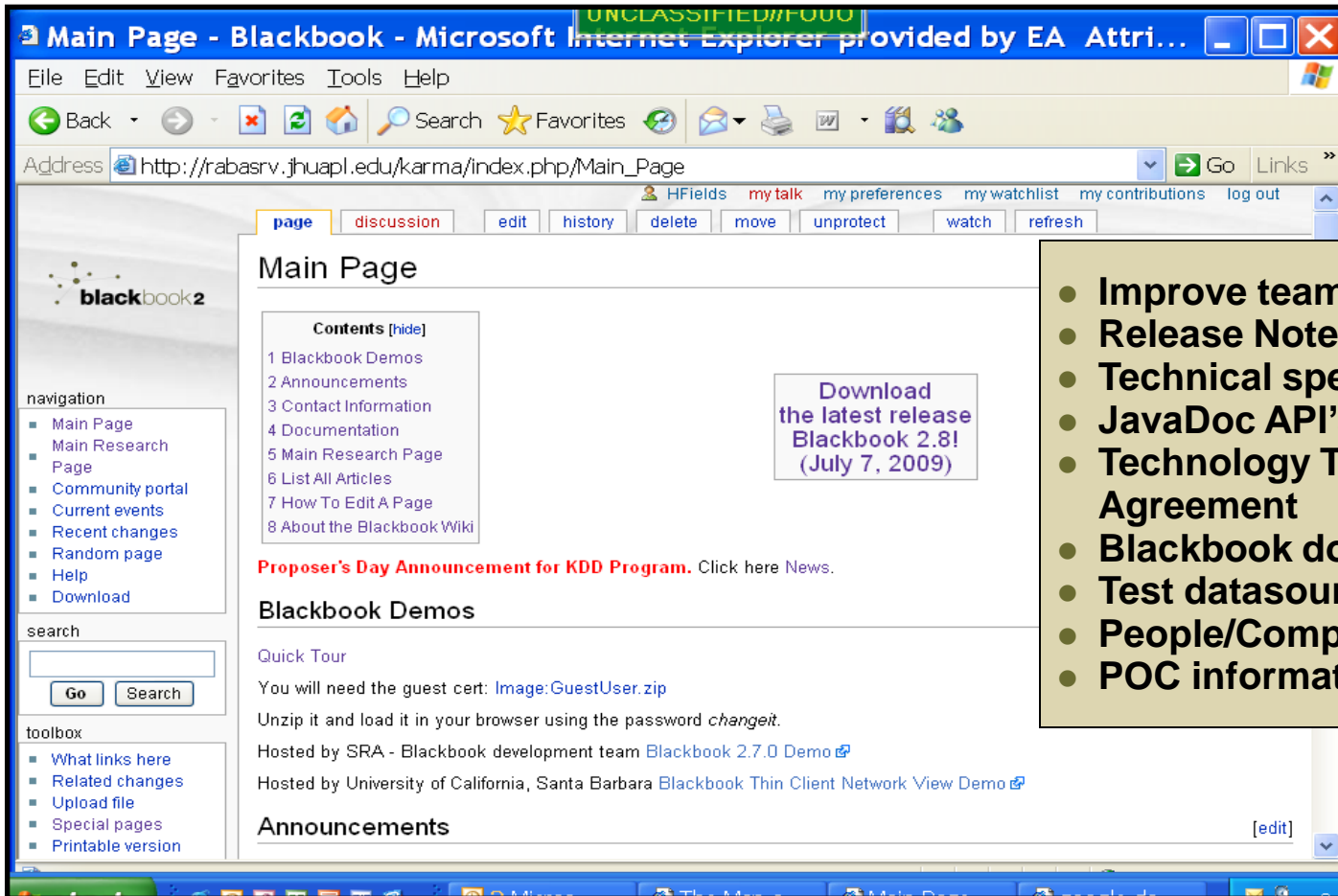
Technology Transfer

- 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
