

<https://www.i2b2.org/software>

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i2b2: Informatics for Integrating Biology & the Bedside - Windows Internet Explorer

https://www.i2b2.org/software/index.html


File Edit View Favorites Tools Help

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i2b2 i2b2: Informatics for Integrating Biology & the Bedside

Software

- i2b2 Software
- Under Development
- Contributed
- Guestbook *
- Statistics *



i2b2 Software

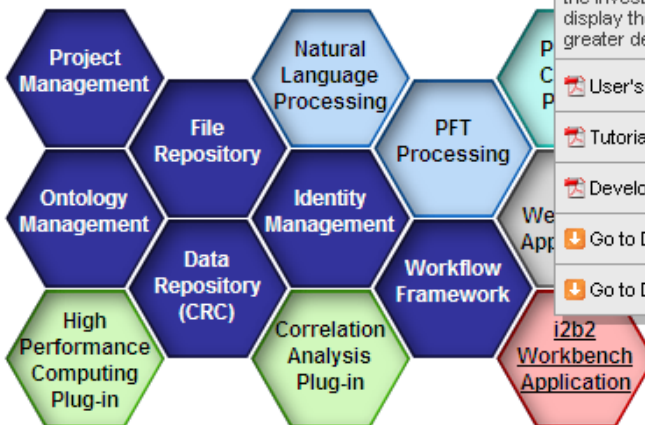
Use the links below to access the software repository where you will find the project source code, executable files, XSD files, PDF files and more.

Web

i2b2 Web Client Launch the AJAX web client in your web browser

Documentation

Hover over the modules below for the latest documentation:



i2b2 Workbench

The i2b2 Workbench is a collection of client-side components designed as Eclipse-based java plug-ins that communicate with i2b2 Cells and allow the investigator to query, analyze, and display the data of the hive, generally in greater depth than the web client.

- User's Guide
- Tutorial Document
- Developer's Guide
- Go to Download Client
- Go to Download Source

i2b2 Workbench Application

Key

- i2b2 Core Cell
- i2b2 Optional Cell
- Workbench/Plug-in
- Web Client
- CRC Plug-in

https://www.i2b2.org/software/index.html#

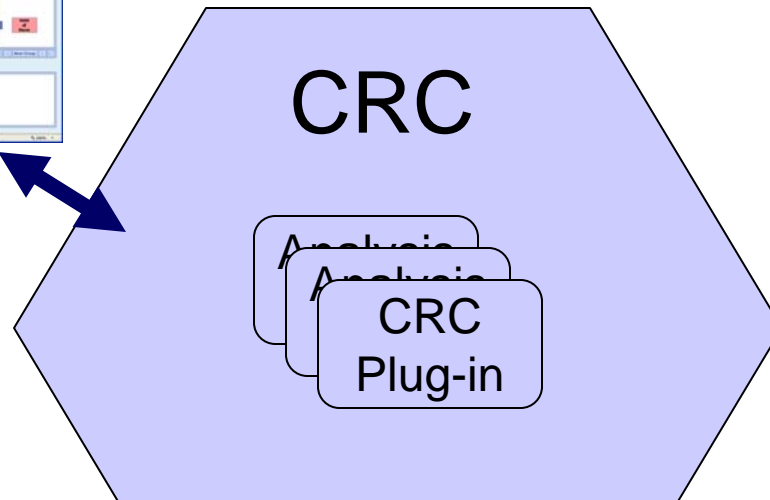
New Features in 1.4

- CRC Server-side Analysis plug-ins
- Patient breakdowns can be viewed for children of any parent term
- Role based access and compete patient query auditing
- Obfuscation of aggregate patient numbers for certain roles
- Security tokens with limited lifetimes replace password
- Full support of Patient Identifier encryption management
- Paging of Patient Data Object
- Export Tools – raw and patient oriented
- Eclipse Plug-in distribution and install automation
- Replacement of Gridsphere with web services and AJAX client
- Microsoft Active Directory integration

CRC Server-side Analysis Plug-ins



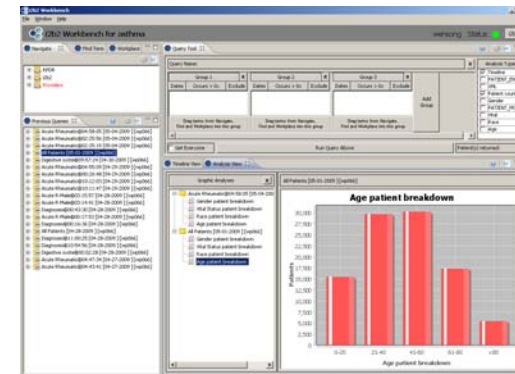
Client



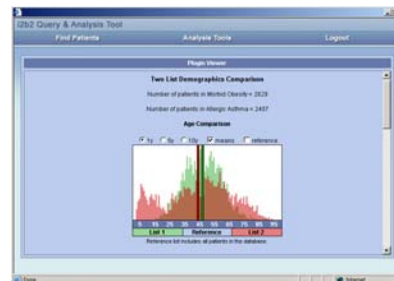
Run on server of CRC Patient Database
Use same input and output tables as regular queries
Started from client or as scheduled daemon
Independently developed programs
Accommodates any command-line or remotely executed program

CRC Server-side Analysis Plug-ins

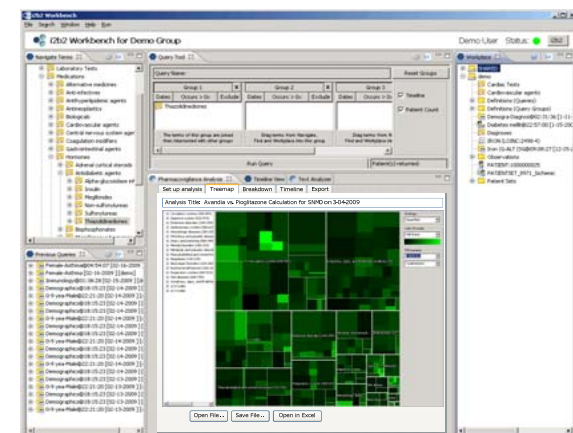
- Breakdowns of patient attributes



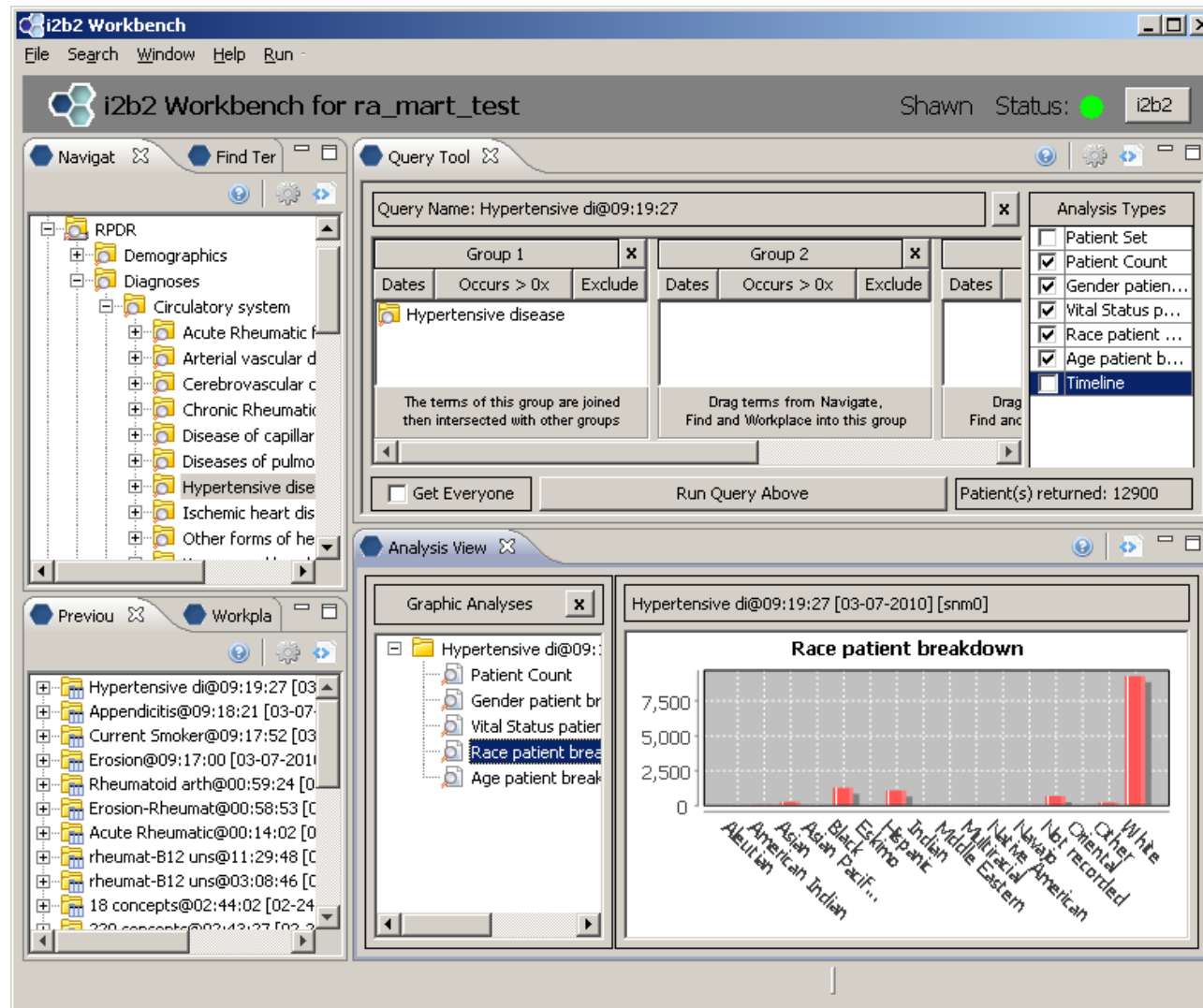
- Two group comparisons



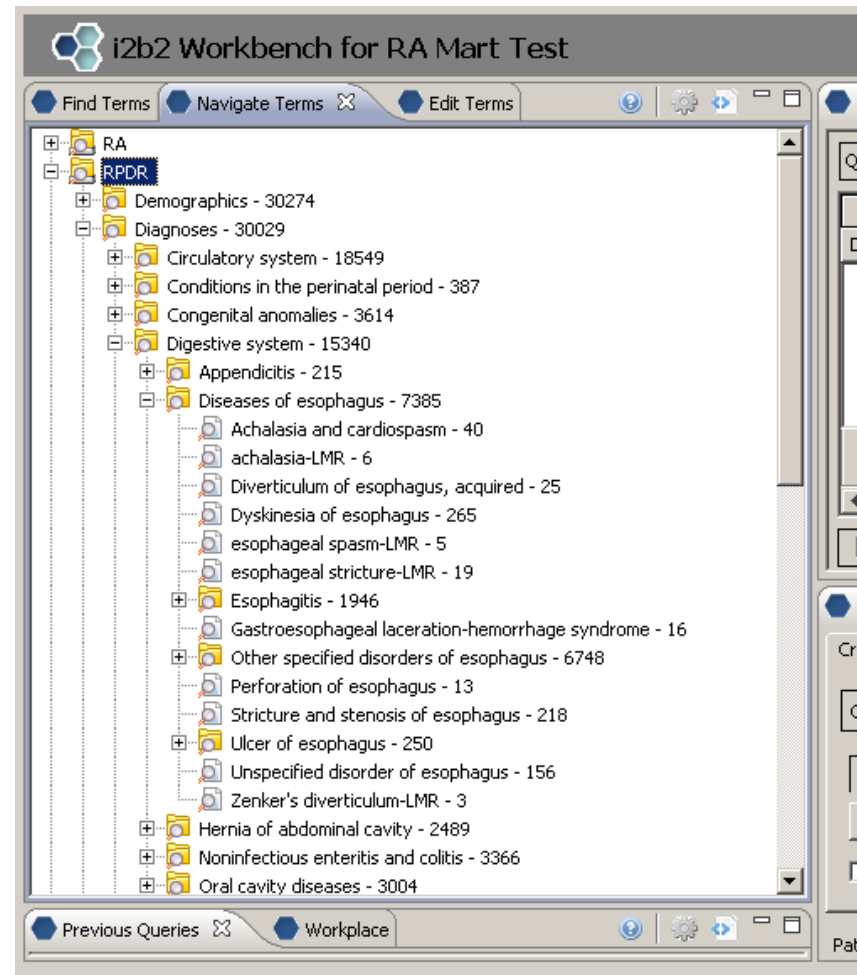
- Many potential future analyses offerings



Patient Counts Plug-in - Patient breakdowns can be viewed for children of any parent term



Patient Counts Plug-in - Patient breakdowns can be viewed for children of any parent term



User Roles

- Each user has at least two roles per project, a role that determines data access rights, and a role that determines project management rights. Other roles may be freely created which are delivered by the PM cell web service
- Implementation of access restrictions for custom roles can be checked in key locations of optional cells.

The screenshot displays the 'i2b2 Query & Analysis Tool' interface. The top navigation bar includes links for 'Find Patients', 'Admin', 'Analysis Tools', 'Message Log', 'Help', and 'Logout'. On the left, the 'PM Navigation' pane shows a tree structure with 'Hive' (Domains, Cells, Global Params) and 'Projects' (i2b2demodata, Cells, Params, Users, Manage Users). The main content area is titled 'Project > "i2b2demodata" > Users'. It features a table with columns 'user_name' and 'roles'. The user 'mem61' is selected, and a modal window shows the role configuration. The roles are: ADMIN (unchecked), MANAGER (unchecked), USER (checked), DATA_PROT (unchecked), DATA_DEID (unchecked), DATA_LDS (unchecked), DATA_AGG (checked), and DATA_OBFSC (unchecked). The modal includes 'Save Updates', 'Save', and 'Cancel' buttons.

user_name	roles
mem61	<input type="checkbox"/> ADMIN <input type="checkbox"/> MANAGER <input checked="" type="checkbox"/> USER <input type="checkbox"/> DATA_PROT <input type="checkbox"/> DATA_DEID <input type="checkbox"/> DATA_LDS <input checked="" type="checkbox"/> DATA_AGG <input type="checkbox"/> DATA_OBFSC

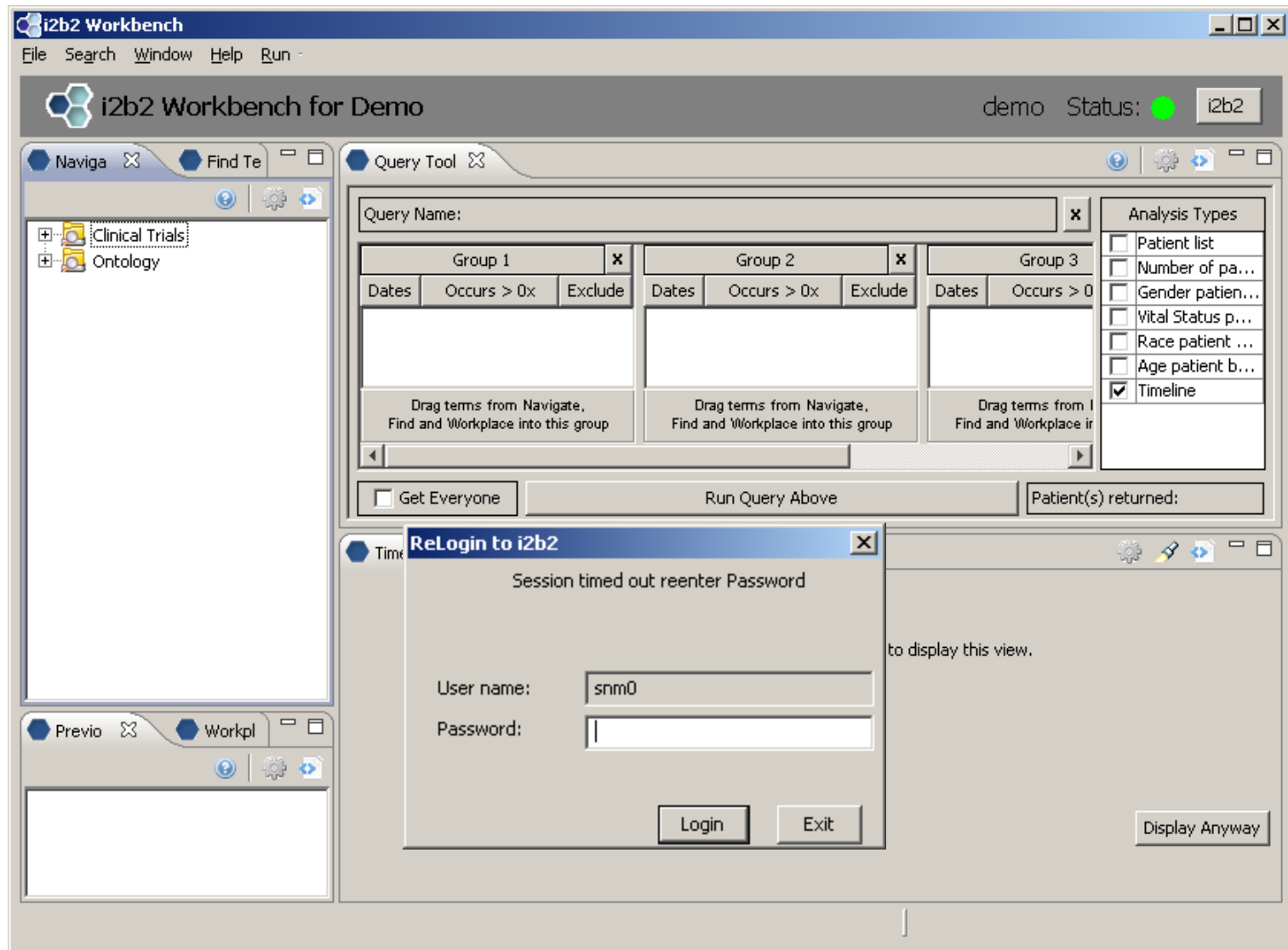
Obfuscation of aggregate results

The screenshot displays the i2b2 Workbench for ra_mart_test interface. The top menu bar includes File, Search, Window, Help, and Run. The status bar shows 'general user 5' and 'Status: green i2b2'.

The main workspace is divided into several panes:

- Left Pane (Tree View):** Shows a hierarchical structure of data categories. Under 'RA', 'RPDR' is expanded, showing 'Demographics' and 'Diagnoses'. Under 'Diagnoses', 'Circulatory system' is expanded, listing various diseases including 'Acute Rheumatic fever'.
- Query Tool Pane:** Contains a 'Query Name' field set to 'Acute Rheumatic@10:43:53'. Below it are three groups (Group 1, Group 2, Group 3) for defining query criteria. Group 1 contains 'Acute Rheumatic fever'. The 'Analysis Types' section on the right includes checkboxes for 'Patient Set', 'Patient Count' (checked), 'Gender patient...', 'Vital Status p...', 'Race patient ...', 'Age patient b...', and 'Timeline' (checked). At the bottom, there are buttons for 'Get Everyone', 'Run Query Above', and a status indicator 'Patient(s) returned: ~206'.
- Workplace Pane:** Shows a list of query results. The first result is 'Acute Rheumatic@10:43:53 [03-10-20...]' with a sub-entry 'Results of Acute Rheumatic@10:4...'. Below this is a list of 'Patient Count (Obfuscated)' results for various time periods, all showing a count of 0.
- Timeline View Pane:** Displays a message: 'You don't have all the required privileges to display this view.' with a 'Display Anyway' button.

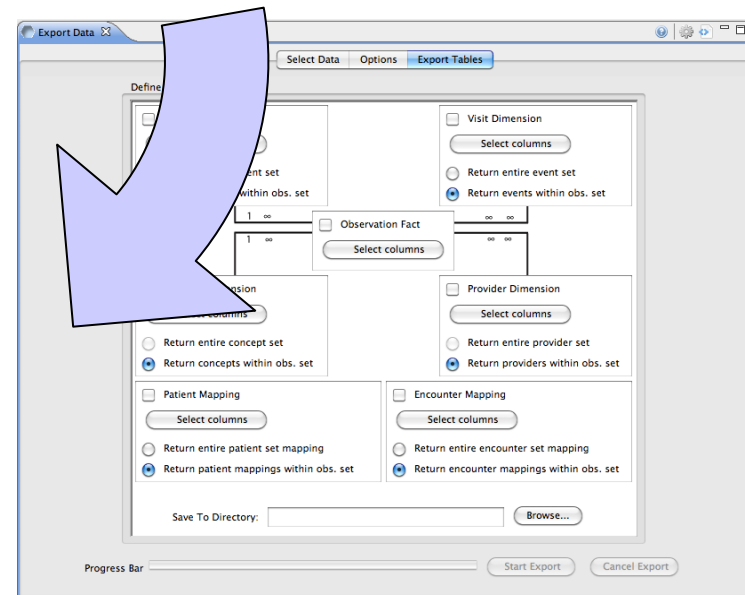
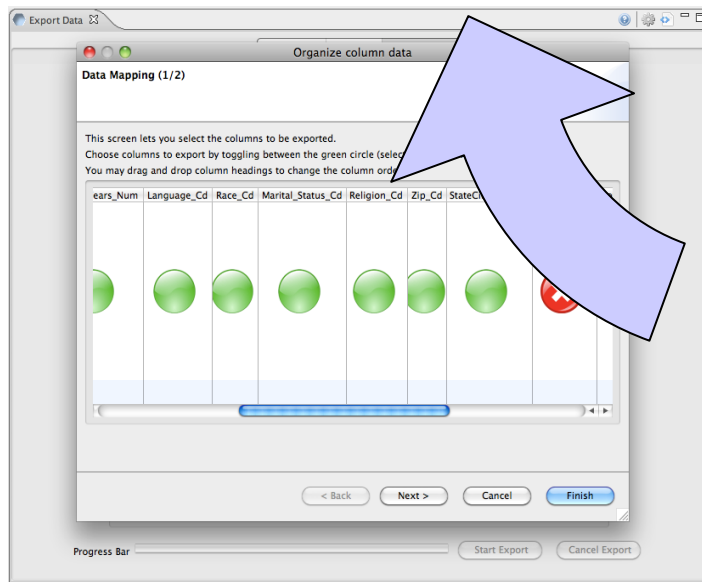
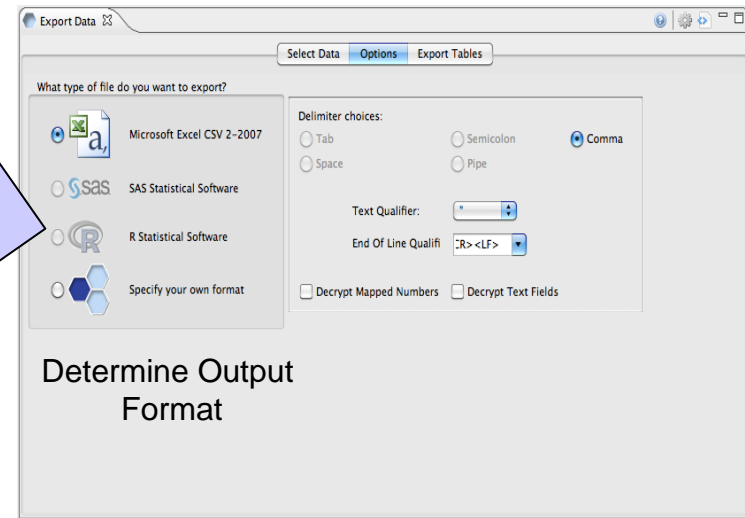
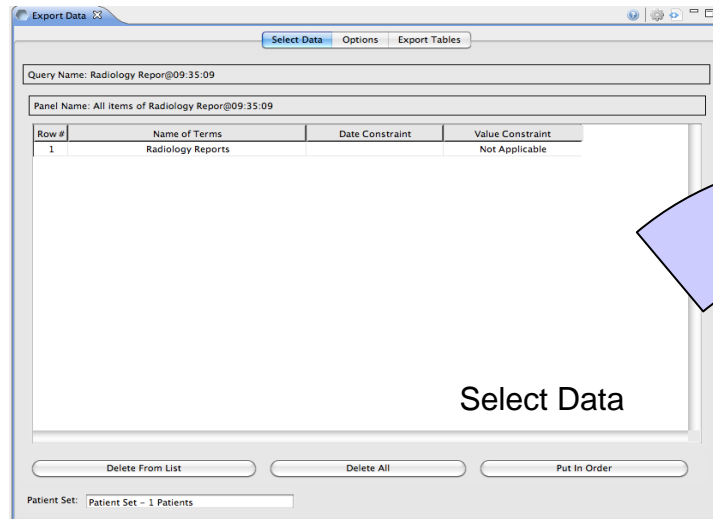
Security tokens and timeout of logon



Session Token

- Saved in Database
- Timeout set by client
- <security>
 - <domain>HarvardDemo</domain>
 - <username>i2b2</username>
 - <password token_ms_timeout="1800000"
 - is_token="true">SessionKey:CLCD6cVHLvXEOb3kuyHy</pas
 - sword></security>

Exporting Data and paging of Patient Data Object



New PM in webclient

■ Adding and Deleting Projects

i2b2 Query & Analysis Tool Find Patients | Admin | Analysis Tools | Message Log | Help | Logout

PM Navigation

- [-] Hive
 - Domains
 - Cells
 - Global Params
- [-] Projects
 - [-] i2b2demodata
 - Cells
 - Params
 - Users
 - Manage Users

Project > "i2b2demodata"

Please select which project configuration screen you want to access.

Project Id:

Project Name:

Project Wiki:

Project Key:

Project Description:

Project Path:

New PM in webclient

■ Adding and Deleting Users



The screenshot displays the i2b2 Query & Analysis Tool interface. The top navigation bar includes links for Find Patients, Admin, Analysis Tools, Message Log, Help, and Logout. The left sidebar, titled PM Navigation, shows a tree structure with Hive, Projects, and Manage Users. The main content area, titled Manage Users, contains a table with user information and three buttons: Save Updates, Delete, and Add New.

full_name	user_name	email	password
i2b2 Admin	i2b2	a@i2b2.org	*****
OBFS_SERVICE_ACCOUNT	OBFS_SERVICE_ACCOUNT	none@i2b2.org	*****

Save Updates Delete Add New

New PM in webclient

■ Adding and Deleting Cells

i2b2 Query & Analysis Tool Find Patients | Admin | Analysis Tools | Message Log | Help | Logout

PM Navigation

- Hive
 - Domains
 - Cells
 - Global Params
- Projects
- Manage Users

Hive > Cells

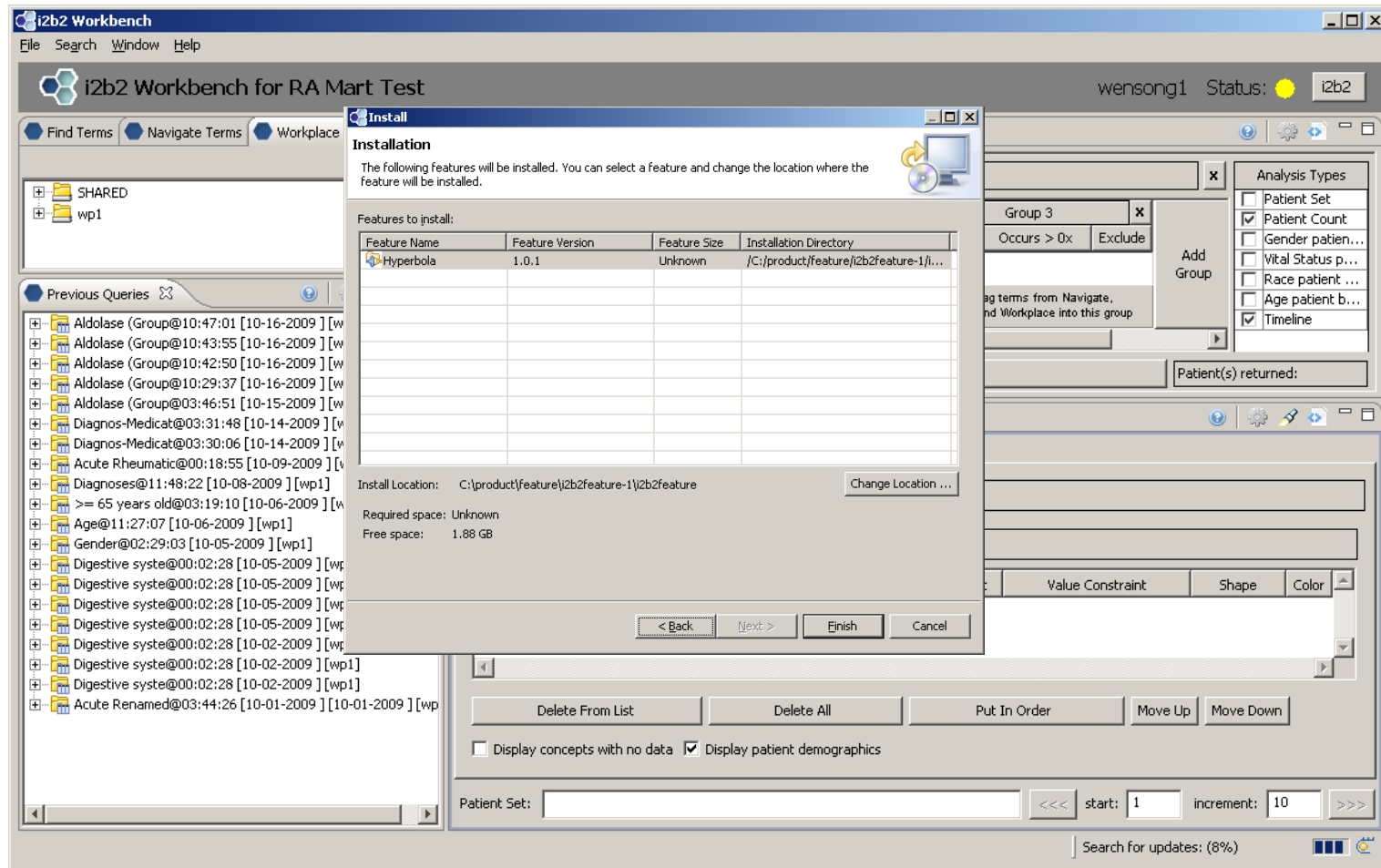
id	name	method	url
CRC	Data Repository	REST	http://192.168.242.130:8080/i2b2/rest/QueryToolService/
ONT	Ontology Cell	REST	http://192.168.242.130:8080/i2b2/rest/OntologyService/
WORK	Workplace Cell	REST	http://192.168.242.130:8080/i2b2/rest/WorkplaceService/
FRC	File Repository	SOAP	http://192.168.242.130:8080/i2b2/services/FRService/

Save Updates Delete Add New

Active Directory Setup

- Can be Global for everyone or specific per user
- Set in User Params or Hive Params
- | Param_name_cd | VALUE |
|-----------------------|--------------------------------------|
| authentication_method | NTLM |
| domain | {Your pdc domain} |
| domain_controller | {Your ip/host for domain controller} |

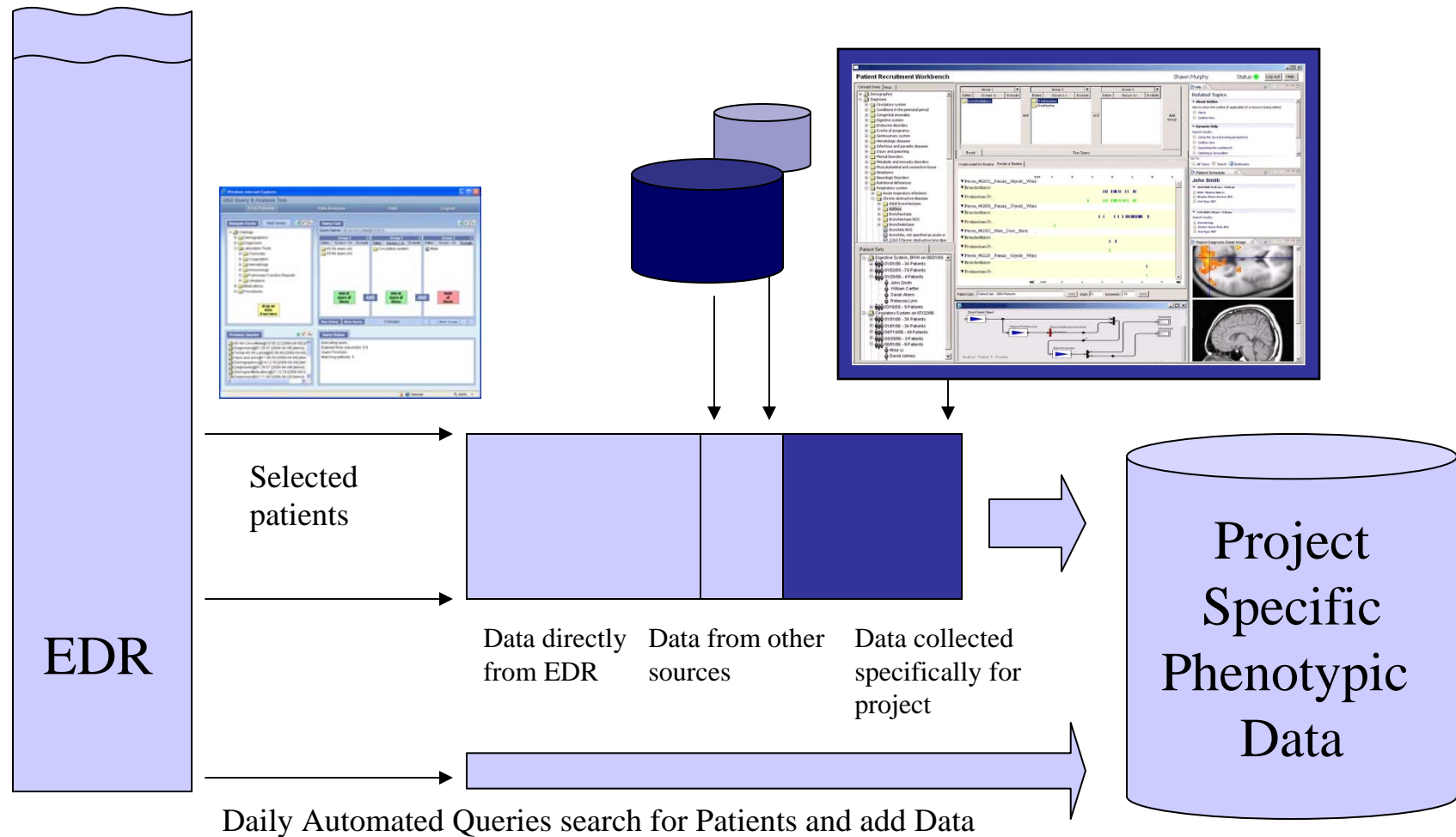
Eclipse plug-in distribution with automated upload and install



Towards completion of Version 1 = August 2010

- Enterprise features
 - Data mart request form
- Note annotation
- Further examples of CRC analyses plug-in support
- Terminology support
 - Small, hand created terminologies
 - Large, enterprise supported terminologies
- Fully expressive data model
 - Queries within other dimensions
 - Same instance and visit queries
 - Patient sets within queries and queries within queries
- Derived values
 - From natural language processing
 - Support for temporal queries

Set of patients is selected through Enterprise Repository and data is gathered into a data mart



Data mart request form

i2b2 Query & Analysis Tool Find Patients | Admin | Analysis Tools | Message Log | Help | Logout

Navigate Terms Find Terms

- RA
- RPDR
- test

Workplace

- lcp5
- SHARED

Project Request Specify Data View Results Plugin Help

Drop a Patient Set and a Concept (Ontology Term) into the input boxes below, enter in the approval message and select the users and then click the "Submit Request" tab to submit the request and get a confirmation number..

Select approval:

Pick users:

User	Data Role	Admin Role
Mike Mendis	<input type="text" value="None"/>	<input type="text" value="None"/>
Shawn Murphy	<input type="text" value="None"/>	<input type="text" value="None"/>
Vivian Gainer	<input type="text" value="None"/>	<input type="text" value="None"/>

Identify cases:

Click a Patient Set to remove it from the list.

Exclude these patients from the cases:

Identify controls:

Exclude these patients from the controls:

Identify Concepts to be Included:

Previous Queries

- Radiology Repor@09:35:09 [3-8-2010] [lcp5]
- Erosions@09:34:46 [3-8-2010] [lcp5]
- Digestive syste@00:02:28 [2-24-2010] [lcp5]
- Digestive syste@00:02:28 [2-24-2010] [lcp5]
- Circulatory sys@00:42:00 [2-24-2010] [lcp5]
- Digestive syste@00:02:28 [2-24-2010] [lcp5]

Plugins

Detailed List View Category: ALL

- Project Request**
This plugin is used to generate a request for a new project based on concepts, patients and sets..
- Demographics (1 Patient Set) - Simple Counts**
This plugin displays a demographic break-down of a Patient Set.

Note annotation

The screenshot displays the i2b2 Workbench for RA_ProdTest interface. The top menu bar includes File, Search, Window, Help, and Run. The main window is titled "i2b2 Workbench for RA_ProdTest" and shows the user "lori" with a status of "green" and the application "i2b2".

The interface is divided into several panes:

- Find Terms / Navigate Terms / Edit Terms:** A tree view on the left showing a hierarchy of medical terms. Under "Diseases", "RA" is selected. Other terms include Chart Reviews, Erosions, Labs, Medications, Notes, RMP Case Control, Smoking, Current Smoker, Denies Smoking, and Never Smoked.
- Query Tool / Annotator:** The main workspace for annotation. It includes a "Workflow" tab, "Source documents" section, and a "Selected document" area. The "Source documents" section shows a "Patient Set - ~568 Patients" and a "Document type" list with "LMR Notes" and "Discharge Summaries". The "Selected document" area is currently empty.
- Document info:** A panel on the right showing "Document ID:" and a "Show all info" checkbox. Below it is a table with "Field Name" and "Value" columns.
- 4. Drag the labels here:** A section for selecting labels. It includes a "Voting" section with radio buttons for "No Vote", "Current Smoker" (selected), and "Denies Smoking". There is also a "Confidence" slider and a "Comments" text area.
- 3a. Select filter [OPTIONAL]:** A section for selecting filters. It includes a checkbox for "Enable source documents filter" and a "Settings..." button.
- 3b. Drag "special" concept here [OPTIONAL]:** A section for selecting special concepts. The "RA" concept is currently selected.
- Search:** A section for searching documents. It includes a "Find:" text box, a "Clear" button, and checkboxes for "Match case" and "Regex Capt. group #:". The "Regex Capt. group #" is set to "0".
- Previous Queries / Workplace:** A panel at the bottom showing a list of previous queries. The "Patient Set - ~568 Patients" query is selected.
- Message:** A log at the bottom showing messages. The messages are: "2010-03-09 16:15:11 Labels data was changed.", "2010-03-09 16:15:07 Labels data was changed.", and "2010-03-09 16:14:37 Labels data was changed."

Text Analyzer Plug-in

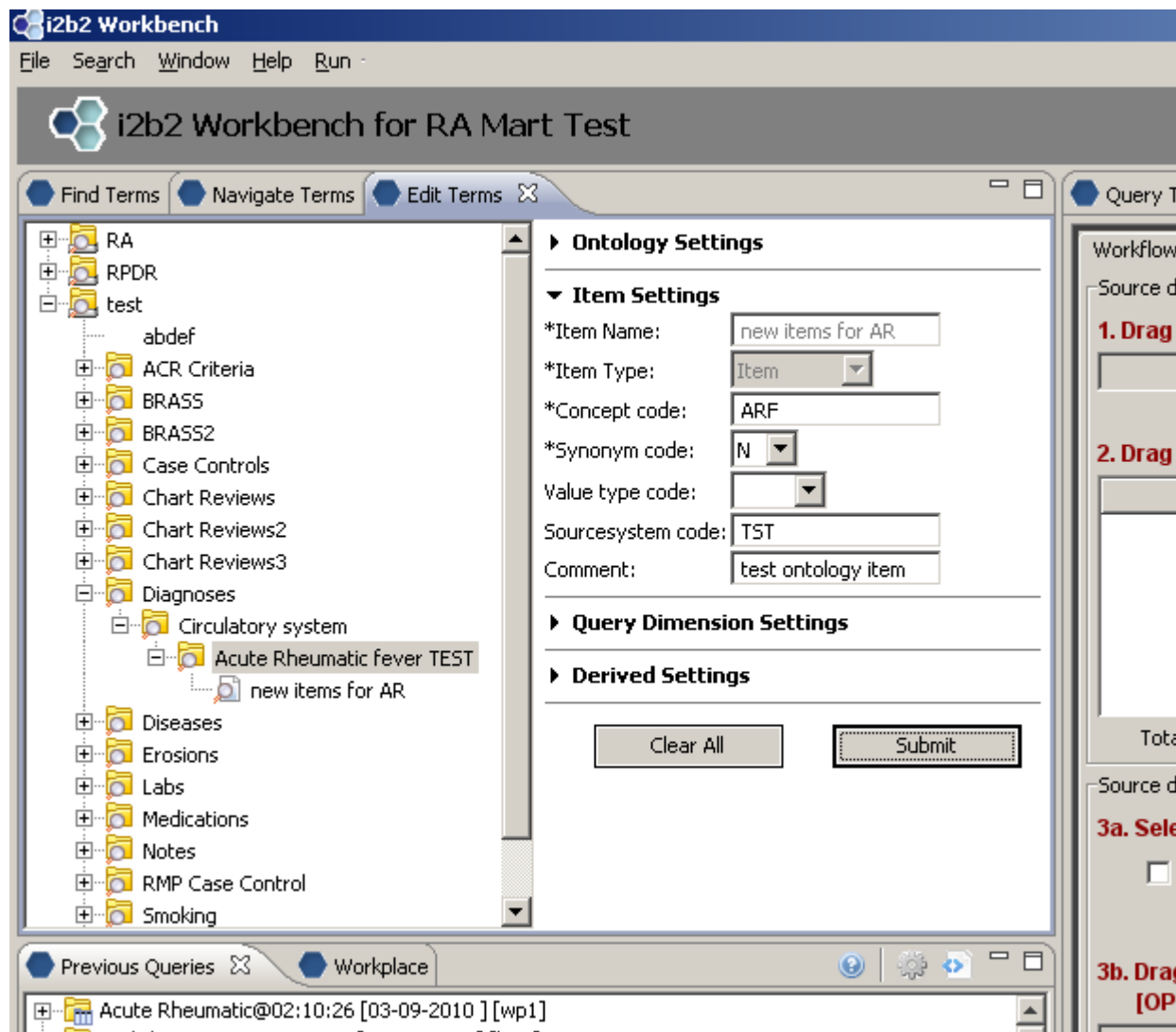
The screenshot displays the i2b2 Workbench interface for the 'ra_mart_test' project. The main window is titled 'i2b2 Workbench for ra_mart_test' and includes a menu bar (File, Search, Window, Help, Run) and a status bar (mike Status: green, i2b2).

The interface is divided into several panes:

- Navigate Terms:** A tree view on the left showing a hierarchy of terms including RA, ACR Criteria, BRASS, BRASS2, Case Controls, Chart Reviews, Chart Reviews2, Chart Reviews3, Diseases, Erosions (with 'Erosion' selected), Negative Erosion, Possible Erosion, Labs, Medications, Notes, Discharge Summaries, LMR Notes, Op and Path Reports, Radiology Reports, RMP Case Control, Smoking, Tianxi, and RPDR.
- Pharmacovigilance Analyzer:** A central pane with tabs for 'Query Name', 'Export Data', and 'Query Tool'. The 'Query Name' tab shows a query: 'Bone density = @05:10:25'. Below it, there are two groups of terms: 'Group 1' (Erosion) and 'Group 2' (Radiology Reports). The 'Analysis Types' tab on the right lists various analysis types with checkboxes: Timeline (checked), PATIENT_ENC..., XML, Patient count, Gender, PATIENT_MO..., Vital, Race, and Age.
- Workplace:** A pane on the right showing a list of terms related to the query, including 'Bone density = Abnormal_93Ym', 'Bone density = Abnormal_mdoa', 'Bone density = Abnormal_p0Bh', 'Bone density Is 2002,done_9UVn', 'Bone density Is 2002,done_VQZh', 'HDL (Group:HDL)', 'HDL (Group:HDL)', 'HDL (Group:HDL)', 'HDL (Group:HDL) = HIGH_MevY', 'HDL (Group:HDL) = HIGH_qmMf', 'HDL (Group:HDL) = HIGH_yJTJ', and 'HDL (Group:HDL) = LOW_68FW'.
- Text Analyzer:** A pane at the bottom right showing a search results window. It contains a search bar and a list of results. The first result is 'There is circumferential joint space narrowing of the right hip with erosive changes and acetabular protrusion. Degenerative changes'. Below this, there are two boxes labeled 'Erosion' and 'erosive erosion'.

The bottom of the interface features a 'Previous Queries' pane on the left, a 'Create model for Timeline' and 'Render a Timeline' section in the center, and a 'Patient Set' section on the right with fields for 'Patient Set: 1 patients', 'start: 1', and 'increment: 1'.

Terminology support - Small, hand created terminologies





Focus of version 2

- Specific focus for analyses plug-ins
 - Genomic correlations with phenotypes
 - Comparative Effectiveness Analyses
- Methods to perform distributed analyses using plug-ins
- Import of standard terminologies in collaboration with NCBO
- Methods to support Natural Language Processing
- Connection to PHI
 - Identity management cell modeled after CRC to manage PHI
 - Enterprise services driven by requests containing PHI



Version 2 - Looking for Community Contributions

- Connections to caBIG
- Connections to BIRN
- Loading data from HL7
- Contributed Data Visualizations
- Contributed Data analyses
- Ties to bio-specimens
- LDAP integration with project management
- Integration of Master Patient Index



Version 2 - Tools for Community

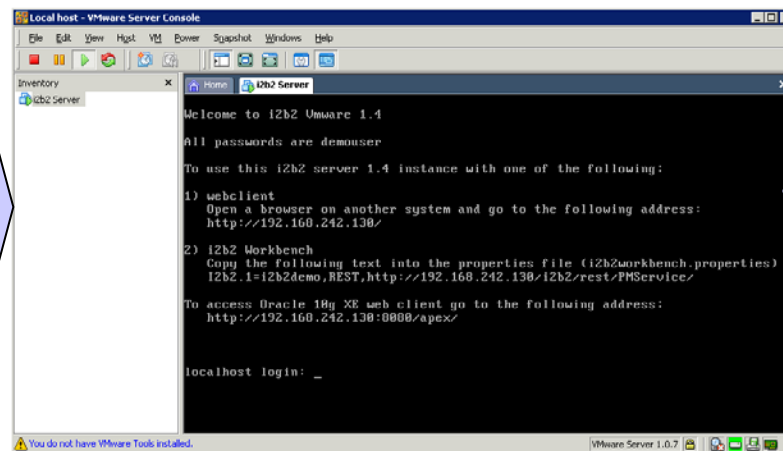
- JIRA Bug Tracking
- Web site for i2b2 distribution and documentation
- Source Code Subversion Repository
- Shared Wiki Documentation
- Open forum software

Version 2 – Value to i2b2 implementations

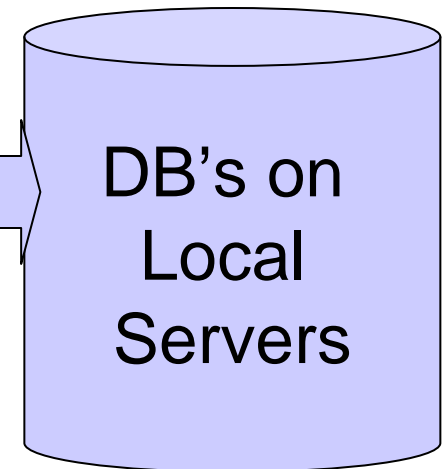
- Product Management
- VM Distributions
 - Support for self-configuring distributions
 - Built-in security for distribution
 - Ability to deploy to enterprise ESX servers

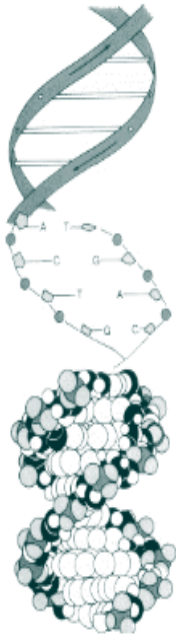


Workbench on
Local clients



i2b2 Virtual Machine





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