Temporal Exploration of EHRs Using the i2b2 Open Source Platform

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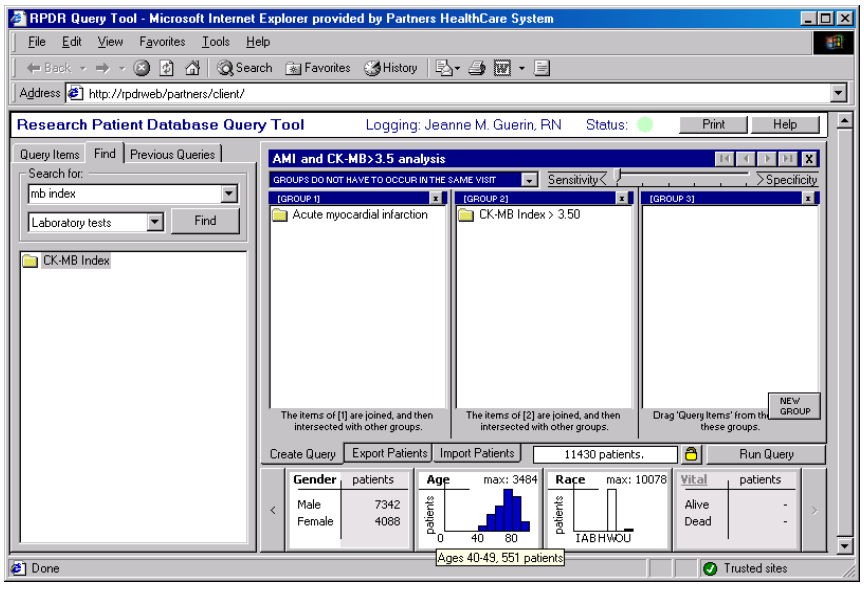
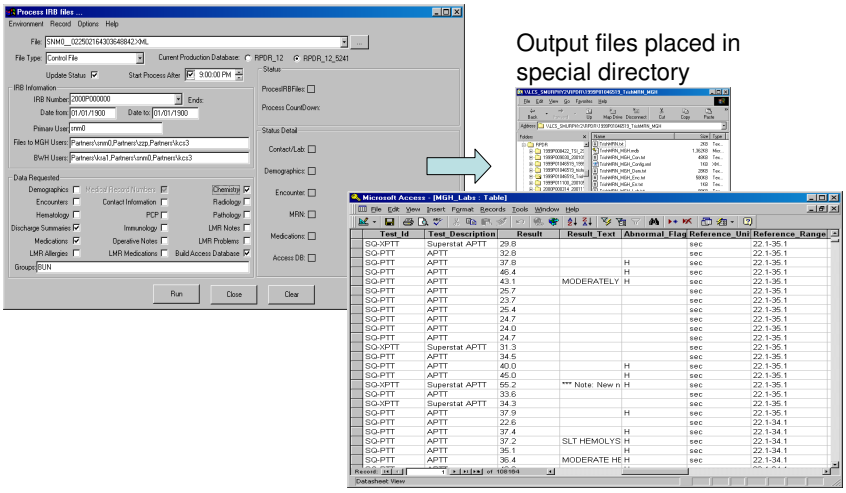
Partners Healthcare

In the Beginning …



Returning Data to Investigators

Identified data is gathered from RPDR and other Partners sources



Output files placed in special directory

Files include a Microsoft Access Database

Researchers' Wish List

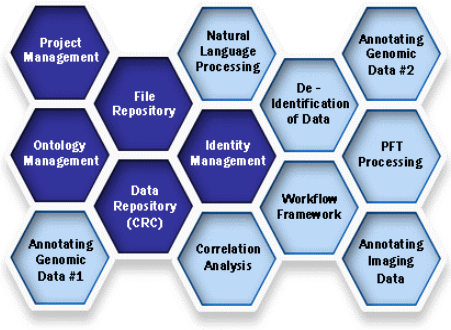
- To view many patients at a time
- To have a complete view of a patient's data
- To view a patient over time
- To view patient text notes in the application
- To add power to the notes via NLP
- To annotate the data
- To save and reuse work

Our Wish List

- An open source framework that is:
- Easy to use for a variety of users
- Scalable
- Extensible
- Robust
- Interoperable
- Platform-independent
- HIPAA-compliant

Tools and Architecture

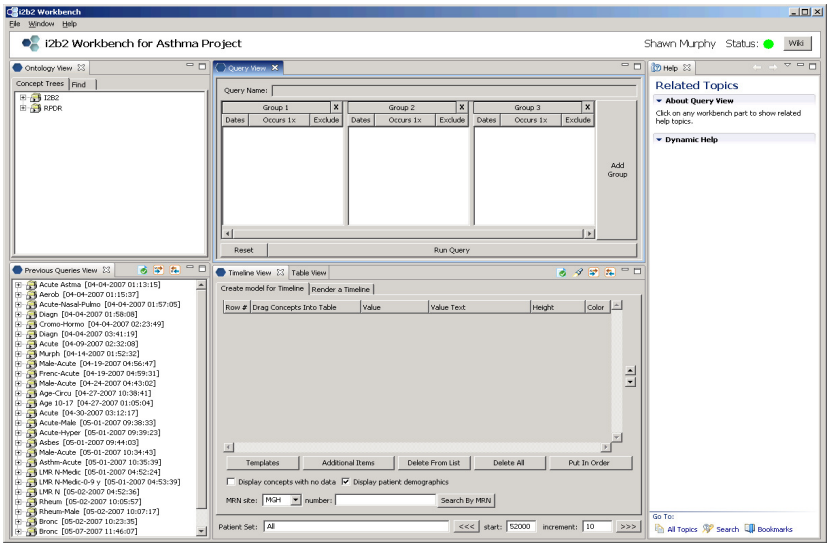
i2b2 HIVE:



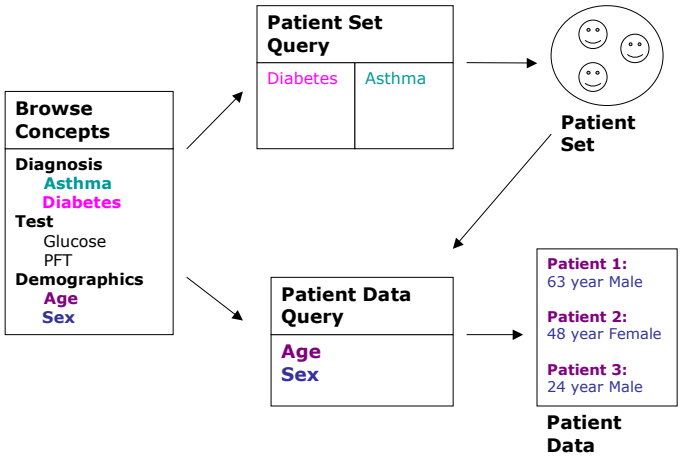
- Service-Oriented Architecture
- XML messages
- Cells
- Eclipse (plug-ins)

Process

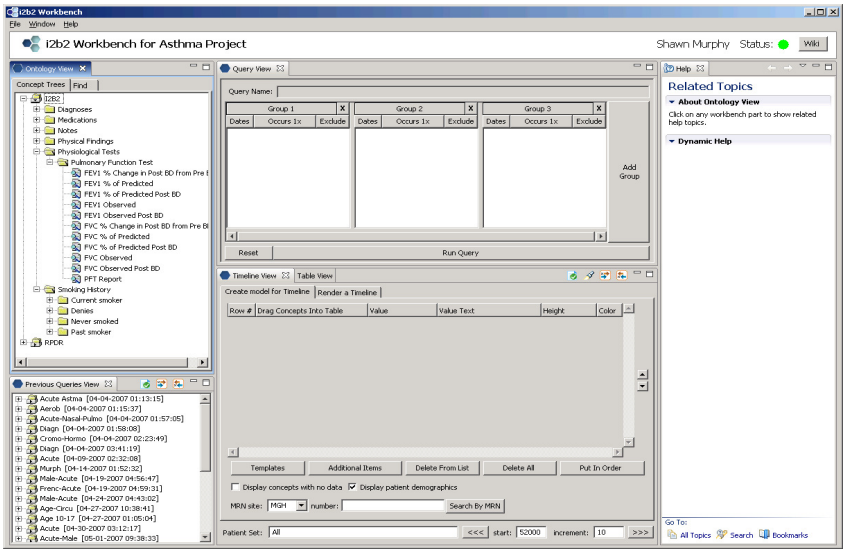
i2b2 Workbench



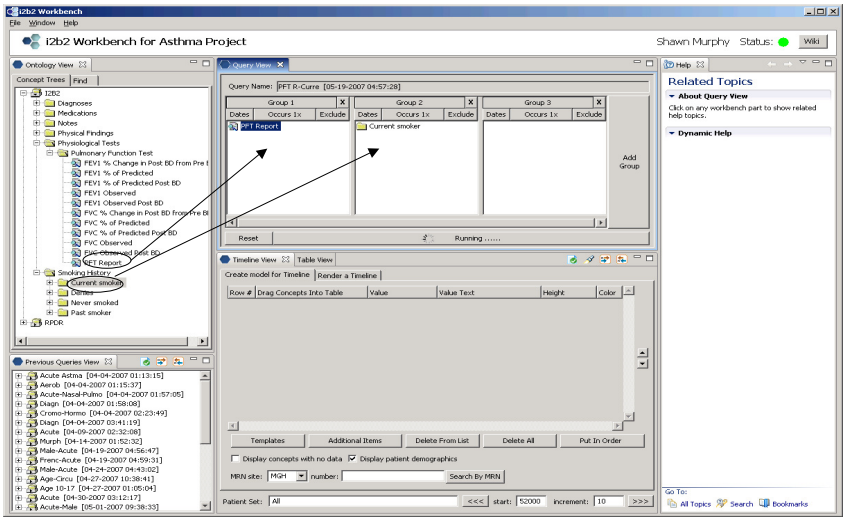
User Interactions



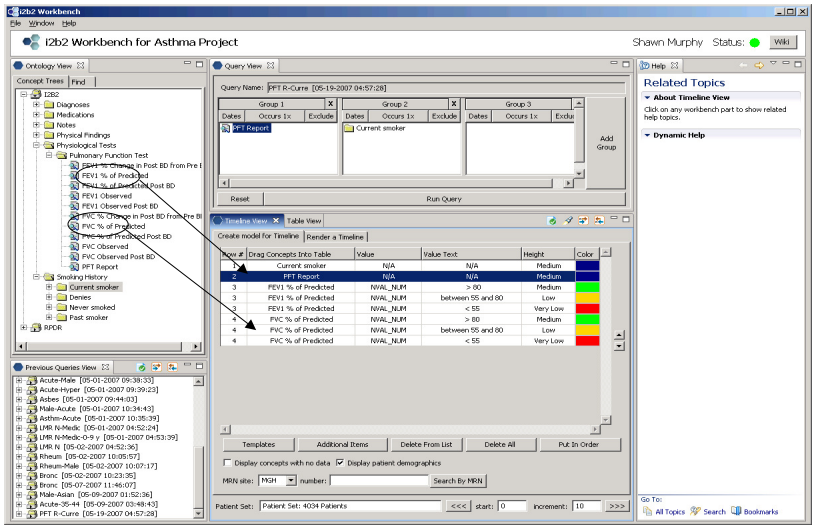
Browse concepts



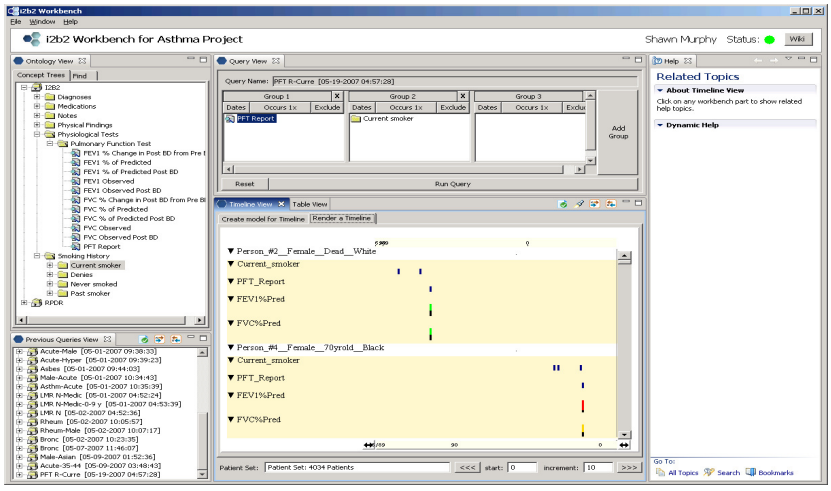
Create a Query



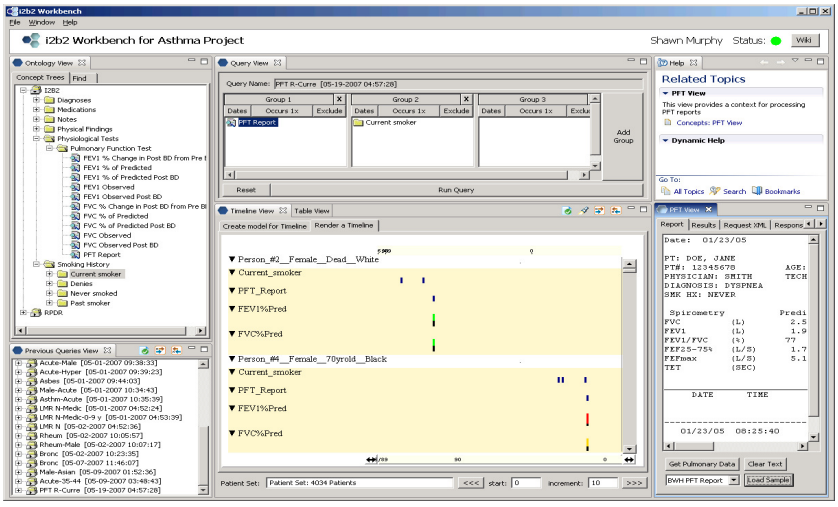
Create a model for the Timeline



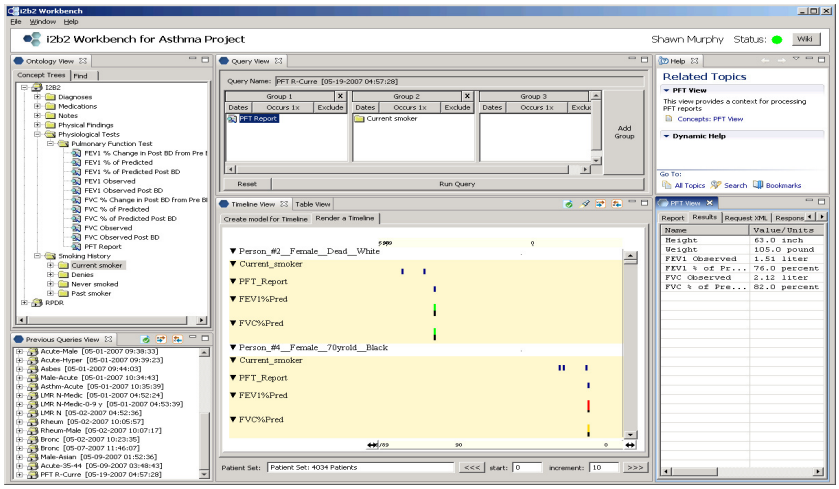
Timeline



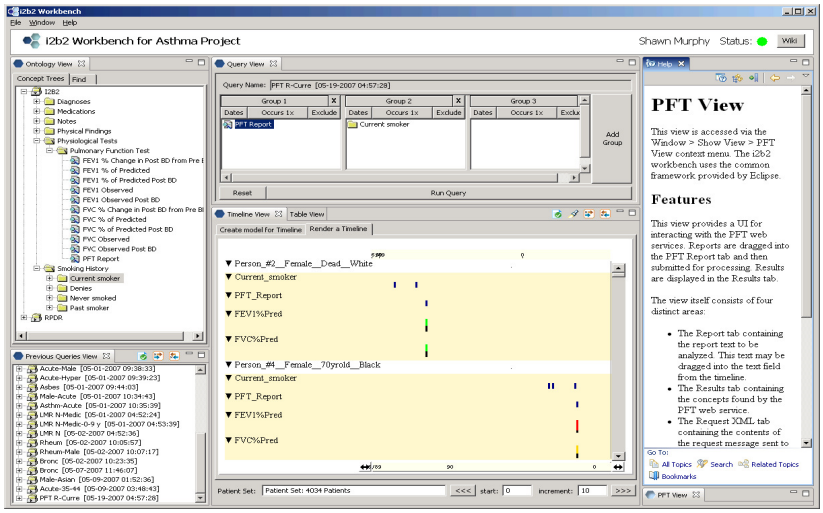
View a text report



Parse the text report

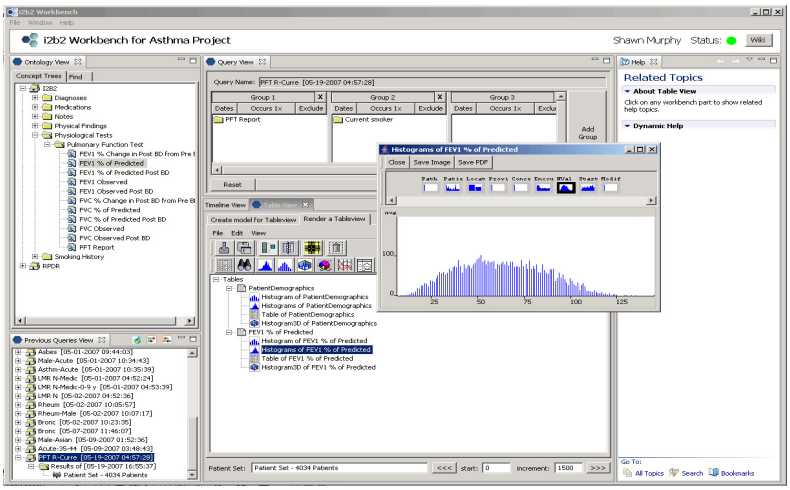


HELP



Add another plug-in: TableView

http://ccgb.umn.edu/software/java/apps/TableView/



The workbench and timeline allow users to:

- survey the data to see what is available
- check data integrity for obvious anomalies
- compare data coming from different sources
- display data concisely on single patients
- drill down in term hierarchies
- perform time-oriented queries
- Show time-oriented averages (trends) within the data using sentinel events to synchronize the starting points.

What are we going to do with it?

- Extend phenotypic data collection
- Add anonymous specimen repository
- Add a Bayesian inference engine
- Predictive modeling
- Perform clinical trials in-silico
- Discovering correlations within data (relationship networks)
- Pharmacovigilance
- Genomic studies
- Geograpic Information Systems (GIS) studies

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Thanks!

HCIL

i2b2

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Raj Kuttan
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