BioBank2 Feature Overview

Prepared by AICML  
May 9, 2011

# INTRODUCTION

This document describes the features provide by BioBank2. BioBank2 is a client server application with an N-tier server architecture on the server side. A Java Client, meant to be used by repository site technicians, provided most of the functionality for specimen processing. A Web Client, still to be implemented, will provide functionality to researches and administrators. Researchers will be able to order specimens that have been stored for them based on criteria they define. Administrators will be able to generate reports detailing the operation of repository sites.

The top level features of the software are:

1. Collection protocol definition
2. Specimen processing
3. Specimen ordering for researchers
4. Repository site configuration management
5. Reports

These features are discussed in more details in the following Sections

# COLLECTION PROTOCOLS

Collection protocols in BioBank2 are referred to as Studies and multiple studies can be defined. Studies can be configured to receive biological specimens from multiple clinics. Studies and clinics are linked via a contact person. The specimen processing ensures that specimens are received from clinics associated with a study.

A study can also be configured with the specimen types it will receive. Specimen processing generates warnings if the technician adds a specimen type not defined by the study. The specimen types can also be configured to require time drawn and original volumes.

A study also defines the valid aliquoted and derived specimens that it will collect. Default volumes and the quantity of aliquots / derivatives can also be specified. A study can add or remove the aliquots / derivatives at any time.

The study can define the patient information to be collected on each visit. This information can be also updated / changed during the course of the study.

# SPECIMEN PROCESSING

Specimen processing is a two stage process that involves nurses / technicians at the collecting clinic and technicians at the repository site. First the nurse / technician at the collecting clinic creates a patient record in the database for the patient being processed. The patient is referred to with a CHR number. Once the patient has been added to the system a a collection event is created for that patient. The collection event specified the specimens that were collected and any additional information specified by the study.

The clinic nurse / technician then creates a dispatch which specifies the specimens to be shipped to the repository site. The dispatch can be made of the specimens for one or more patients. Essentially a dispatch records the manifest of what is being shipped to the repository site. Dispatches are usually shipped to repository sites, but the software is flexible in that if necessary a dispatch can be sent from one clinic to another.

It is also possible that a clinic may aliquot or create derivatives for specimens. A dispatch can also hold these specimens if the clinic wishes to send them to a repository site.

Once a package is ready for shipping, the clinic nurse / technician can then enter shipping information for the package (shipping method and waybill for example). At this point the repository site technicians will see that the package is in transit to their site.

Once the package arrives at the repository site, the site technician validates the manifest with the aid of the software. If all specimens are contained and there is no problem regarding the validity of the specimens they can now be processed. A processing event is now created for the shipment and

some or all of the specimens received in the dispatch are added. The specimens are added by scanning the 2D Data Matrix barcode on the specimen tube. After the processing event is created, the technician can then aliquot or create derivative specimens (physical step).

The next step in processing is to link the aliquoted / derived specimens to the source specimens they come from. This is done with the Specimen Link feature in the software. This feature allows the user to link NUNC tubes with 2D Data Matrix barcodes in bulk or individual tubes. This feature performs validations at each step to minimize human error. A flatbed scanner can be used when dealing with NUNC tubes. Currently the flatbed scanning can only be done with the software running under Microsoft Windows.

The last step in processing is to assign the aliquoted / derived specimens a storage location. This is done with the Specimen Assign link feature which is similar to the specimen link feature. The feature performs error checking to ensure that valid container locations are selected for the specimen types being stored.

The specimen link and specimen assign features give the user the option of printing a log of what was done for record keeping purposes.

# SPECIMEN ORDER

The specimen order web client feature allows researchers or members of a research group to request aliquots and / or derived specimens from their studies. All order requests can be configured to require the approval from a principal investigator prior to filling an order. Specimens are ordered by patient visit number and specimen type. Orders can be created via a web interface or by uploading an input file. The package the specimens are stored in can be delivered to an address specified by the research group member.

The software will allow for research groups to be defined and authorizations given to group members. Research groups can be associated with one or more studies.

# REPOSITORY SITE CONFIGURATION

In the Java Client, the following can be configured for repository sites: studies, clinics, and storage. Sites can be configured to participate in a subset of the studies defined in the system. Sites can be configured to define the subset of clinics that can send dispatches to them. Storage containers can be configured to be of any dimension and container hierarchies can be defined. Containers can also define the specimen types that they will hold.

# REPORTS

The Java Client supports 2 types of reports: hard coded and user defined. Hard coded reports are some of the reports currently required by CBSR. For example, some of the reports are patients per clinic per study, patient visits per patient per study, etc. With user defined reports the user can specify what he /she would like to see by selecting from the various tables in the database.