Introducing epiSampler 3.0

Irrua Specialist Teaching Hospital
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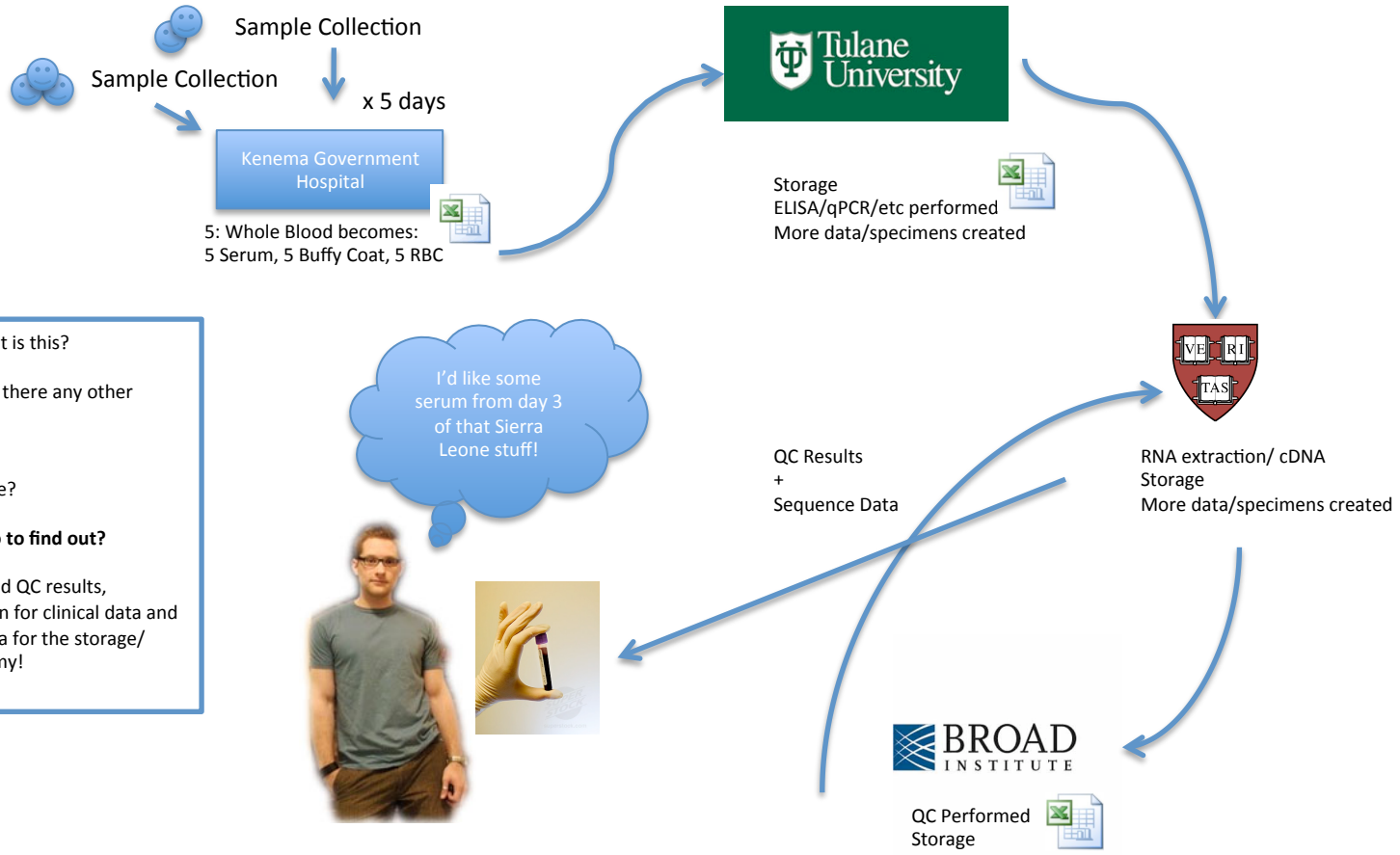
Why epiSampler?

Large scale projects have large demands

- Data quality
- Specimen organization and management
- Information/Data Sharing
- Why not Excel?
  - Free-form data access means increased error rates
  - Relational databases are more powerful and efficient
  - Data must be shared manually

A Scenario…


Sample Collection
Sample Collection
x 5 days
Kenema Government Hospital
5: Whole Blood becomes:
5 Serum, 5 Buffy Coat, 5 RBC
Tulane University
Storage
ELISA/qPCR/etc performed
More data/specimens created
But Stephen wonders: what is this?
Where did it come from, is there any other information?
Is it IgG or IgM Positive?
What did the qPCR look like?
What would he have to do to find out?
Ask Kristian, who would find QC results,
Ask Bob who would ask Dan for clinical data and Luis for ELISA data, and Lina for the storage/ Freeze/Thaw history… oh my!
I'd like some serum from day 3 of that Sierra Leone stuff!
QC Results
+
Sequence Data
RNA extraction/ cDNA
Storage
More data/specimens created
BROAD INSTITUTE
QC Performed
Storage

Evolution of epiSampler

- 2009: Version 1.0, built in Microsoft Access
  - Benefits
    - Data and sample processing made simpler
    - Relatively stable underlying relational database
    - Standardized sample processing
  - Still lacking
    - Access data sharing algorithm not designed for weak network
    - Data sharing via ‘backups’ emailed weekly
    - Low level data validation
    - No way to ‘update’ software once installed
    - Worked only on Microsoft system
    - Kit labels printed by the Broad Institute = lead time

Evolution of epiSampler

- 2010: Version 2.0, Custom Software written in the Java programming language
  - Benefits:
    - Able to update software over network automatically
    - Could create and print collection kits
    - Automatic data transfers to the network
    - Increased data control / less editing, more perfect data
    - Platform Independent – works on Mac and PC
    - Security: Encrypted data in custom flat file database
  - Still Lacking
    - Too complicated to use
    - Flat file database unstable at large size
    - Data transfers susceptible to corruption with power loss / network interruption
    - More difficult to access data, correct it, use it
    - Networked DB vulnerable to intrusion
    - Only one Research Project per installation

Version 2.0

Input Capabilities:

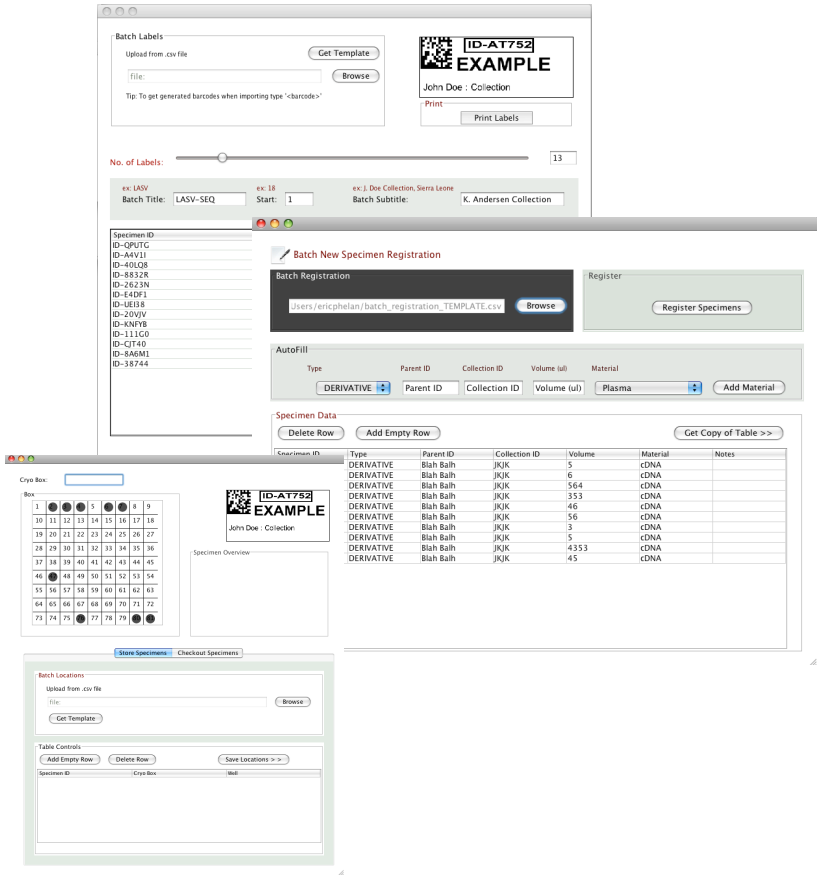
- Add New Subjects, Collections, and Specimens individually or in bulk
- Generate and Print Barcodes as needed
- Specimen registration
- Upload user generated data

Tracking and Sample Management:

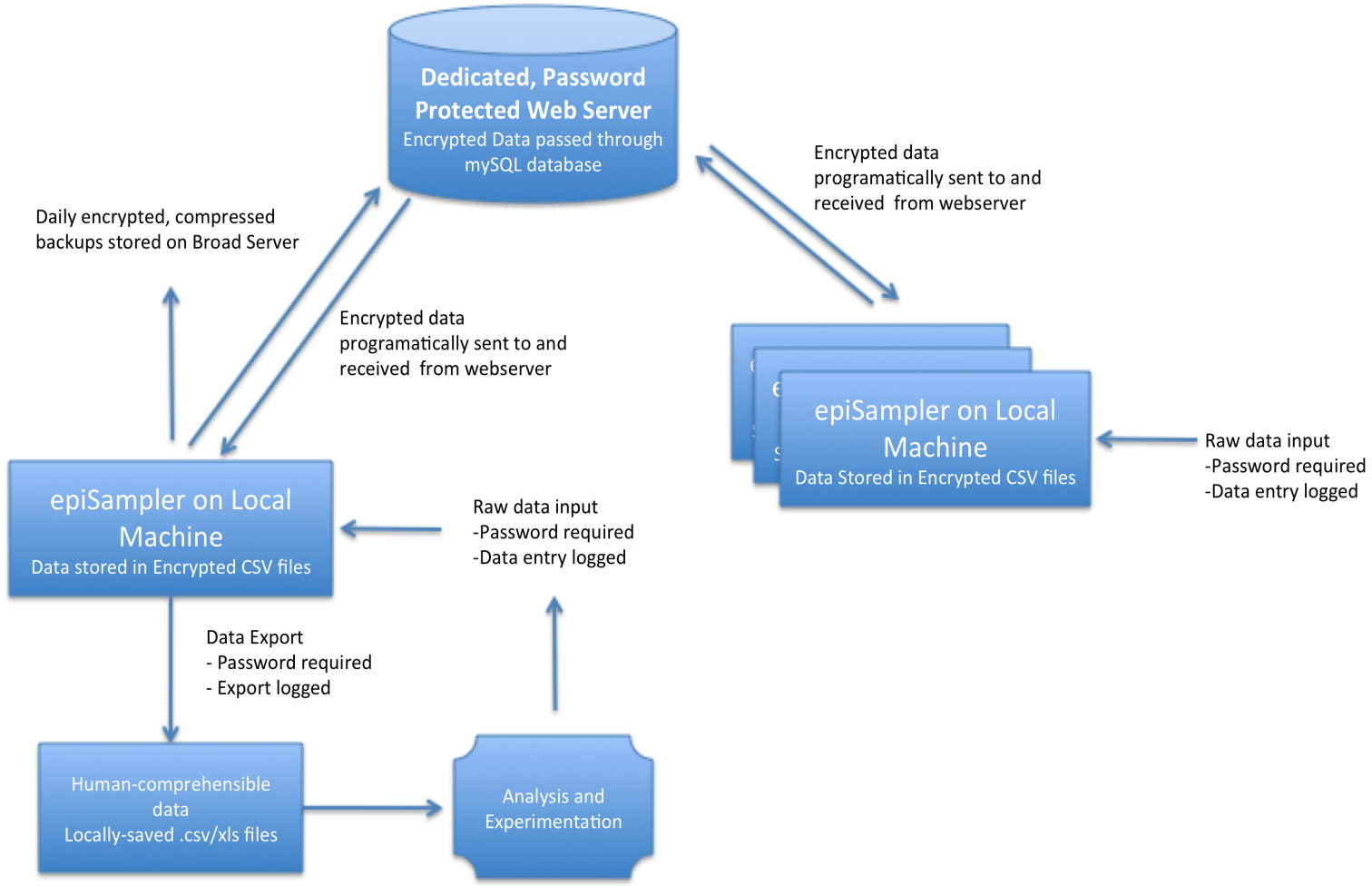
- Record and update sample storage
- Record sample usage
- Record sample shipments and receipt

Data Management:

- Visual Database Query
- Specimen Visualization



Protecting the Data – a critical mission



Evolution of epiSampler

- Designing Version 3.0
  - Goals:
    - Very stable database and data transfer
    - Automatic software updates
    - Multiple project support
    - High level of data integrity: no multiple entries, data format and values match acceptable ranges and data types, data entered in a timely fashion.
    - Ease of access to data for lab work in the field
    - Simple interface that is robust, yet intuitive

Demonstration