



Remote Data and LIMS Integration

Bill Pingpank, *V.P. Client Services*

Presentation Overview

1

Definition of a Modern LIMS

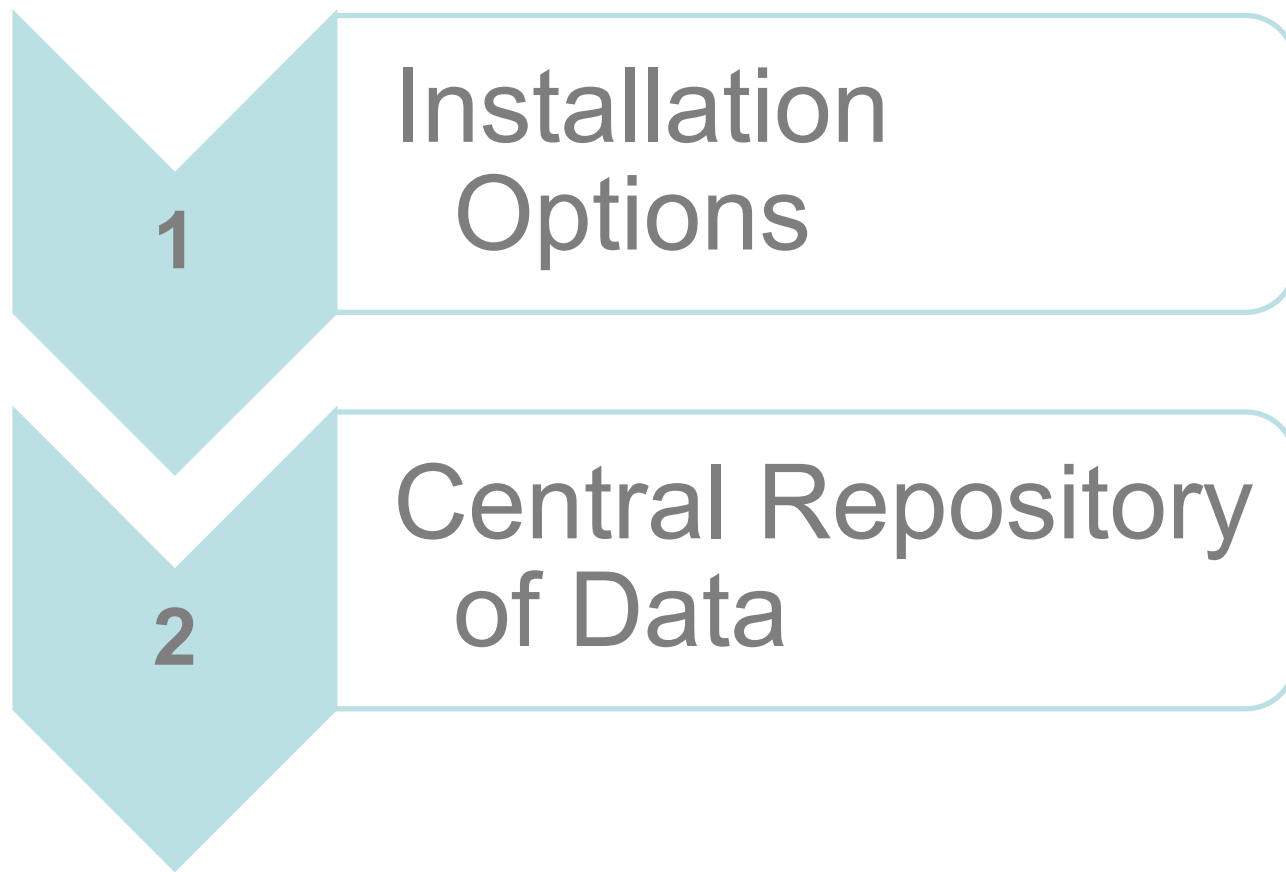
2

Remote Data Sources

3

Collection of Remote Data

What Can Be Expected from Modern LIMS



LIMS Installation Options

Cloud

- subscription based
- lower cost of entry

Site Installation

- license based
- costs incurred up front

Central Repository

Central Repository for Lab Testing Results

- Print/access Certificates Of Analysis (COA)
- Various end reports of results
- Cradle to grave custody tracking

Central Repository cont'd

Consolidated Quality Control Information

- Monitor laboratory QA/QC metrics and identify problem areas
- Centralize documentation and reference information

Central Repository cont'd

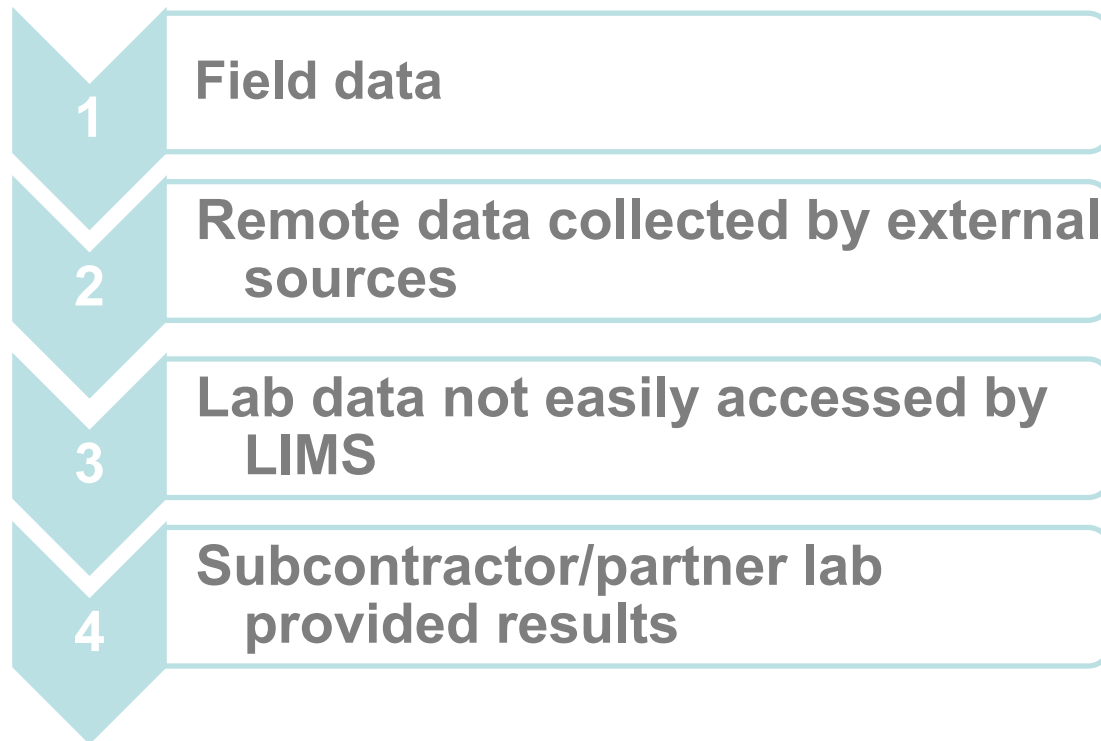
Consolidated Quality Control Information

- Traceability of standards and reagents to testing results
- Linkage between a specific test run and all traceable items associated with supporting those results

**Accessible through numerous points
throughout the laboratory and beyond**

What Is Remote Data?

Remote data is data that is observed outside of the lab environment



Remote Data: Field

Field data refers to sample collection information and the data observed during sample collection.

Samples could be from varied sources (ground point sources – such as soil, water, animal, plants, vegetables, etc.)

Field Sample Collection Information

i.

Sample collection dates/times, sampler responsible for collection, methods of collection

ii.

Chain of custody from sample collection through field handling and transport

1. Digital signatures
2. Dates and times of transfer

iii.

Surrounding conditions

- e.g. weather, topography;

Field Sample Collection Info. Cont'd

iv.

Testing done during sample collection

- e.g. temperature, pH, dissolved oxygen, color, moisture, mass, volume;

v.

Specific criteria for regulatory programs during sample collection

- Identification information for federal/state/local programs
 1. Specific Location IDs/regulatory Codes
 2. Type/classification of product
 3. Sample Size

Remote Data: External Sources

Manufacturing Plant Production Environments

- Production dates/times
- Lot number traceability
- Shift information

SCADA

- Online measurements

Treatment Plants

- Flows
- pH
- Conductivity

Remote Data: Not Easily Accessed

Laboratory data not easily accessed by LIMS

- Instrumentation outside of network (wired/wireless) range
- Instrumentation incapable of being networked (OS/manufacturing requirements)

Subcontractor/partner lab provided results

Collecting Remote Data

Exploring methods commonly employed to capture data

Data Stored non-Electronically

Data Stored Electronically

Collecting Remote Data: non-Electronic

i.

For data not electronically stored:

A. Paper: most common method of storage in use today

- **Upside:** easily referenced assuming documents are retained
- **Downside:** results must be manually transcribed into LIMS or other systems in order to use/report
 1. Introduction of transcription errors

Collecting Remote Data: Electronic

ii.

For data stored electronically :

A. Spreadsheets are commonly used to electronically capture and store information

- **Upside:** can be centrally stored and referenced, therefore easily found
 1. Some LIMS can be configured to import data directly from spreadsheets for error free transcription
- **Downside:** in many cases, manual data entry into the LIMS is still required, resulting in potential errors

Collecting Remote Data: Electronic

ii.

For data stored electronically :

B. On-Line Entry: the assumption is that the user has direct access to the LIMS via network

- **Upside:** User enters data directly into the LIMS; no transcription errors
- **Downside:** If connectivity is lost/non-existent, then alternative data collection must be employed and manual transcription must take place later; increases chances of introduction of error

Collecting Remote Data: Electronic

ii.

For data stored electronically :

C. Off-Line Entry: Connectivity is not required; the user's device (i.e. tablet, phone, laptop) becomes repository for data collection

- **Upside:** there is no issue about connectivity; data is entered and stored throughout field activities
- **Downside:** verification of data transfer at the end of the field activities still must be performed

Case Study/Example

Client: Agriculture – State Laboratory

Pre-electronic collection:

Dairy sample data was being collected by hand by >50 field inspectors.

Post-electronic collection:

Login time per sample group went from 5-10 min to <1.

i.

Samples auto-logged from field

ii.

Staff waits for expected incoming data

iii.

Original field documentation is attached to incoming COC

iv.

So successful that regulatory self-monitoring program now submits electronically

Case Study – cont'd

Finished Products					Check box if not sampled:
Product Description	Pull Date	Temp at Pick-up	ReSp	Lab Sample ID	
+ - Cream Whipped (=>30 - <36%)	3/22	36.2 °F	<input type="checkbox"/>	For Lab Use Only	
+ - Half-Half	3/22	36.2 °F	<input type="checkbox"/>	For Lab Use Only	
+ - Milk =>3.25%	3/23	36.2 °F	<input type="checkbox"/>	For Lab Use Only	
+ - Milk 1%	3/23	36.2 °F	<input type="checkbox"/>	For Lab Use Only	
+ - Milk 2%	3/23	36.2 °F	<input type="checkbox"/>	For Lab Use Only	
+ - Milk Chocolate 2%	3/23	36.2 °F	<input type="checkbox"/>	For Lab Use Only	
+ - Milk Skim/NF	3/21	36.2 °F	<input type="checkbox"/>	For Lab Use Only	
TC Product Type: 2% milk		TC Sample Temp: 36.2 °F		TC Sample Size: 1 Qrt	
Cultured Products					Check box if not sampled:
Product Description	Pull Date	Temp at Pick-up	ReSp	Lab Sample ID	
+ - Acidophilus 2%	3/15	36.2 °F	<input type="checkbox"/>	For Lab Use Only	
+ - Buttermilk 1.5%	3/25	36.2 °F	<input type="checkbox"/>	For Lab Use Only	
+ - Cottage Cheese 1%	4/7	36.4 °F	<input type="checkbox"/>	For Lab Use Only	
+ - Cottage Cheese 2%	4/7	36.4 °F	<input type="checkbox"/>	For Lab Use Only	
+ - Cottage Cheese 4%	4/6	36.4 °F	<input type="checkbox"/>	For Lab Use Only	
+ - Cottage Cheese NF	4/8	36.4 °F	<input type="checkbox"/>	For Lab Use Only	
TC Product Type: Cottage Cheese		TC Sample Temp: 36.4 °F		TC Sample Size: 1 lb	

Q & A

Bill Pingpank

bpingpank@ethosoft.com

1-800-870-7014 ext. 111