



University
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Developing a LIMS to Support Trials in the United Kingdom

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Laboratory Information Management System

Typically:

Sample Management

Instrument Integration

Audit Management

Method Management

Quality Assurance and Control

LIMS like CRM / CMS / ERP is a loose concept



Commercial systems too expensive for our Academic clients

Open source systems:-

- 1) fully featured
- 2) but are generic by providing every possible feature, sometimes creating a burden to accomplish a simple task
- 3) customisable, but little support for large scale changes

Simple answer:-

There was not a balance of the right features at the right price





Typical Client Requirements

- Productive and Quality Controlled, without significant hardware spend
- 1D / 2D barcodes and lab staff, no budget for robotics
- Laptops/desktops, no budget for inventory management hardware or mobile
- Available at numerous sites / Labs
- Integrate with Electronic Case Report Form
- Collection logistics - typically samples collected by research nursing staff then sent to labs for processing.
- Reduce burden on Research Nurses and especially Lab Staff, often lab staff are limited shared resource





Workflow Management

- Guide lab staff with tasks, reduce burden especially in scenarios where staff are processing samples for numerous studies
- Reduce fields and information overload, keep it simple

Sample Management

Instrument Integration

- Good 1D and 2D barcode support

Audit Management

Quality Assurance and Control

Home | Change Password | Logout

RCB LIMS You are logged in as: jgibb

Home

Dashboard Summary

Total Incoming Shipments: 0
 Total Shipments to be Confirmed: 2
 Total Shipments to be Processed: 31
 Total Packages to be Moved: 64
 Total Working Plates in Storage: 0

Incoming Shipments (0)

None

Shipment Confirmation (2)

View	Notes	Ship ID	Delivery Method	Sent From	#Samples	Collected	LogNumber	StudyNo	SenderContact
View	Notes	18	Courier	Whytemans Brae Hospital, Fife	10	06/10/2011 09:30:00	A000000064	190	
View	Notes	101	Hand Delivered	Glasgow Royal Infirmary	11	09/12/2011 10:45:00	A0000000259	237	

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Research Nurses at 18 GP/MD Sites collects:

SST, Lithium Heparin, EDTA, FTA, Paxgene, Urine

Samples shipped to 1 of 4 regional Labs

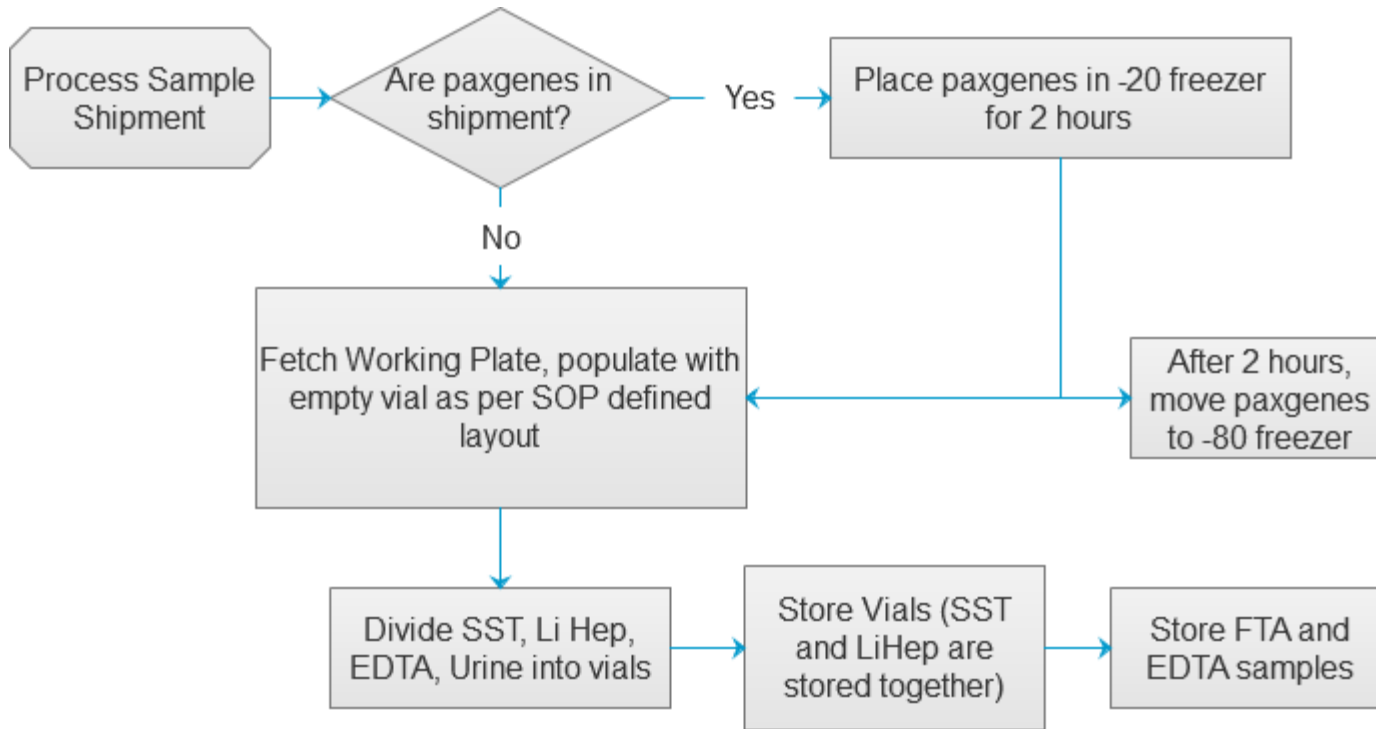
Paxgenes may be kept at site at -20 depending on journey time to lab

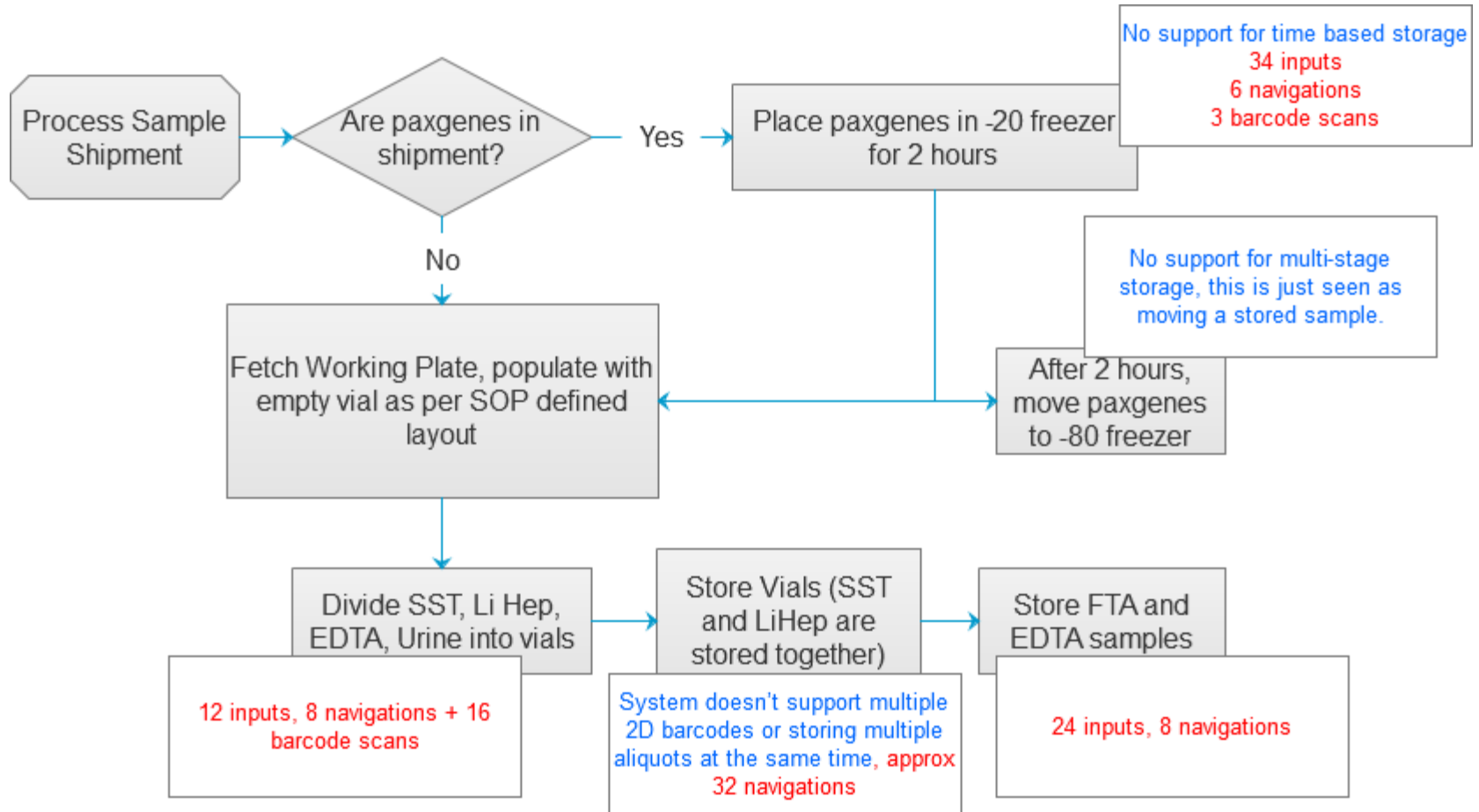
Samples arrive at lab

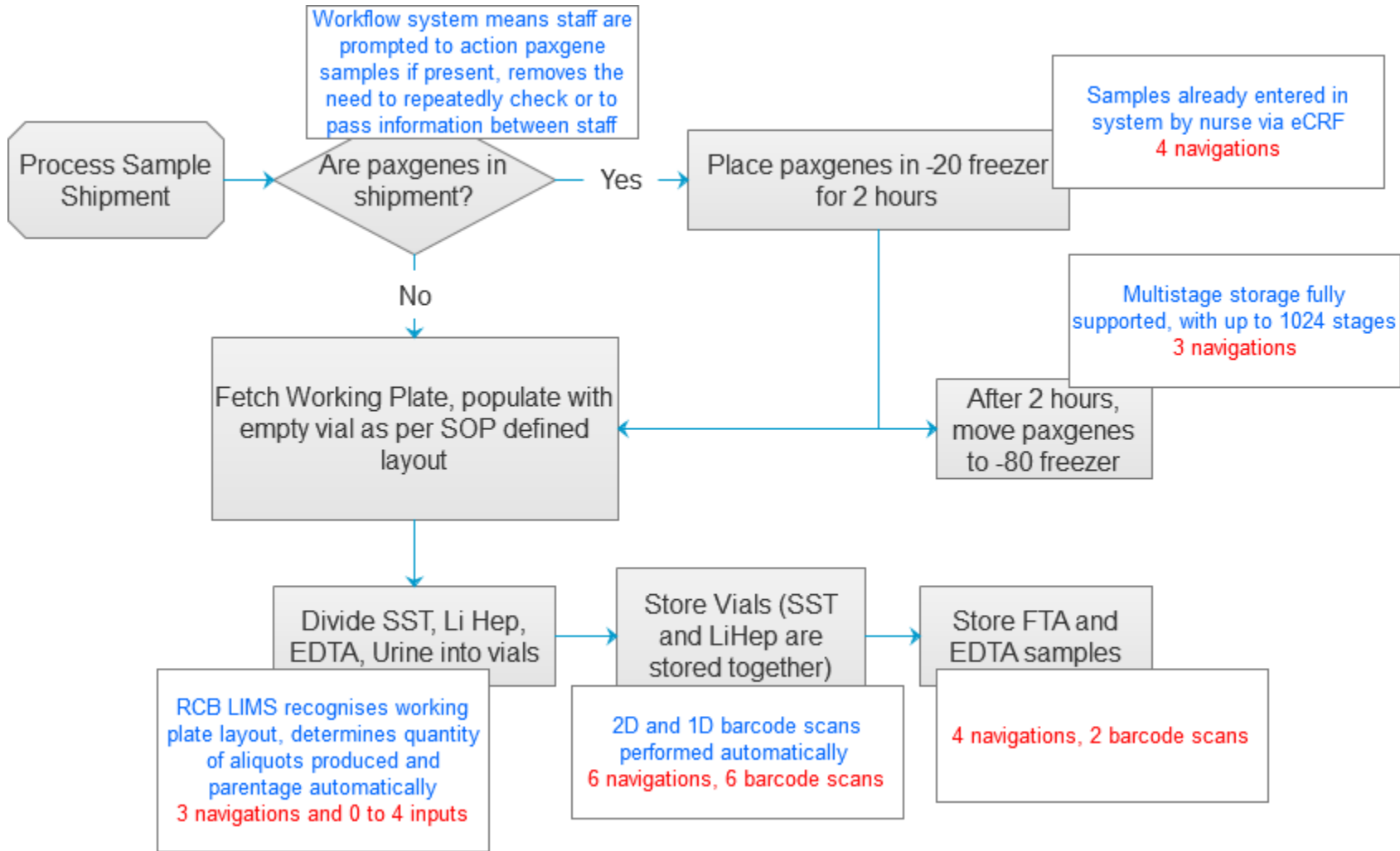
Quality and integrity of samples recorded

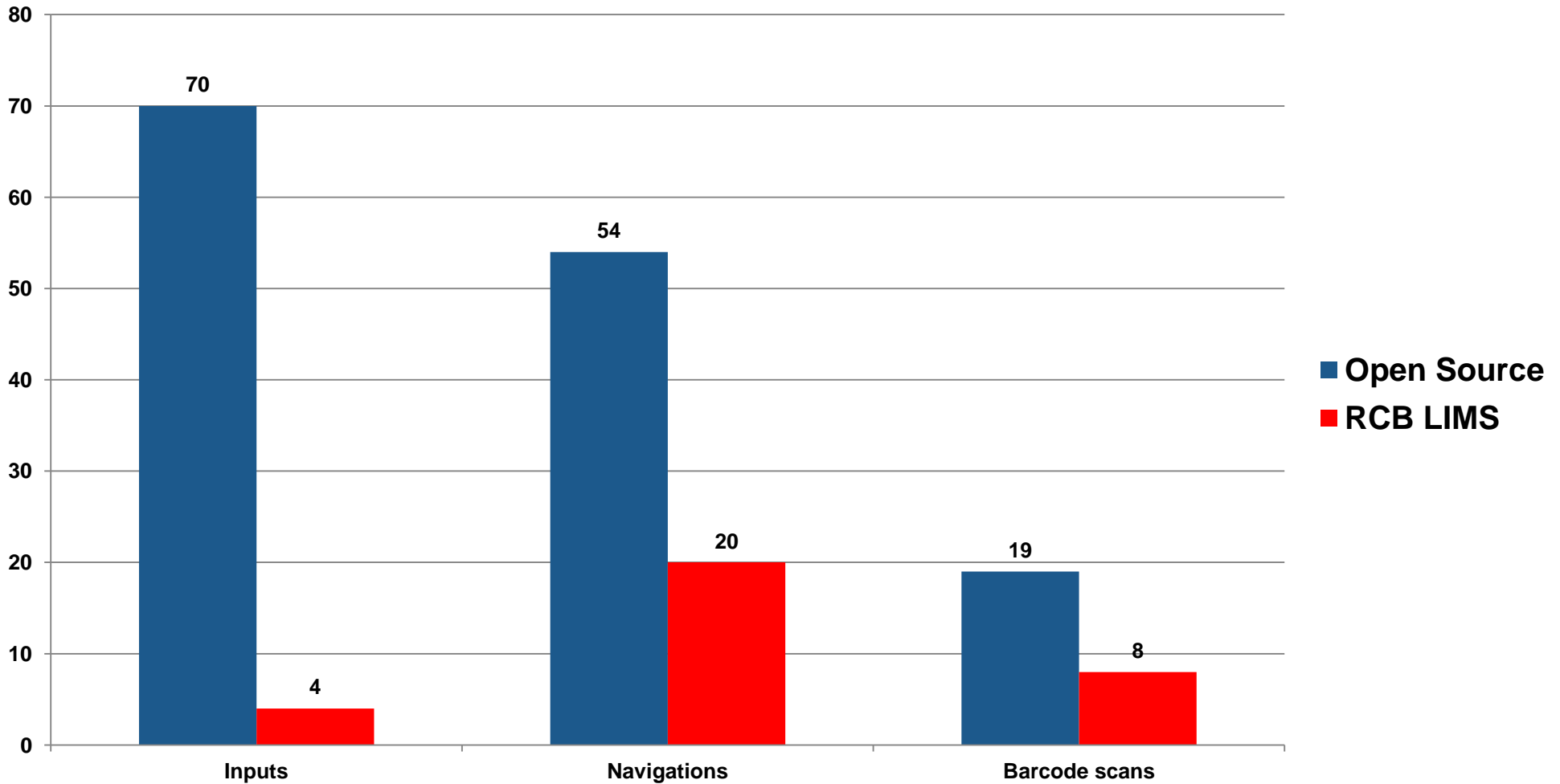
Aliquots and derivatives produced and stored











Fewer inputs, navigations and scans means less time and potential for error, thus lower staff cost



RCB LIMS guides staff with workflows that they are familiar with, it is not just a recording mechanism

RCB LIMS utilises 2D barcode scanners, and on every 2D placement verifies the contents of the plate – 100% verification at every stage

EDTA / Paxgene tubes are 1D only, so verification tasks are generated for appropriate users to perform audits on recent placements based on configurable parameters

Nursing resource maximised to create samples via eCRF (simple 1D barcode scans), reducing lab tech time/cost and also to allow metrics to be collated regarding movements from collection sites to labs

Lab staff are able to access the web based LIMS anywhere and see incoming shipments from sites and prioritise accordingly



Operating challenges

Nurses specifying samples not collected, but then collecting them the following week

Nurses sending samples they should have kept locally, or vice versa

Basic human error

Technical challenges

The system for determining sample placement, based on a study defined storage hierarchy and study defined storage rules



Sample Auditing and Retrieval for 1D Barcoded vials

Need to operate near -80 freezers, staff wearing gloves, keyboard and mouse interaction impractical

Typically freezer rooms have poor cell phone / wifi signal, seldom have wired access – how to synchronise?

Solution

Barcode driven interface on laptop, all navigation controlled by standard 1D barcode scanner – no mouse / keyboard

Offline processing, synchronisation of jobs and results to LIMS when plugged in or file exported



SERA Study

- 9 months of production use
- Currently 16,000 samples from 300 subjects over 700 collection events
- Currently 17 lab staff over 2 labs, 24 collection sites

REMOVAL Study

- Configuration being finalised
- Approx 42,000 samples from 600 subjects over 3000 collection events
- Approx 15 lab staff in 1 lab, 17 international collection sites

TRUST Study

- Configuration being finalised
- Approx 60,000 samples from 3000 subjects over 6000 collection events



