

# Behov, konfigurering och implementering av Sapphire LIMS för en vävnads biobank

## *Needs, configuration and implementation of Sapphire LIMS for a (tissue) biobank*

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27/04/11

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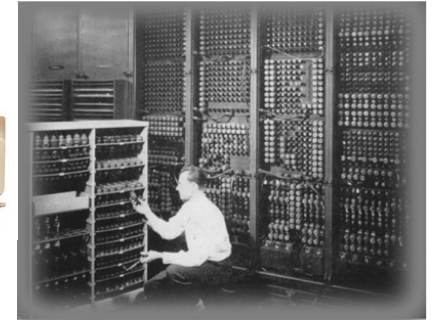
# Clinical Biobank Jessa Hospital

- **Jessa Hospital** (Hasselt, Belgium)
  - 1003 beds, 31501 hospitalizations/yr
- Participation in “**Cancer Control using Population-based Registries and Biobanks**” (CCPRB, NoE FP6)
  - Biobanking Standards based on decade-long experience
  - Biobank/registry based cancer research
  - Linking Biobanks with Cancer Registries (through BIMS?)
- **Haematological biobank** as of August 2005
  - >30 000 samples (as early as 1998)
  - Blood, bone marrow and lymph node tissue
  - Hematopoietic stem cells

**JESSA**  
ZIEKENHUIS



# Early BIMS (2004)



- **Primary needs:**
  - Integrity-proof use of personal data
    - PID
    - LabID, SampleID, eID
  - Informed consent status
  - Sample handling and statistics
  - Log function
  - Enabling samples/data to researchers
    - Maintain privacy while selecting related samples/data
    - Selection of appropriate samples (query)
  - Link with registries (disease, parent, death,...)
- Development of **in-house system**

# Early BIMS



- In-house system
  - MS Access based
  - Focus on sample management
  - Basic functionalities
    - user roles
    - freezer management
- Evaluation:
  - +: built to specific needs/workflow
  - +: user friendly (language, clicking,...)
  - -: limited to sample submission
  - -: time/expertise IT personnel
  - -: biobank developed faster than IT could configure

**HOOFDMENU**

Staalbeheer

Diepvriesbeheer

Wijzig uw wachtwoord

Andere gebruiker

Einde programma

**STAALBEHEER**

Nieuw staal invoeren

Wijzig een staal

Archiveer een staal

Werklijst afprinten

barcodes afprinten

likar update

Opzoeken

Selecties

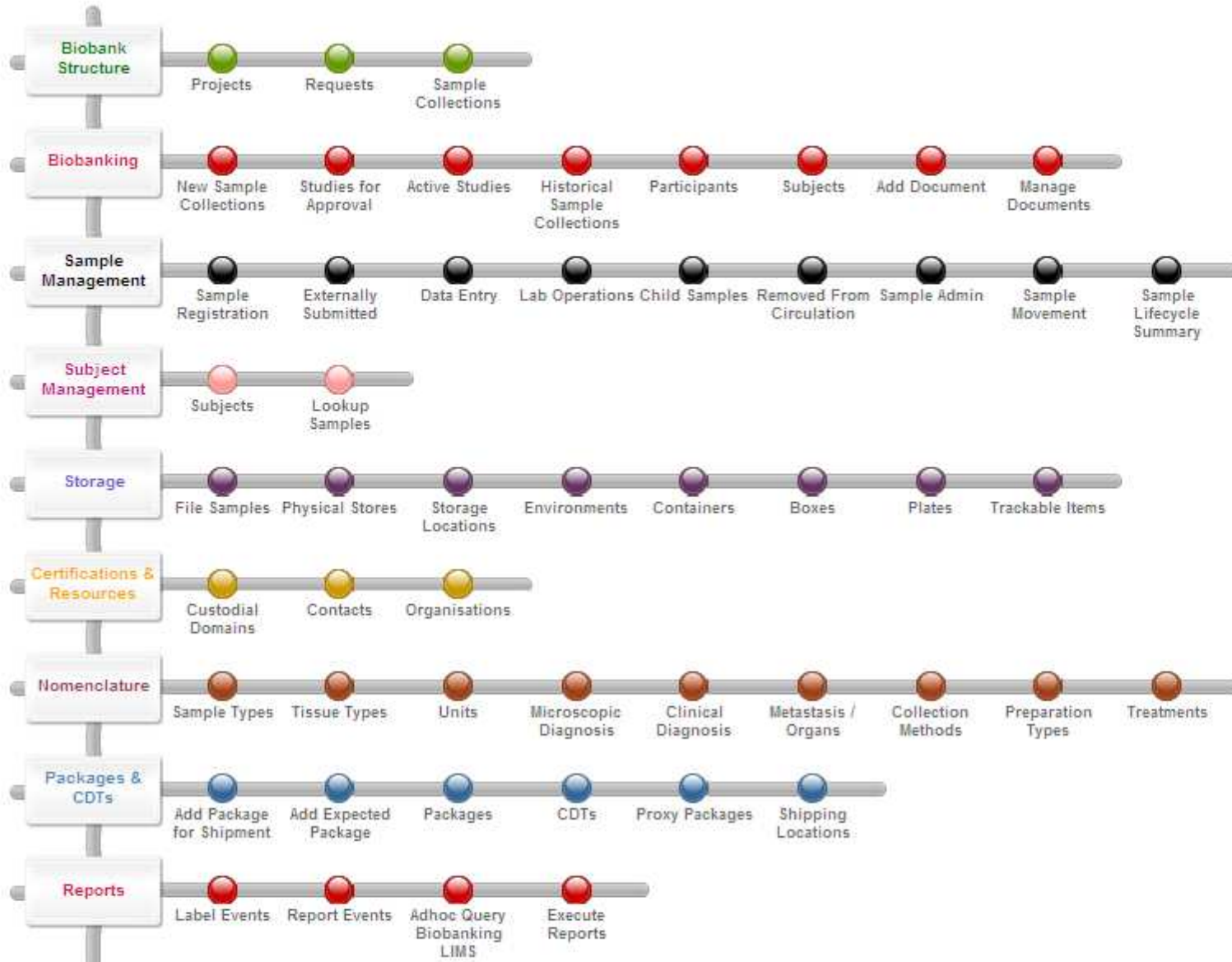
Terug naar hoofdmnu

laatste update: 2009-10-15 14:42:12

# BIMS selection

- Evolution from single disease Biobank to service facility for several studies
    - Need for **full virtual control** of samples AND activities
  - CCPRB evaluation of BIMS (2007)
    - In-house system not adequate (too complex)
    - Opt for commercially available system
    - Selection based on elaborate tender (J. Carlson):
      - Biobank facility: virtual setup of real-life situation
      - Sample handling: functionality of collecting and handling samples
      - (Research) applications: post-collection functionality
      - System administration: both of biobank facility as of system
      - Multi-(international)user system
- Sapphire LabVantage, SoftwarePoint (Fi)

Biobank

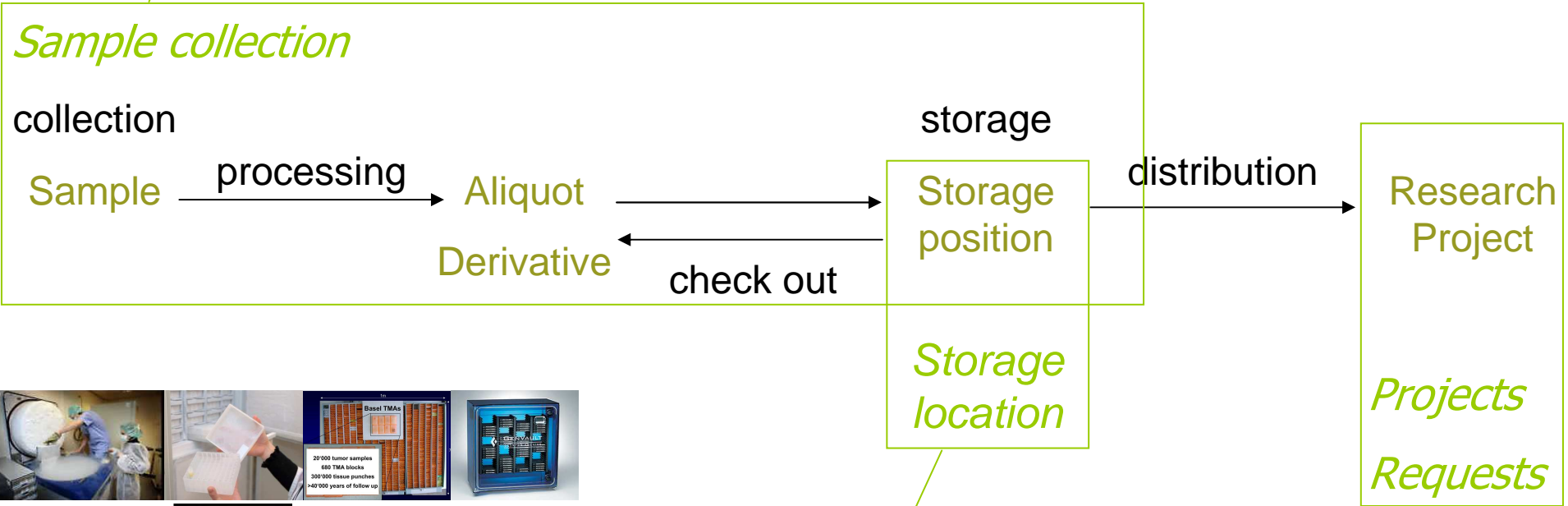


# Sapphire implementation @ JH (CCPRB)

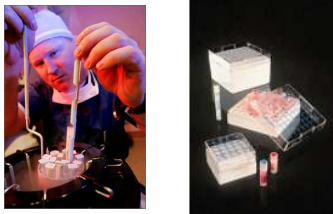
- Introduction to the system Jan 2008 (R4.7)
- Implementation sessions with SWP in Aug + Nov '08, Feb '09 (R5.0)
  - Identification of needs and related configs
    - What do we need?
  - Set-up of collaborative system
    - Common determinants
    - Subject/sample ID, sample type, derivatives...
    - Nomenclature!
  - Solution: mapping real-life situation step-by-step

# Flow chart biobank activity: Facility/Structure

- Principal Investigator
- Collection sites
- Contacts
- Restriction classes (consent)



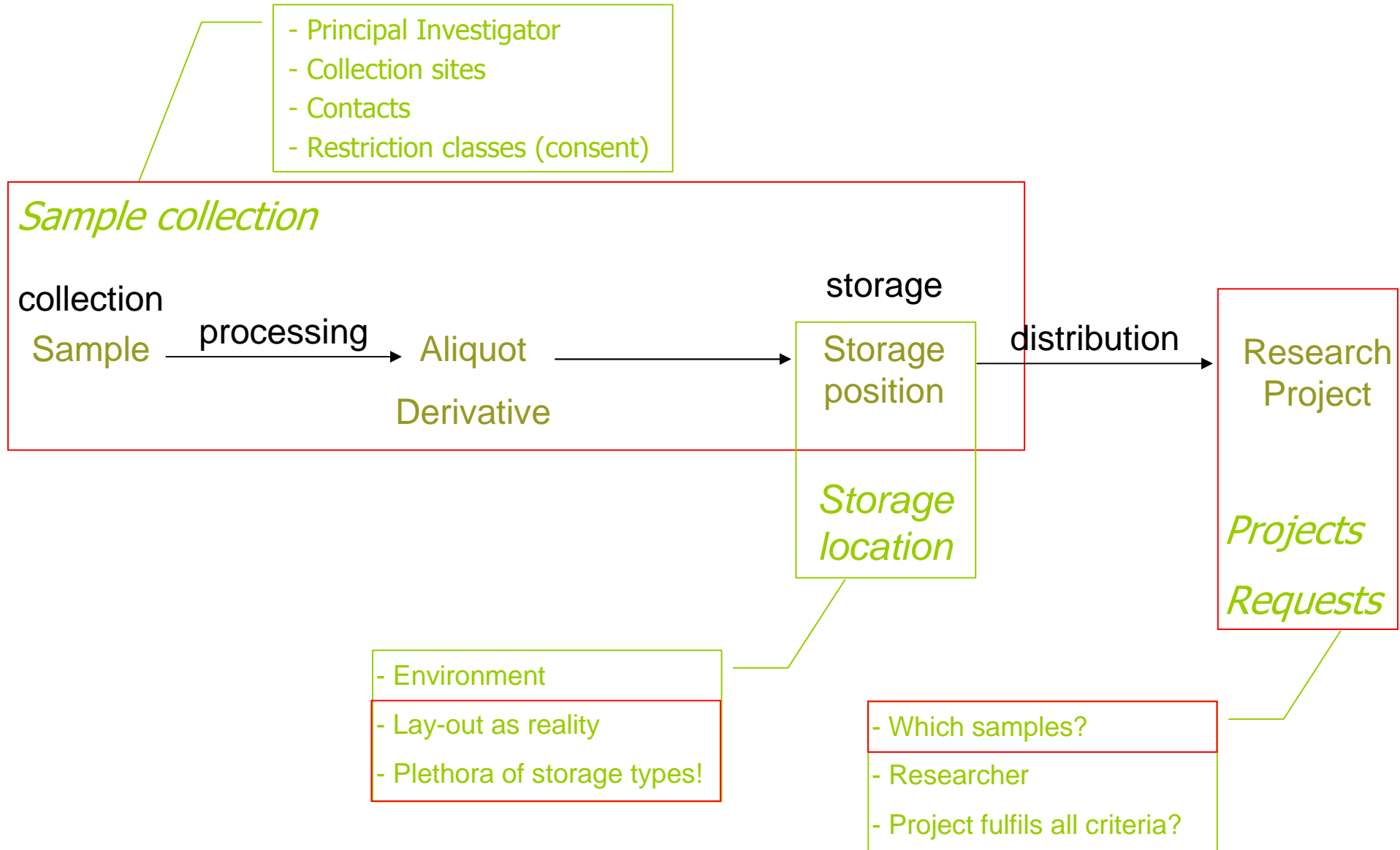
20'000 tumor samples  
600 TMA blocks  
300'000 tissue punches  
>40'000 years of follow up



- Environment
- Lay-out as reality
- Plethora of storage types!

- Which samples?
- Researcher
- Project fulfils all criteria?

# Facility/Structure implementations



# Facility/Structure: Storage Locations

LabVantage Project Louise (Test DB) v1.0 LOES LINSSEN ON TEST TIME ZONE: CEST

Biobank Structure | Biobanking | Sample Management | Subject Management | **Storage** | Certifications & Resources | Nomenclature | Packages & CDTs | Reports

File Samples | Physical Stores | **Storage Locations** | Environments | Containers | Boxes | Plates | Trackable Items

Side Bar << Storage Units Tree + Add + Add Child Edit View Delete Show TrackItems Edit Physical Store Print Label

Other Tasks: - Add Child, - Move, - Export

Bulletins (open...): No bulletins

Recent Items: - Edit Project, - Cytokine anal CABG, - Project List, - Request List, - Registered Sample List, - Edit Reference Type, - Sample Deviation, - Reference Type List, - Edit Sample S-110405-00001 Details, - Lab Operations Sample List, - Sample Collection List, - Edit Sample Collection hem-VJZ

LabVantage Solutions, Inc. © 2010

Search Bar: 100618\_testvriezer Freezer PS-000140 -80 Yes none No

Search: BiobankIII Freezer PS-000142 BiobankIII -80 Yes none No

Tank01 Tank PS-000143 nitrogen\_gas\_phase Yes none No

Biobank Freezer PS-000144 Biobank -80 Yes none No

Search By Query: AllPhysicalStoreSU, ByPhysicalStoreId, ByStorageUnitType

Search By Category:

Adhoc Search (New Adhoc Query)

<input type="checkbox"/>	R1	Rack		Yes	none	No
<input type="checkbox"/>	R2	Rack		Yes	none	No
<input type="checkbox"/>	R3	Rack		Yes	none	No
<input type="checkbox"/>	R4	Rack		Yes	none	No
<input type="checkbox"/>	R5	Rack		Yes	none	No
<input type="checkbox"/>	R6	Rack		Yes	none	No
<input type="checkbox"/>	L1	SlotBE		Yes	4	No
<input type="checkbox"/>	L2	SlotBE		Yes	4	No
<input type="checkbox"/>	L3	SlotBE		Yes	4	No
<input type="checkbox"/>	L4	SlotBE		Yes	4	No
<input type="checkbox"/>	L5	SlotBE		Yes	4	No
<input type="checkbox"/>	L6	SlotBE		Yes	4	No
<input type="checkbox"/>	L7	SlotBE		Yes	4	No
<input type="checkbox"/>	L8	SlotBE		Yes	4	No
<input type="checkbox"/>	L9	SlotBE		Yes	4	No
<input type="checkbox"/>	L10	SlotBE		Yes	4	No
<input type="checkbox"/>	L11	SlotBE		Yes	4	No
<input type="checkbox"/>	D1	BoxBE-9x9				
<input type="checkbox"/>	D2	BoxBE-9x9				
<input type="checkbox"/>	D3	BoxBE-9x9				
<input type="checkbox"/>	D4	BoxBE-9x9				
<input type="checkbox"/>	A1	BoxPos				

StorageUnit Renderer

View Options Legend

	1	2	3	4	5	6	7	8	9
A	1	2	3	4	5	6	7	8	9
B	10	11	12	13	14	15	16	17	18
C	19	20	21	22	23	24	25	26	27
D	28	29	30	31	32	33	34	35	36
E	37	38	39	40	41	42	43	44	45
F	46	47	48	49	50	51	52	53	54
G	55	56	57	58	59	60	61	62	63
H	64	65	66	67	68	69	70	71	72
I	73	74	75	76	77	78	79	80	81

73 FILLED I1

Storage Sample S-100622-01190

6 Total

	SDC	SDI	External Id	Location	Reserve SU	Custodian	FT
	Sample	<a href="#">S-100622-01190</a>	09103861	/BiobankIII/R1/L1/D2/I1			●
	Sample	<a href="#">S-100622-01357</a>	09121416	/BiobankIII/R1/L1/D2/E1			●
	Sample	<a href="#">S-100622-02846</a>	09280154	/BiobankIII/R1/L1/D2/A9			●
	Sample	<a href="#">S-100622-02651</a>	09223136	/BiobankIII/R1/L1/D2/C4			●
	Sample	<a href="#">S-100622-02778</a>	09271205	/BiobankIII/R1/L1/D2/F3			●

# Facility/Structure: sample collections

**Sample Collection**

Sample Collection Id: ESIR

Description: Electrostimulatie Studie

Type: Clinical Active: Yes

GLP:  Yes  No Principal Investigator: Dendale P, Dr

Data Controller: Hansen D, Dr External Protocol Id: ESIR protocol

Verification Role: Coordinating Centre: JZH\_VJ\_REGO

No. of Clinical Sites: 1 # of Planned Clinical Sites:

Notes:

Contacts Restriction Classes Approvals Clinical Sites Approval Rules Clinical Events Tests

<input type="checkbox"/>	Restriction Class Name	Active	COC	Data Restriction
<input type="checkbox"/>	Toestemming Onbekend	<input checked="" type="checkbox"/>	Yes	Yes
<input type="checkbox"/>	Geinformedeerde toestemming Studie	<input checked="" type="checkbox"/>	Yes	Yes

Add Restriction Class Edit Delete

Contacts Restriction Classes Approvals Clinical Sites Approval Rules Clinical Events Tests

<input type="checkbox"/>	Identifier	Clinical Event
<input type="checkbox"/>	CE-ESIR-0016	15 min pre-stim
<input type="checkbox"/>	CE-ESIR-0017	15 min post-stim
<input type="checkbox"/>	CE-ESIR-0018	60 min post-stim

Add Delete

**Project**

Project: Cytokine anal CABG Status: Active

Name: Ethical Permit:  Yes  No

Description:

Start Date: End Date:

Principal Investigator: Dr. D. Hansen VJZ Internal Manager:

Notes:

Request(s) Project Contacts

<input type="checkbox"/>	Request Id	Description	Status	Request Date	Due Date	Samples
<input type="checkbox"/>	cytokine anal CABG1		Open			4

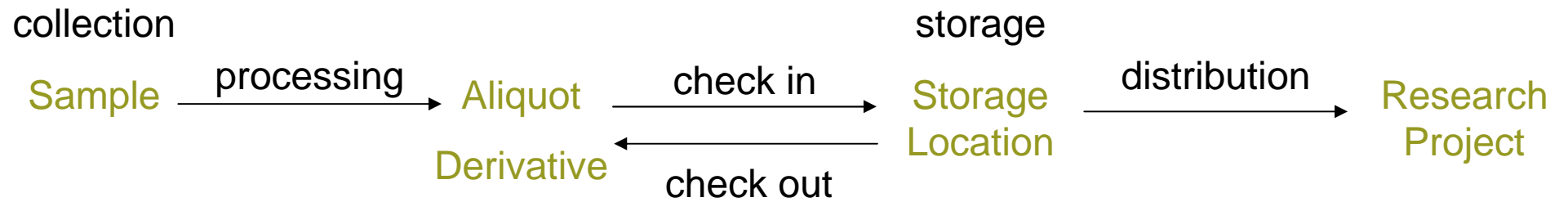
LabVantage SAPHIRE R5.1

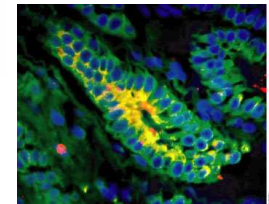
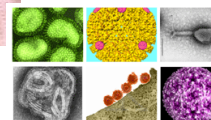
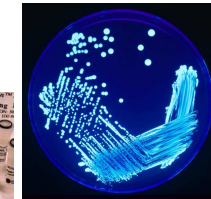
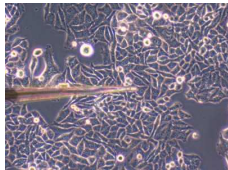
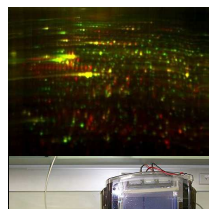
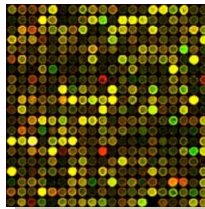
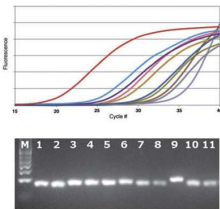
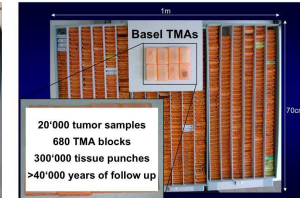
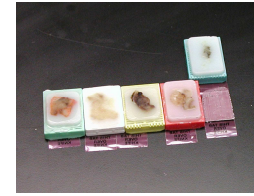
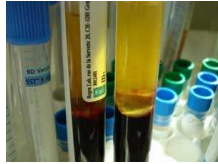
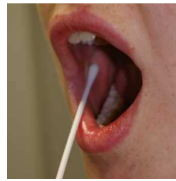
Sample List View View as PDF View as Excel Close

1 - 4 of 4 (page 1 of 1) [0 selected] Group By: None

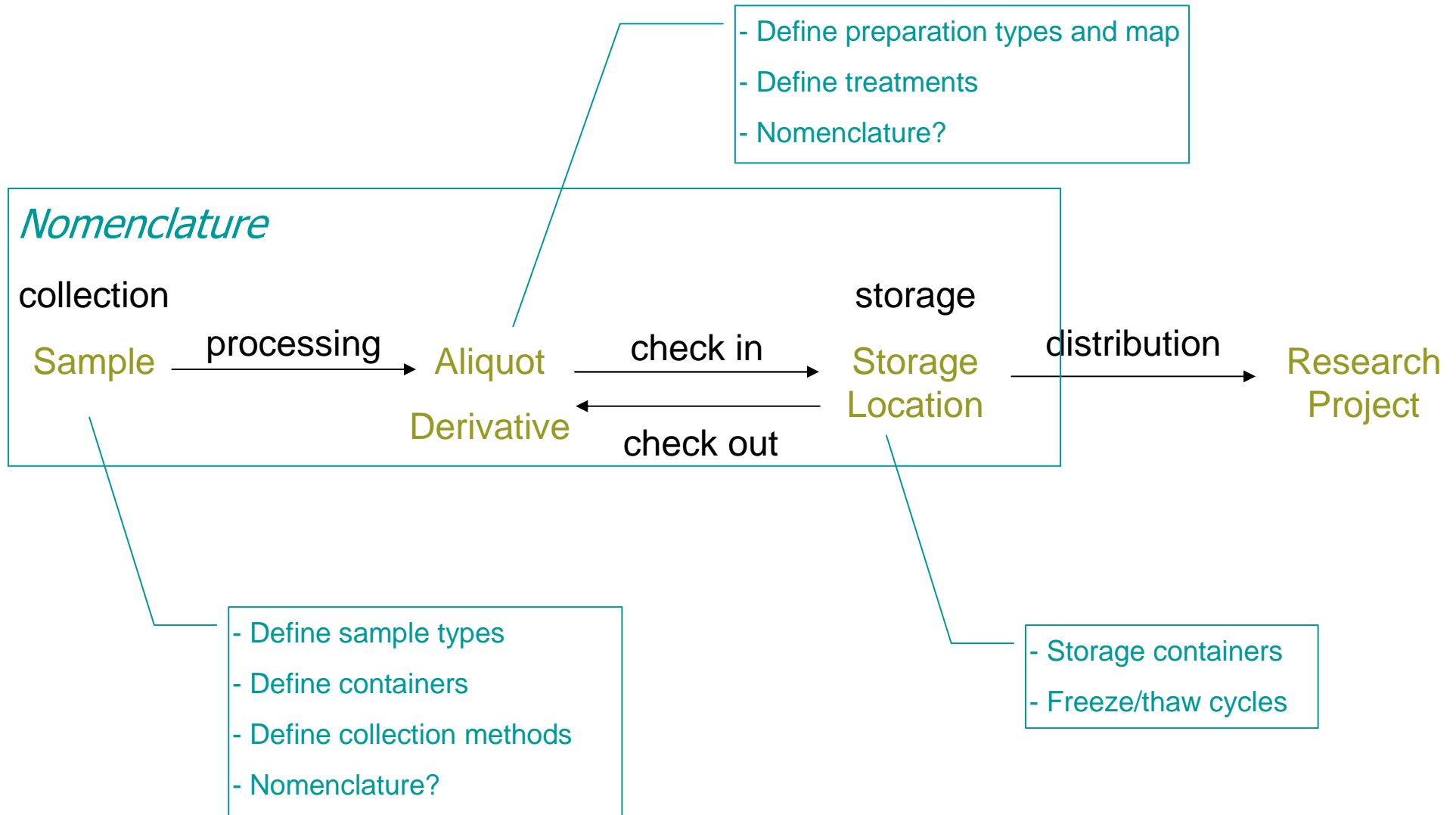
<input type="checkbox"/>	Sample Id	External Id	Sample Type	Status	CD	Custodian	CoC	Location
<input type="checkbox"/>	S-110328-00001	09210001	White blood cells	In Circulation	VJZ			/PKG-1103-000012
<input type="checkbox"/>	S-110328-00002	09210001	Plasma	In Circulation	VJZ			/testvriezerll/5/1/BX-00019778
<input type="checkbox"/>	S-110328-00003	09210001	DNA	In Circulation	VJZ			/PKG-1103-000012
<input type="checkbox"/>	S-110328-00004	09210001	Erythrocytes	In Circulation	VJZ			/testvriezerll/5/1/BX-00019778

# Flow chart biobank activity: Sample Handling

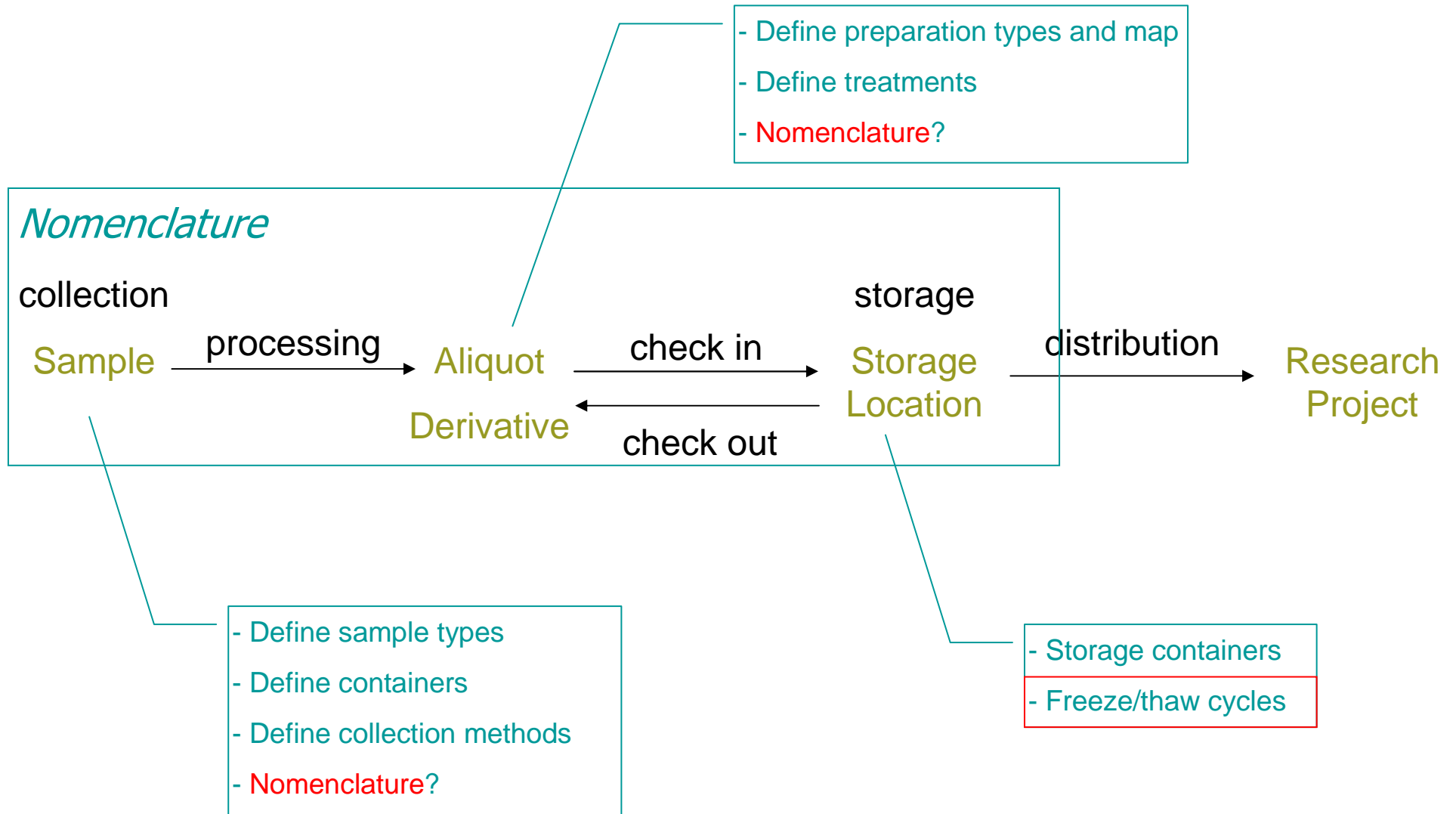




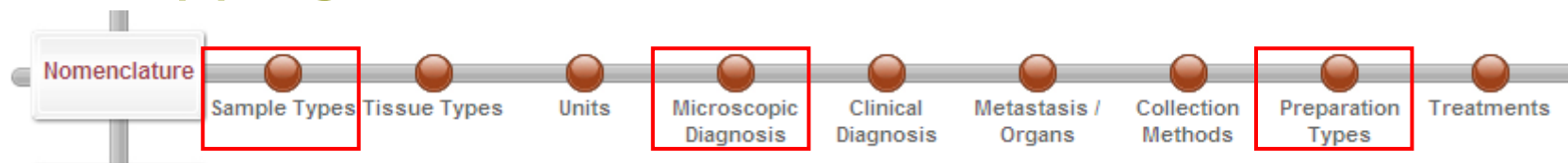
# Flow chart biobank activity: Sample Handling



# Sample Handling Implementations



# Sample handling: Nomenclature and prep type mapping



**Sample Type List** + Add

1 - 28 of 28 ( page 1 of 1 ) [ 0 selected ]

<input type="checkbox"/> Sample Type ▲	Description
<input type="checkbox"/> <a href="#">Aferese Plasma</a>	Plasma bijproduct van HPSC aferese
<input type="checkbox"/> <a href="#">Beenmerg</a>	Beenmerg - BM
<input type="checkbox"/> <a href="#">Bloed Cellen</a>	Bloed Cellen, mix van RBC en WBC
<input type="checkbox"/> <a href="#">Buffy Coat</a>	Buffy Coat - BC - aangerijkte WE
<input type="checkbox"/> <a href="#">cDNA</a>	cDNA
<input type="checkbox"/> <a href="#">Cellen</a>	Cellen van niet-gespecificeerde
<input type="checkbox"/> <a href="#">Chromosome slide</a>	slide with cells for chromosome
<input type="checkbox"/> <a href="#">Cytosol</a>	Cytosol van hele cellen of weefs
<input type="checkbox"/> <a href="#">DNA</a>	DNA (genomisch, mitochondriaal
<input type="checkbox"/> <a href="#">Erythrocyten</a>	Erythrocyten - RBC
<input type="checkbox"/> <a href="#">FFPE - weefsel</a>	Formaldehyde gefixeerd, paraffi
<input type="checkbox"/> <a href="#">Gedroogde Bloed Spot</a>	Gedroogde Bloed Spot - DBS
<input type="checkbox"/> <a href="#">Gesorteerde Cellen</a>	Gesorteerde cellen mbv FACS o
<input type="checkbox"/> <a href="#">Homogenaat</a>	Homogenaat van cellen of weefs
<input type="checkbox"/> <a href="#">Imprint Cytology/Dep</a>	Dep of imprint cytologie van wee
<input type="checkbox"/> <a href="#">Klonter</a>	Klonter
<input type="checkbox"/> <a href="#">Mononucleaire Cellen</a>	Mononucleaire Cellen (mono's/ly
<input type="checkbox"/> <a href="#">Perifeer Bloed</a>	Perifeer Bloed - PB
<input type="checkbox"/> <a href="#">Plasma</a>	Plasma
<input type="checkbox"/> <a href="#">Proteines</a>	Proteines

**Microscopic Diagnosis Tree**

<input type="checkbox"/> Description	Active
<input type="checkbox"/> CODAP 1999	Yes
+ <input type="checkbox"/> Algemeen	Yes
+ <input type="checkbox"/> WBC	Yes
+ <input type="checkbox"/> Myeloproliferatief	Yes
+ <input type="checkbox"/> Bloedplaatjes	Yes
<input type="checkbox"/> Lymfoïde pathologie	Yes
<input type="checkbox"/> 77HO - M. Hodgkin, nos	Yes
<input type="checkbox"/> 83SL - Splenisch lymfoom met VL/Villeuze lymfocyten	Yes
<input type="checkbox"/> 83BD - Mantelzone lymfoom, mantle cell lymphoma, MCL	Yes
<input type="checkbox"/> 83HE - Eosinofiel granuloom	Yes
<input type="checkbox"/> 83 - lymfoom, non-Hodgkin, NHL	Yes
<input type="checkbox"/> 78AC - Atypische CLL	Yes
<input type="checkbox"/> 78HC - Hairy cel leukemie	Yes
<input type="checkbox"/> 78HV - Hairy cell leukemie variant	Yes
<input type="checkbox"/> 83BE - Folliculair lymfoom / follicle center lymphoma	Yes
<input type="checkbox"/> 83BG - DLBCL / diffuus grootcellig B-cel lymfoom	Yes

**Edit Preparation Type** Save + Add Another

**DNA extractie**

Preparation type

Preparation Type:

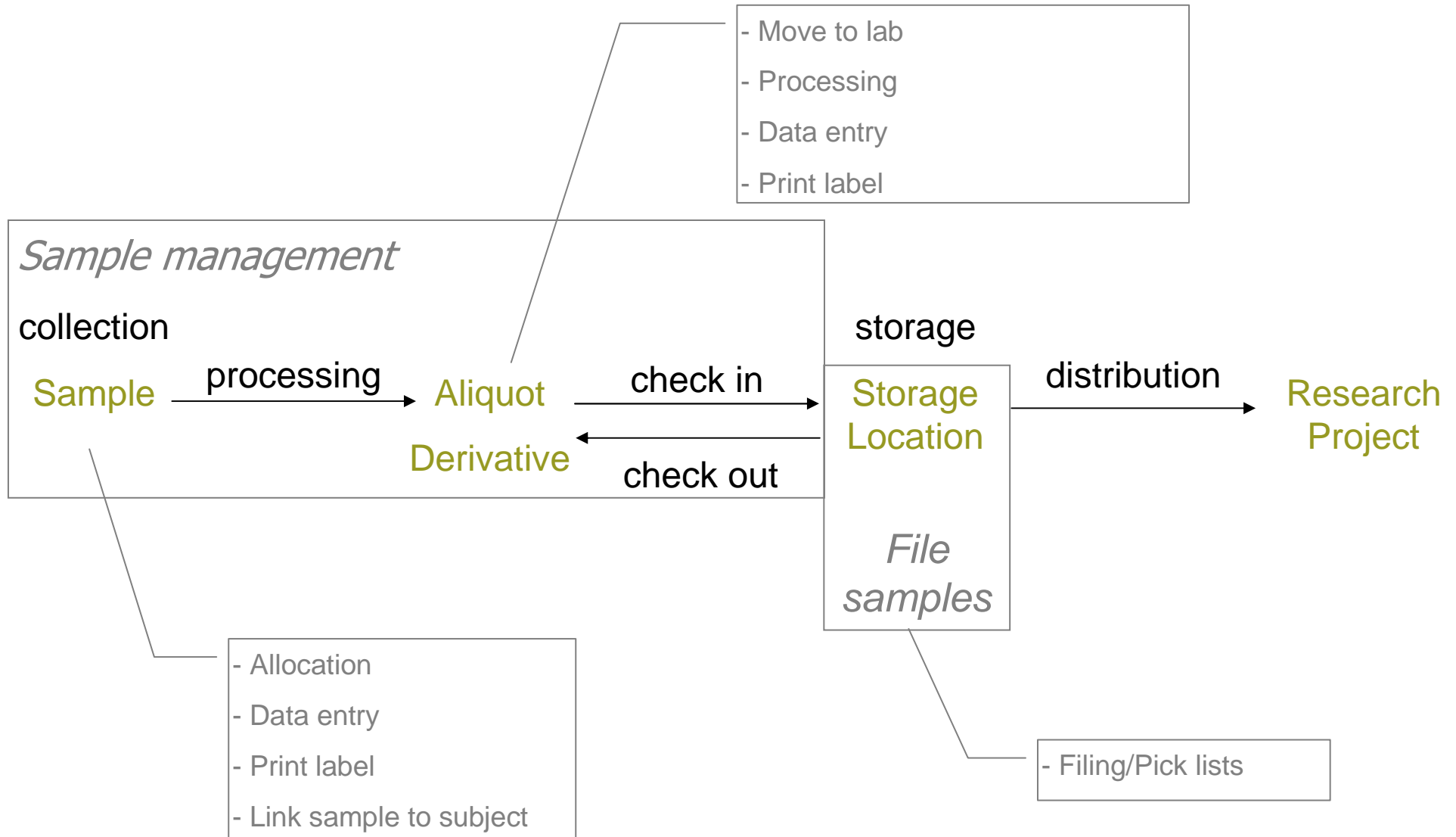
Description:

---

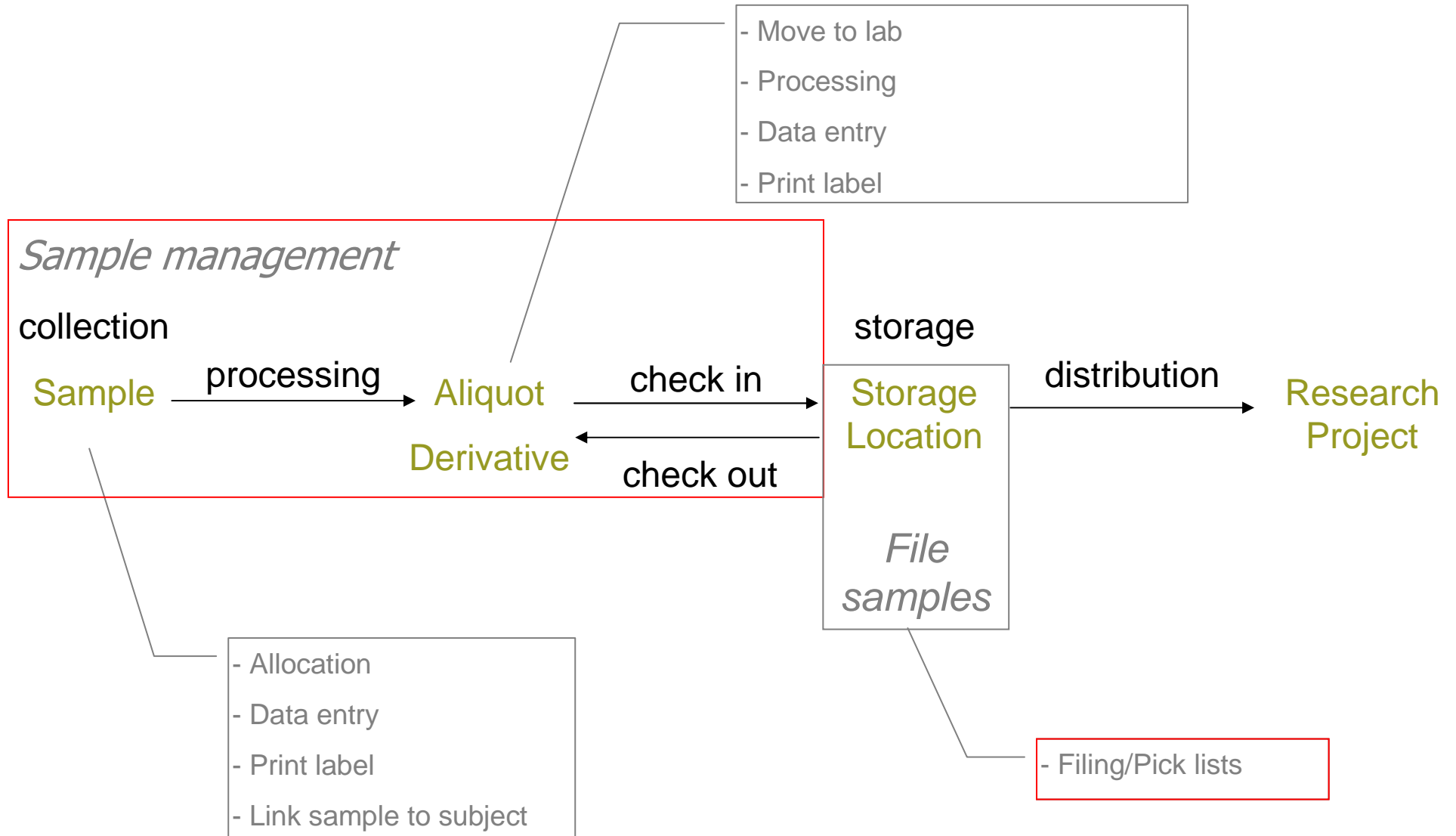
**Preparation Sample Type Mapping** Preparation Treatments

<input type="checkbox"/>	Source Sample Type	Destination Sample Type	<input type="checkbox"/>
<input type="checkbox"/>	Perifeer Bloed	DNA	<input type="checkbox"/>
<input type="checkbox"/>	Gesorteerde Cellen	DNA	<input type="checkbox"/>
<input type="checkbox"/>	Witte Bloedcellen	DNA	<input type="checkbox"/>
<input type="checkbox"/>	Buffy Coat	DNA	<input type="checkbox"/>
<input type="checkbox"/>	Klonter	DNA	<input type="checkbox"/>
<input type="checkbox"/>	Beenmerg	DNA	<input type="checkbox"/>
<input type="checkbox"/>	Aferese Plasma	DNA	<input type="checkbox"/>
<input type="checkbox"/>	Bloed Cellen	DNA	<input type="checkbox"/>
<input type="checkbox"/>	Weefsel	DNA	<input type="checkbox"/>
<input type="checkbox"/>	Gedroogde Bloed Spot	DNA	<input type="checkbox"/>
<input type="checkbox"/>	Mononucleaire Cellen	DNA	<input type="checkbox"/>
<input type="checkbox"/>	Wisser	DNA	<input type="checkbox"/>

# Flow chart biobank activity: Sample Flow



# Sample Flow implementations



# Sample Flow: Data entry

Lab Operations Sample List

1 - 1 of 1 ( page 1 of 1 ) [ 0 selected ] Group By Storage Status:

Storage Status: Temporary In Lab

Sample Id	External Id	Subject PID	Collection Date	Status	Sample Type	Quantity	Parent	CD	Custodian	Sample Collection	Data Restriction	Restriction Class	Location
<input type="checkbox"/> <a href="#">S-110422-00001</a>	11160001	PID01	22-4-11 16:14	Temporary In Lab	Peripheral blood	2 ml			VJZ	<a href="#">hem-VJZ</a>		<a href="#">full consent</a>	

Accessioning Data Entry

Sample	External Id	Subject Id	Sample Status	Restriction Class	Clinical Site	Clinical Protocol Id	Clinical Event	Conditional Approval	GLP
<input type="checkbox"/> <a href="#">S-110422-00001</a>	11160001	<input type="text" value="ST-00000009"/> <input type="button" value="Lookup"/>	Temporary In Lab	full consent	Virga Jesseziekenhuis	<a href="#">VJZ-1</a>	first sampling	<input type="checkbox"/>	<input type="checkbox"/>

Sample	Sample Type	Container Type	Prep Type	Collection Method	Collection Date	Initial Volume	Volume Units	Initial Mass	Mass Units	Freeze
<input type="checkbox"/> <a href="#">S-110422-00001</a>	Peripheral blood	EDTA		EDTA	22-4-11 16:14	2	ml	0		

# Sample flow: create derivatives/aliquots

**Add Sample Derivatives** Save Return To List

**Parent Samples**

<input checked="" type="checkbox"/>	Sample ID	Sample Type	Description	Concentration	Initial Quantity	Remaining Quantity	Mark Consumed
<input checked="" type="checkbox"/>	S-110422-00005	Peripheral blood			0,5 ml	0 ml	<input checked="" type="checkbox"/>

**Derivatives**

	Sample Template	Number of Derivatives	Sample Type	Prep Type	Treatment	Quantity	Unit
	-- Select Template --	4	Plasma	centrifugation	-- Select Treatment --	25	µl
<input type="checkbox"/>	-- Select Template --	1	Plasma	centrifugation	-- Select Treatment --	100	µl
<input type="checkbox"/>	-- Select Template --	1	Buffy coat	centrifugation	-- Select Treatment --	50	µl
<input type="checkbox"/>	-- Select Template --	1	White blood cells	centrifugation	RBC lysis	50	µl
<input type="checkbox"/>	-- Select Template --	1	Erythrocytes	centrifugation	-- Select Treatment --	50	µl
<input type="checkbox"/>	-- Select Template --	1	DNA	testpreptype	testtreattype	100	µl

+ Add

# Sample Flow: File samples

Add Aliquots Save Return To List

Parent Samples Save

<input checked="" type="checkbox"/>	Sample ID	Sample Type	Description	Concentration	Initial Quantity	Remaining Quantity	Mark Consumed
<input checked="" type="checkbox"/>	S-110422-00001	Peripheral blood			2 ml	0 ml	<input checked="" type="checkbox"/>

Aliquots

Sample Template	Number of Aliquots	Quantity	Unit
-- Select Template --	4	0,5	ml

+ Add

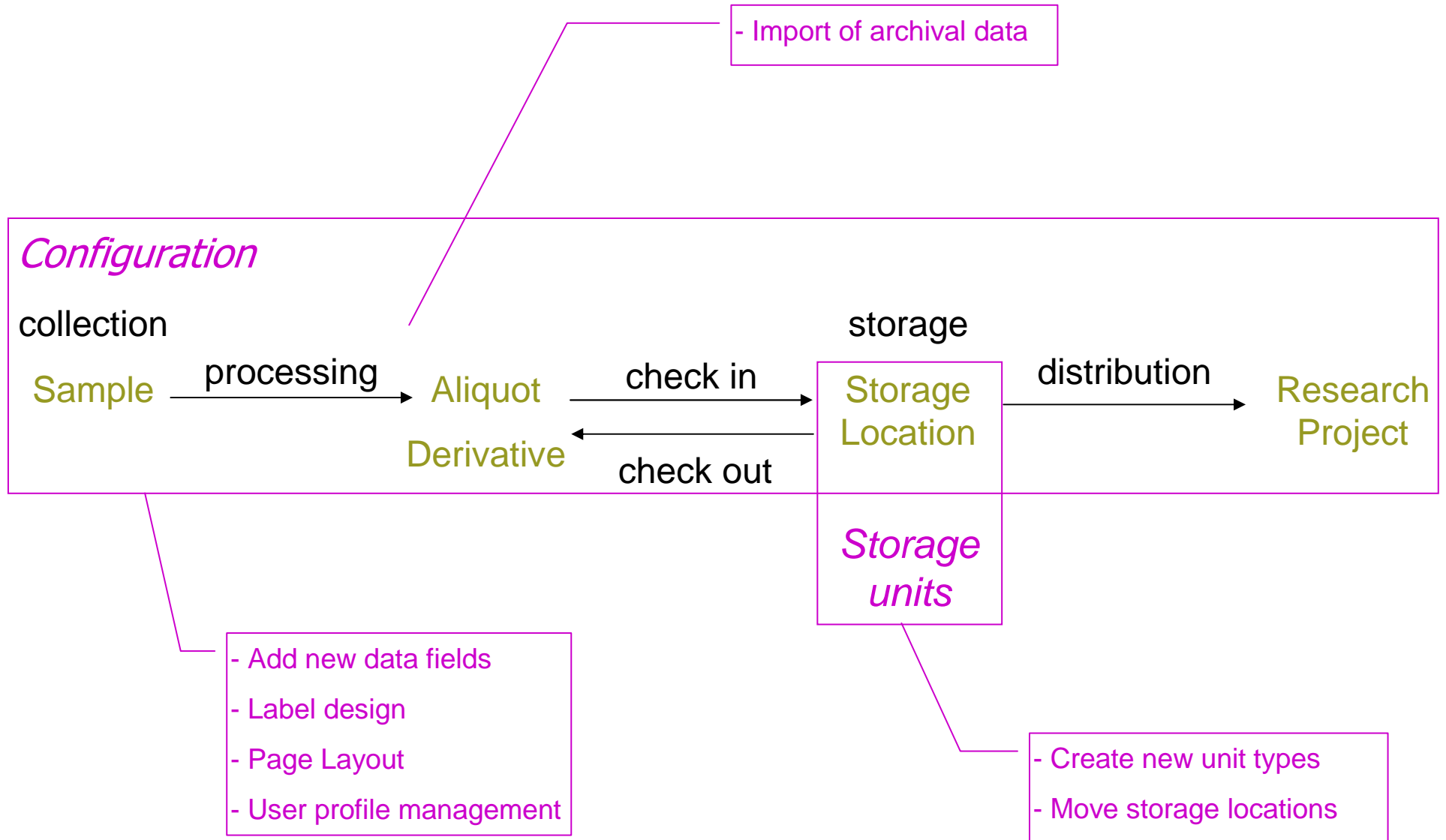
https://uwap35.srv.lu.se/louise/rc?command=viewreport&reportid=TrackitemPicklist&displaytype=pd - Windows Internet Ex...

1 / 1 81,2% Zoeken

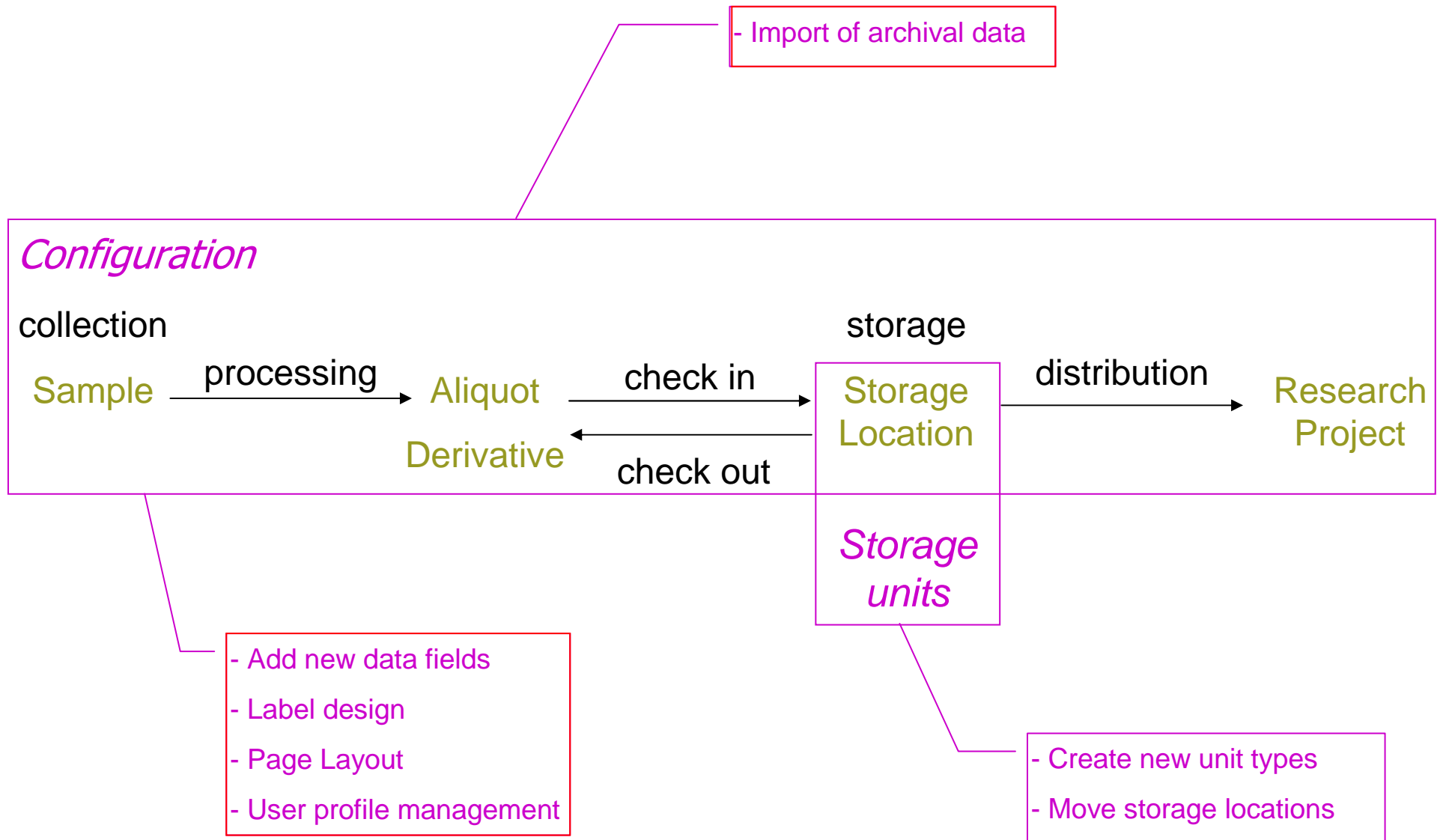
**LabVantage SAPHIRE** Location PickList

Sample					
Sample ID	Status	Sample Type	Location	Custodian	Domain
S-110422-00002	In Circulation	Peripheral blood	/Biobank/R1/L1/D1/A1		VJZ
S-110422-00003	In Circulation	Peripheral blood	/Biobank/R1/L1/D1/A4		VJZ
S-110422-00004	In Circulation	Peripheral blood	/Biobank/R1/L1/D1/A3		VJZ
S-110422-00005	In Circulation	Peripheral blood	/Biobank/R1/L1/D1/A2		VJZ

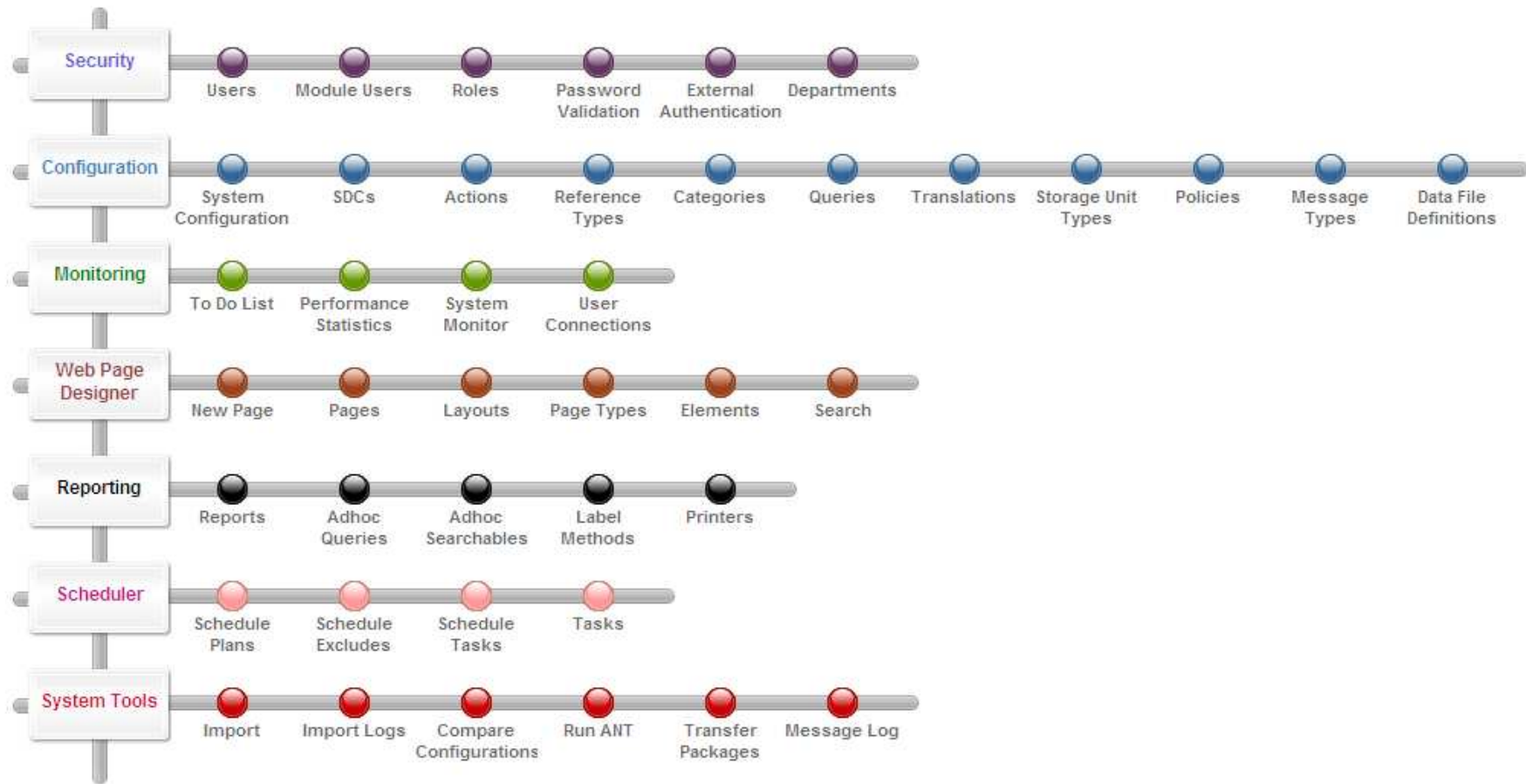
# Flow chart biobank activity: Maintenance



# Maintenance implementations



# Maintenance: sysadmin



# Maintenance: Database fields

Field Name	Description	Type	Length
<input type="checkbox"/> conservativerestrictionsfla		Character	1
<input type="checkbox"/> studyalias		Character	40
<input type="checkbox"/> u_pi	Principal Investigator	Character	20
<input type="checkbox"/> u_datacontroller	Data Controller	Character	20
<input type="checkbox"/> u_pi_addrstype	Always Hidden	Character	80
<input type="checkbox"/> u_dc_addrstype	Always Hidden	Character	80

Page Property Manager Quick Edit (Page)

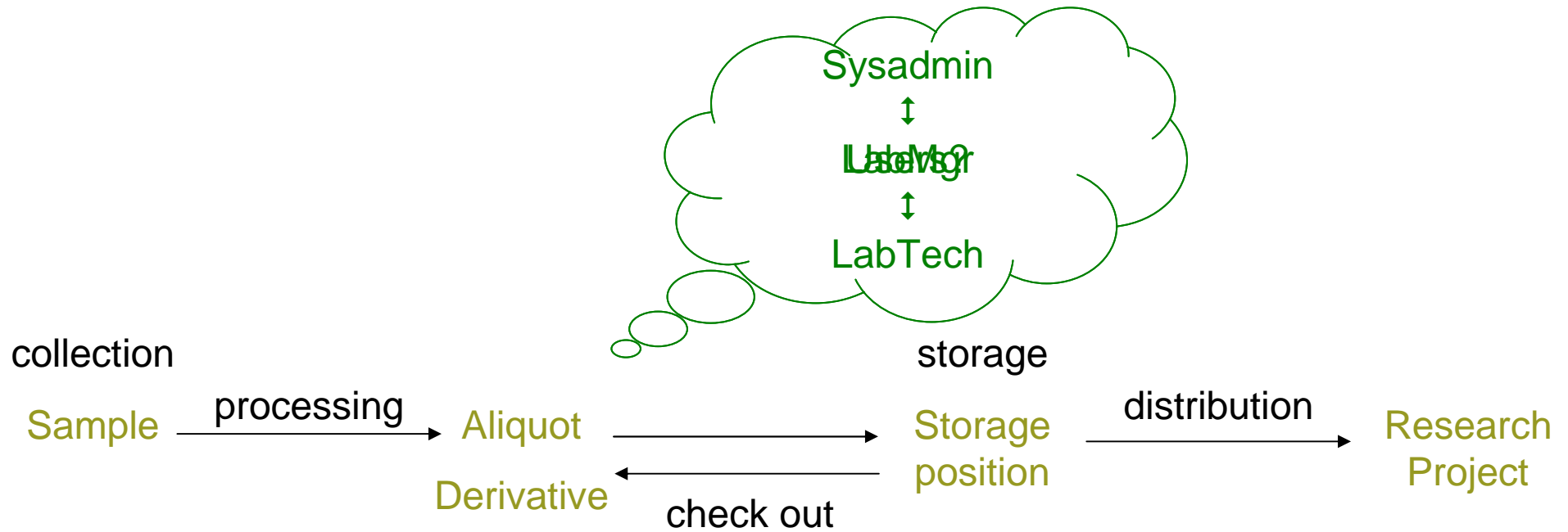
Show Advanced Properties

SDC	{ Study }
Style	{ FormWithTabGroups }
Form Columns	{ 2 }
Fixed Columns	{ 1 }
View Only	
EventNotify	

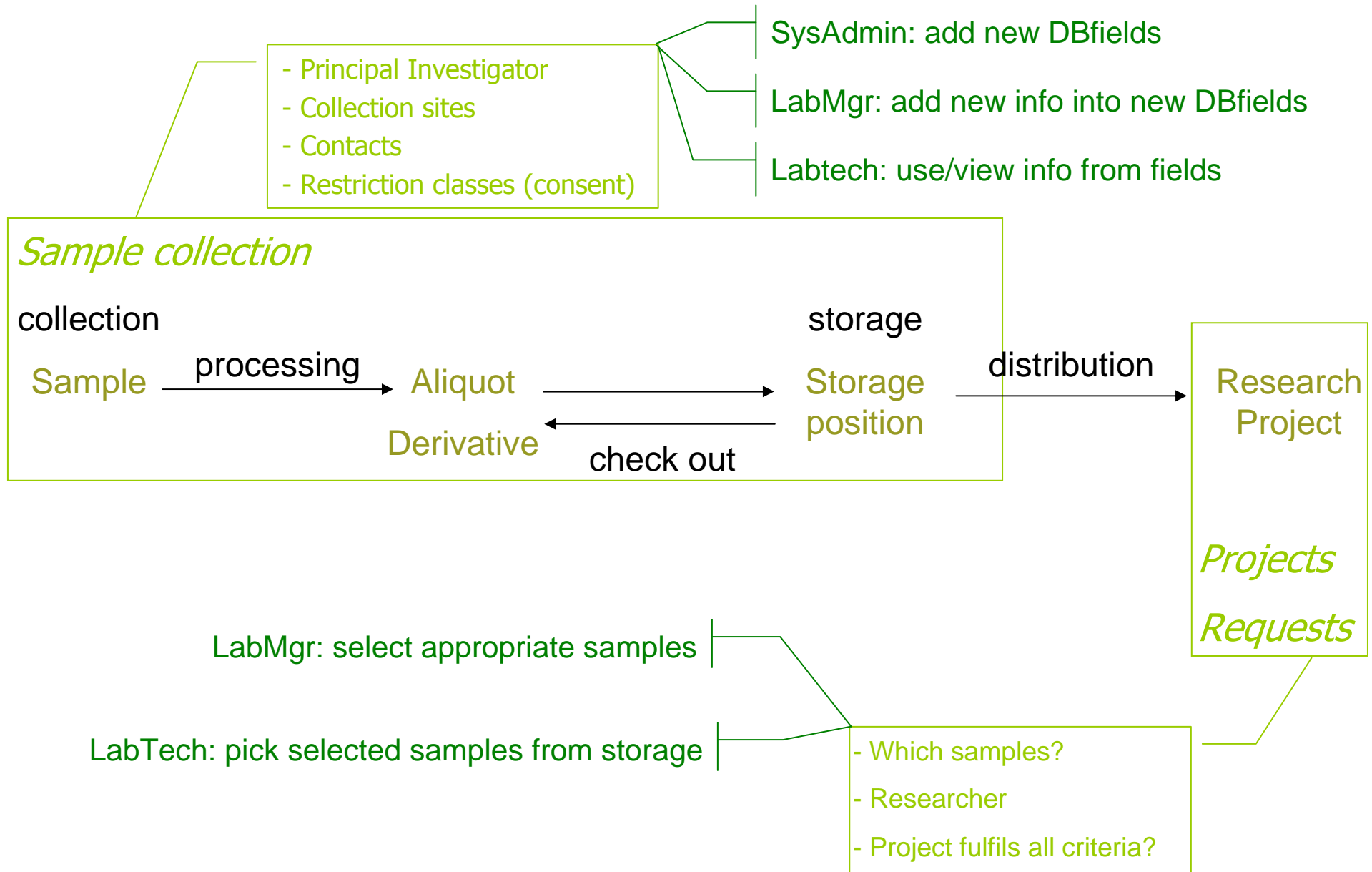
Columns

<input type="checkbox"/> Study Id	Identifier	{ actualparticipants }
<input type="checkbox"/> {{Study}} Alias	Column Id	{ (select count(*) from s_participa
<input type="checkbox"/> Description	Title	{ # of Actual Participants
<input type="checkbox"/> Type	Mode	
<input type="checkbox"/> Active	Validation	
<input type="checkbox"/> GLP	Custom JS	
<input type="checkbox"/> Require Link to Subject	Link URL	HRef
<input type="checkbox"/> Suppress HIPAA	Target	
<input type="checkbox"/> Require Sample Collection Inf...	Tip	
<input type="checkbox"/> Principal Investigator	CSS Class	
	Lookup URL	HRef
	Restrictive Where	

# Flow chart biobank activity: User roles



# Flow chart biobank activity: User roles



# User role implementation

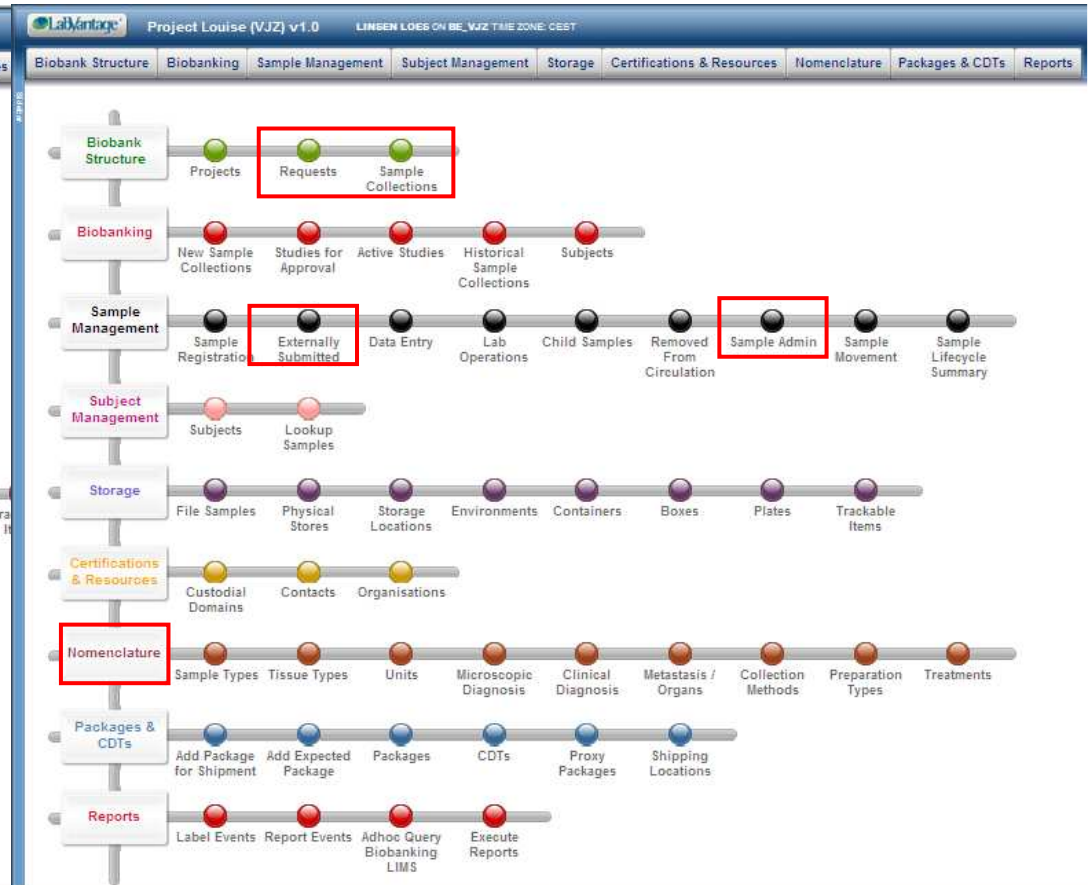
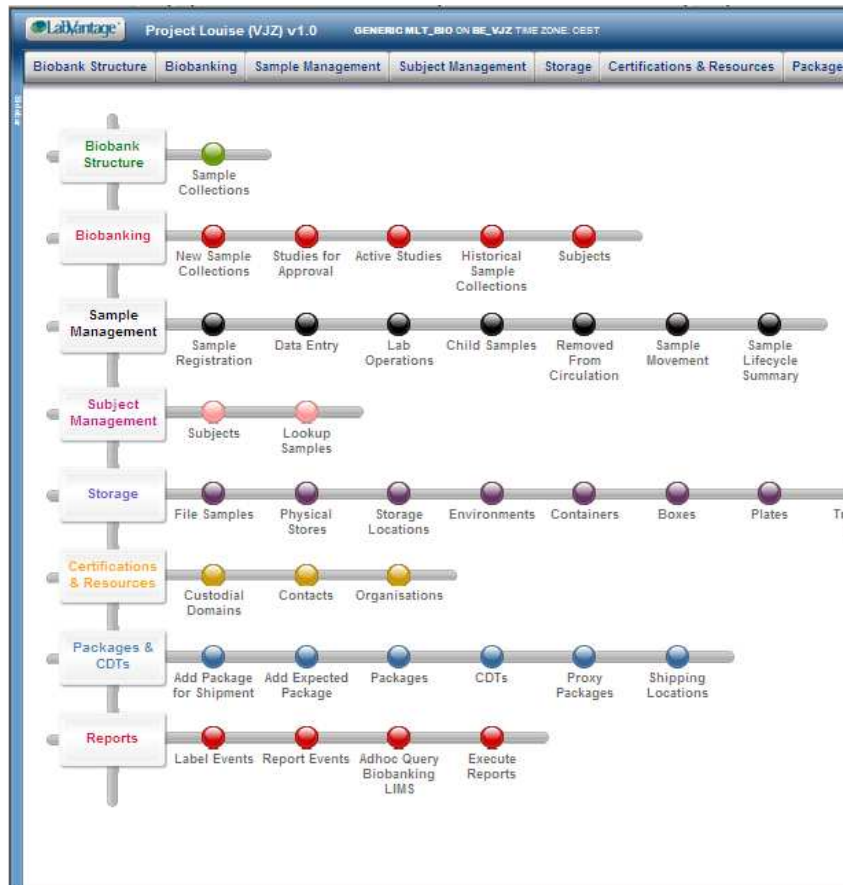
- User Roles
  - Lab Technician
  - Lab/Data Manager
  - System Administrator

User Roles	Categories	User Profile
<input type="checkbox"/> Administrator	<input type="checkbox"/> Analyst	<input type="checkbox"/> CAPA MGR
<input type="checkbox"/> CAPA QA	<input type="checkbox"/> CAPA SME	<input type="checkbox"/> CAPA User
<input type="checkbox"/> CertificationOverrid	<input type="checkbox"/> Contact Manager	<input type="checkbox"/> Data Manager
<input type="checkbox"/> Domain Admin	<input type="checkbox"/> Lab Data Entry	<input type="checkbox"/> Lab User
<input type="checkbox"/> LabManager	<input type="checkbox"/> ManagerApproval	<input type="checkbox"/> Package Receiver
<input type="checkbox"/> Preparation	<input type="checkbox"/> QA	<input type="checkbox"/> ReagentManager
<input type="checkbox"/> Receipt	<input type="checkbox"/> Reference	<input type="checkbox"/> Repository User
<input type="checkbox"/> Sample Submitter	<input type="checkbox"/> SampleLogin	<input type="checkbox"/> SampleReview
<input type="checkbox"/> SMS Admin	<input type="checkbox"/> Staging Lab User	<input type="checkbox"/> SupervisorApproval
<input type="checkbox"/> Virtual		

# User role implementation

## Lab user

## Lab Manager




# Difficulties with implementation

- Getting to know the system
  - Presented with empty box
  - Flexible
  - OOB functionalities vs customization
  - Tower of Babel: IT vs bio(techno)logists

# Difficulties (ctd)

- IT support
  - Expertise of superusers (PO and me)
    - Some configs can be made by non-IT **after education**
      - 2 training sessions of 2 full days:
    - Initially requested too much from SWP that could have been done by own personnel (cost!)
      - Q: Which headings do you want to see on the list page?

Storage Status: Temporary In Lab														
<input type="checkbox"/>	<u>Sample Id</u> ▼	<u>External Id</u>	<u>Subject PID</u>	<u>Collection Date</u>	<u>Status</u>	<u>Sample Type</u>	<u>Quantity</u>	<u>Parent</u>	<u>CD</u>	<u>Custodian</u>	<u>Sample Collection</u>	<u>Data Restriction</u>	<u>Restriction Class</u>	<u>Location</u>
<input type="checkbox"/>	<a href="#">S-110422-00001</a>	11160001	PID01	22-4-11 16:14	Temporary In Lab	 Peripheral blood	2 ml			VJZ	<a href="#">hem-VJZ</a>		<a href="#">full consent</a>	

- In-house IT support for internal implementation of system
  - Structural support (DB management, restarting server, sftp...)
- External IT support for advanced customization
  - New pages, upgrades, ...

# Strengths of Sapphire

- Web-based application
- No local installation necessary
- Backup at server facility
- Automatic logging of all transactions
- Chain of custody
- Configurable
- Different modules available
  - Biobanking
  - CAPA
  - eFORMS
  - LIMS

# Weaknesses of Sapphire

- Slow (occasionally)
- Not free from bugs
- Not thoroughly tested
- Some steps are more complicated than necessary
- Customization might be expensive
- Help files not that informative
- How-to documentation missing

# Lessons learnt:

- Implementation of BIMS
  - *Bezint eer gij begint* (Look before you leap)!
  - Charting of needs, workflow/systems
  - Test phase/system
  - TIME
  - Support by in-house IT personnel (independent of BIMS solution)
  - Goodwill from end-users
- Good advice
  - Don't get fooled by salesreps (everything is possible)!
  - Get to know the system thoroughly!
    - ask for hands-on demo's for a mixed public
  - There's always a catch!
    - Read small print (or ask for it if there isn't any)

# Selection of BIMS: In-house vs open source vs commercial?

## Summary life cycle TCO savings for using caTissue vs. alternatives

Cancer Center Life Cycle TCO Comparison: 10-Year Life Cycle <sup>1</sup> In-House vs. Contractor-Based IT Labor Rates						
TCO Cost Component (in \$000's)	In-House IT Labor			Contractor-Based IT Labor		
	ca Tissue	COTS Solution	Custom Built Solution	ca Tissue	COTS Solution	Custom Built Solution
Hardware	\$39	\$39	\$39	\$39	\$39	\$39
Software Maintenance	---	\$110	---	---	\$110	---
Customization	\$13	\$13	---	\$13	\$13	---
Labor	\$243	\$243	\$1,933	\$473	\$473	\$2,434
Training	\$5	\$5	\$5	\$5	\$5	\$5
TOTAL	\$300	\$410	\$1,977	\$530	\$640	\$2,478
<b>Cost Savings</b>						
<b>caTissue vs. Alternative</b>	NA	\$110	\$1,677	NA	\$110	\$1,948

### Key Points

- ▶ Only the COTS solution incurs upfront software licensing and maintenance costs
- ▶ The increase in labor costs for Custom Built option is due to estimated 4 FTEs for one year needed to develop a custom solution
- ▶ IT development costs increase significantly when outsourced
- ▶ Avg Savings
  - \$110K vs. COTS<sup>2</sup>
  - \$1.8 Mil vs. Custom Built option

1. Full life cycle TCO reflects costs incurred over a ten year period.

2. COTS cost savings comparison based on one license.

# Future perspectives

- Production (May 2011)
- R5.1 upgrade:
  - Implement e-forms (lab/collection site)
  - Import functionality (nomenclature)
- Barcode scanning to support sample flow
- Upload data from lab/hospital records
  - Diagnoses
  - Treatments
  - Consent status (residuary material)
- Flemish Biobanking Initiative
  - Virtual biobank
  - Central access point for researchers