THE UNIVERSITY OF HONG KONG

CULATR/LAU ONLINE WORKFLOW SYSTEM – PHASE 1

M150-2

e-Holding Application Workflow

Requirement Specification (Draft)

Private and Confidential

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By Software Tailor (HK) Limited

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TABLE OF CONTENTS

1. DOCUMENT HISTORY

Version 1.0, Oct 15, 2014, Created by Johnny

Change Number	Revision Description	Pages Affected on Respective Version	Revision/ Version Number	Date

2. BACKGROUND

2.1 About This Document

This document defines the functional requirements for the e-Holding Application Workflow. It will be used as the basis of the system design in the next phase of development.

As well as a system overview, attention is given to functional and non-functional requirements and system usage scenarios.

2.2 Document Audience

The document is intended for e-Holding Application Workflow development team as a blueprint for the construction of the system, and for HKU e-Holding operations staff. It is expected the reader has computer science or information technology background, understanding database concepts, database diagrams and input-process-output descriptions.

3. SYSTEM OVERVIEW

The Laboratory Animal Unit (LAU) of The University of Hong Kong (HKU) is a service unit of the Faculty of Medicine. The Unit was established in 1979. The primary function of the LAU is the breeding of specific pathogen free laboratory animals for research and teaching, mainly for the Faculty of Medicine, although animals are also supplied to other University departments and units. Centralized animal holding and surgical facilities for biomedical research are also provided. The Unit also advises on matters relating to laboratory animal science and provides veterinary service to all departments and units of the University.

Software Tailor will implement an LAU Management System to replace the original system. The original system is composed of different sub-systems, some of which created by other vendors and local engineers. These systems are independent and requires large amount of human resources to export and input the data between systems. This process is time consuming and error prone. The new LAU management system is expected to have a centralized system to replace the existing system and workflows. CULATR/LAU Online Workflow System is the project name for implementing the LAU Management System.

The CULATR/LAU Online Workflow System consists of the following sub-systems or workflows:

1. CULATR Application,

2. Animal Holding,

3. e-Ordering,

4. Post Approval Monitoring (ePAM) System,

5. Application for Smartcard Registration

6. Application for Animals/Embryos Importation/Exportation

7. Application for Introduction of Animals/Embryos from Local "Non-LAU" sources

8. Application for Relocation of Experimental Animals Out of the LAU to Other Local Facilities

9. Application for Delivery of Animals, diet and bedding

10. Application for Room booking

11. Application for Enquiry about Availability of Animals

12. Laboratory Examination Application (LAU in-house request and HKU/Non-HKU users request)

13. Serological Screening & Genetic Moritoring Request Form for In-house/HKU/Non-HKU Users / Animal Importation Cases

14. Application for Screening of Biological Materials for Microbial Contamination

15. Training Registration and Management

16. Follow-up Action Log in Areas

17. LAU e-Inventory for Equipment

3.1 Objectives

The CULATR/LAU Online Workflow System has the following objectives:

- Conduction of CULATR application and LAU service application activities in online web platform and enhancing data accessibility and transparency;

- Increase the efficiency and effectiveness of current workflow and data entry tasks;

- Maintain an accurate level of database information and data exchanges;

- Allow applications and members to receive timely information and instructions;

Operating Environment

The CULATR/LAU Online Workflow System (the system) requires the following operating Environment:-

✧ Minimum System Requirements

- ✧ **Server**: Centos 6.5 recommended

- ✧ **Http Sever**: Apache 2.2

- ✧ **MySQL**: : MySQL 5.5

- ✧ **PHP**: PHP 5.3+ recommended

- ✧ **Server monitoring**: Zabbix 2.2+

✧ Minimum Hardware Requirements

- ✧ **CPU**: 2 cores or above, 4 core recommeded

- ✧ **Memory**: 1G or above, 4G recommended

- ✧ **Disk**: 50G or above, 200G recommend

- ✧ **Network Card**: 100M or above

- Network download speed of 120 Kbps (or higher)*

3.2 Design and Implementation Constraints

- All systems shall have the same user interface design;

- The workflow or task distribution shall be implemented without a third party workflow management system in order to minimize integration risks and maintenance effort.

3.3 Assumptions and Dependencies

- It is assumed the requirements of each sub-system are to be reviewed and confirmed by corresponding user representative before the design stage so to reduce the impact to minimal on the software design and re-design during or after the design phase.

4.   USER REQUIREMENTS

The following describe the requirement of the e-Holding Application Workflow of the CULATR/LAU Online Workflow System.

In these requirements:

'Must' is used for requirements which have been identified as essential for the prototype.

'Should' is used for requirements that would be desirable in the system but which may not be included in the prototype.

'May' is used for requirements that will not be included in the prototype but may be part of the system

4.1 General

CLARIFICATION QUESTIONS:

1. [File: Area of Animal Species/Strains] Why it doesn't show CA-Ext, CA-Lab, CA-FMB and MDA-Ext?

2. [4.1.3] The area description is associated with the category or to specific area?

3. [4.1.5] Can the delegate submit the holding application on behalf of the PI?

4. [4.1.6] The location change will notify to PI automatically through the system instead of having LAU GO to issue letter?

Code	Descriptions
4.1.1	The System must allow PI (not Co-PI) to submit holding application for approved CULATR application.
4.1.2	The System must allow PI to assign a delegate to fill-in (and submit? TBC) the holding application. The delegate must be a person specified in CULATR application form section 2 or 3.
4.1.3	The System must allow LAU GO to grant the right for the PI of a processing (not-yet-approved) CULATR application to submit holding application before a specified date. In this case, the System must require the PI to provide a valid reason on submitting the holding application before the approval of CULATR application.
4.1.4	The System must allow LAU GO to define categories of Areas, i.e. Conventional Area (CA) and Minimal Disease Area (MDA). For each category, the System must stores its description including what kind of experiment can be performed in that area.
4.1.5	The System must allow LAU GO to define a list of Areas in each Area Category. Each Area has a name, a code, address, the list of species it can hold, the cage

	type and quantity of each cage type, and holding type (EB, EB with reason, and EH)
4.1.6	The System must allow LAU GO to define a list of cage type. Each cage type has a name, rental cost, description and the species intended to hold. (TBC)
4.1.7	The System must allow LAU Area Head or Technical Officers to change the location of cage and send notification for the change to LAU GO (to GO and/or to PI? TBC).
4.1.8	The System should provide auto-save feature as the application form can be long.
4.1.9	The System must allow PI and CW/Co-workers (Co-PI and Staffs/students in corresponding CULATR application) to access information of approved holding application(s).
4.1.10	The System must show corresponding notes to assist PI to fill-in the Holding application.

4.2 e-Holding Application Form

The square brackets [x] refers to the corresponding section of the Animal Holding Application Form currently in use.

Clarification Questions:

1. (2) Even though the department of the PI may be changed, but the account number is specified in the holding and the payment should always be made to the specified account. If the department is changed, then a corresponding account should be changed as well?

2. [4.2.24] (7) When PI is applying holding before CULATR approval and if the species change after holding approval, the system will mark the previous holding application as "invalid"?

3. (15) (a) this could later become a reminder or requirement for PI/CW to apply training in the system?

4. (19) "The System must allow PI who is from Psychology, O & G and Pharmacology to specify the information of two Departmental Animal Keepers for and only for CA-FMA area. All other PI must fill-in the Account Number for payment of husbandry work charge." If applying additional in additional to CA-FMA, PI will specify an account number for charging other areas?

Internal Notes

For each field,

1. Optional or compulsory. Must fill-in "N/A" (not in e-form)

2. Maximum length for text

3. Any relationship with other fields in this application form

4. Any restriction or constraints for filling in such information

5. Need to collect statistics, for summing or averaging (if not, we will not store as child-tables)

6. Provide note for each section?

7. Can provide example to end users for input reference?

8. Changes of information requires notification to specific user(s)? Like department of PI.

Code	Descriptions
4.2.1	[1] The System must retrieve PI Name, Email Address, Tel. No. and Position, i.e. Job Title, from user profile information, which has already provided in CULATR application.
4.2.2	[1] The System must ask the PI to provide Fax No. This information should

	associate with user profile of the system. Once specified in holding application, the System must update the profile information. Alternatively if the user profile has the information, it must be automatically filled.
4.2.3	[2] The System must retrieve the department(s) of the PI.
4.2.4	[3] The System must allow PI to select an approved and valid (within the CULATR application validity period) CULATR application.
4.2.5	[3] The System must retrieve CULATR information including approval date and approved project duration.
4.2.6	[4] The System must allow PI to specify the commencement date, default to CULATR approval date or holding application date whichever is later, but allow modification. The holding commencement date must not be outside the CULATR validity period.
4.2.7	[4] The System must allow PI to specify the holding completion date, default to the end of CULATR application validity period. The holding completion date must not be outside the CULATR validity period and must be later than the commencement date.
4.2.8	[4] In order to cater for the exceptional cases that the holding completion may be later than CULATR validity period, the System must allow LAU GO to authorize PI to set the Holding Completion Date to a date not later than LAU GO specified date, an Extended Holding Completion Date. In this case, the system must request PI to provide a reason to support the extended period.
4.2.9	[5] The System must allow PI to submit either a new holding application or an amendment (extension of period and/or increase of holding space).
4.2.10	[5] The System must refer to the corresponding CULATR application to see if section 7(a)[ii] is checked and filled-in for enabling the selection of "EB" in the holding application form.
4.2.11	[5] (a) For new application, the System must first show Notes for Completing the E-Holding Application Form (Annex 1) and must require PI to click "Agree" button in order to proceed to next step.
4.2.12	[5] (a) For new application, the System must ask the PI to see if it is a replacement of previous CULATR. If true, the System must ask the PI to provide the CULATR No. and the System shall lookup and pre-select the approved area of the specified CULATR's holding application.
4.2.13	[5] (a) The System must allow PI to select one or more areas for holding. If the selected area is "EB with reason" (displayed as EB), the PI must provide a reason for each such area selected
4.2.14	[5] (a)(iii) The System must allow PI to specify one CULATR project for replacement.
4.2.15	[5] (b) The System must automatically filled-in the start date of the extension period which is the end of current approved holding period.

4.2.16	[5] (b) The System must make sure the end date of the extension period is not beyond the validity period of the CULATR application.
4.2.17	[5] (b) In order to cater for the exceptional cases that the holding extension may be later than CULATR validity period, the System must allow LAU GO to authorize PI to set the holding extension date to a date not later than LAU GO specified date, an Extended Holding Completion Date. In this case, the system must request PI to provide a reason to support the extended period.
4.2.18	[5] (b) The System must display the list of rooms currently held by PI and allow PI to select one or more room to extend holding.
4.2.19	[5] (c) The System must allow PI to extend holding space of each room currently approved for current CULATR application, without the need to select EB/EH.
4.2.20	[5] (c) The System must automatically filled-in the starting quantity on extending holding space which is the current approved number of cage.
4.2.21	[5] The System must display previous approved holding information of current CULATR application.
4.2.22	[6] The System must display the title of the CULATR application.
4.2.23	[7 - 11] The System must allow PI to specify the information in section 7 to section 11 of the holding application form for each area selected in 5 (a). The System must provide facilities to copy information of one area to another.
4.2.24	[7] The System must retrieve the species from Section 7 (a) [i] and [ii](I) of CULATR application form and allow users to selection one or more species/strains for specific area. Default to select all.
4.2.25	[7] The System should cater for the case when retrieving species/strain information from not-yet-approved CULATR application. The finalized species/strain list of approved CULATR may be different than the time filling in the holding application.
4.2.26	[7] The System must show (1) Approved animal strains and quantity, (2) total quantity used since project start date and (3) quantity of animals not yet used.
4.2.27	[8] The System must show a list of cage types of each room for PI to enter the quantity required of each cage type. The System shall filter the list of cage types available for input based on selected species/strain and area of the room.
4.2.28	[8] The System must display the unit cost of each cage type for information only (do not need to calculate sum).
4.2.29	[8] The System must show reference to "Recommended Stocking Density Table".
4.2.30	[9] The System must automatically show Biological Materials information, e.g. cell lines, serum, etc.) from section XXXX (TBC) of the corresponding CURALR application and allow PI to select none, one or more materials will be used

	(default to select all).
4.2.31	[9] The System must allow upload of supporting documents, e.g. leaflet and brochure, of Biological Materials.
4.2.32	[9] The System must show the following notice when user selected one or more Biological Materials: "All biological materials have to be screened for contamination at user's own cost before they can be used in the Minimal-Disease Experimental Holding Area on 1/F of the LAU Building and EG/F of the LAU Extension."
4.2.33	[10] The System must automatically show Hazardous Materials information from section 11 (k) (TBC) of the corresponding CURALR application and allow PI to select none, one or more materials will be used (default to select all).
4.2.34	[10] The System must allow upload of supporting documents, e.g. safety office's advice, of Hazardous Materials.
4.2.35	[10] The System must show the following notice when user selected one or more Hazardous Materials: "Please provide a copy of Safety Office's advice on safety measure required."
4.2.36	[11] The System must automatically show Surgical and Non-surgical procedures information from section 11 (b) (TBC) of the corresponding CURALR application and allow PI to select none, one or more procedures will be performed (default to select all).
4.2.37	[11] The System must allow upload of supporting documents, e.g. safety documents, of Surgical and Non-surgical procedures.
4.2.38	[12] The System must automatically show drugs information from section 11 (b) (TBC) of the corresponding CURALR application and allow PI to select none, one or more drugs will be used (default to select all).
4.2.39	[15](a) The System must allow PI to specify the training requirements of each CW.
4.2.40	[15](b) The System must allow PI to specify other requirements, e.g. equipment or instrument, of the holding application.
4.2.41	[16] The System must automatically show CW information from section 2 & 3 of the corresponding CURALR application and allow PI to select one or more persons who will be using the holding facility (default to select all).
4.2.42	[16] The System must automatically retrieve the training sessions attended by each persons listed in holding application for and only for LAU members to review.
4.2.43	[16] The System must allow PI to fill-in the Fax. No. of each selected person.
4.2.44	[18] The System must allow PI to specify one Account Number to associate with the holding application for rental charge.

4.2.45	[18] The System must cater for the possible format change of Account Number on Account Number validation. The current format is a 30-digit + (2-char code) with dots in between, i.e. 99999.999999999.999999.99999.999.99(D2). For example, 10117.000000000.000000.21800.400.01 (D2).
4.2.46	[18] The System should store Account Number in user profile of current logon user and allow user to enter or select one.
4.2.47	[19] The System must allow PI who is from Psychology, O & G and Pharmacology to specify the information of two Departmental Animal Keepers, one as backup, for and only for CA-FMA area. All PIs from other departments must fill-in the Account Number for payment of husbandry work charge. (TBC)
4.2.48	[20] The System must require all CW (exclude animal keepers) specified in the holding application to endorse by logging in the system, review the form and click an "Endorse" button.

13 ◎

4.3 e-Holding Application Workflow

For each task:

- ✧ What is the expected start time of each task?
- ✧ What is the duration / expected completion time of each task?
- ✧ Any deadline?
- ✧ Reminder necessary?
- ✧ Notification necessary?
- ✧ What is the starting condition of the task?
- ✧ What is the ending condition of the task?
- ✧ What is the exception case of the task?
- ✧ Who is responsible for this task?
- ✧ How many people is required for this task? Could be more than one?
- ✧ What if people responsible get sick? Or left the team?
- ✧ What if passed the expected date without response?
- ✧ What if passed the deadline without response?

Code	Descriptions
4.3.1	On form submission, a Holding Application Code will be generated in the format XXXXXX (TBC).
4.3.2	
4.3.3	
4.3.4	
4.3.5	
4.3.6	
4.3.7	
4.3.8	
4.3.9	
4.3.10	
4.3.11	