INCORPORATE REPORTING WORKFLOW INTO RADIOLOGY

PROJECT PROPOSAL

BY

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Abstract

The Librehealth radiology(lh-radiology) module is an integral part of the librehealth health information technology project, with aim of adding capabilities of a Radiology Information system (RIS) into LibreHealth Toolkit. Currently, the radiology reporting workflow has not been implemented into the module. This proposal soughts to present an approach of implementing the reporting workflow which spans from 'claiming a study' to 'approving' a study.

Current State

Current set of features include placing radiology orders, configure a set of concept classes to define the orderable imaging procedure at the healthcare facility, configure DICOM web viewer like oviyam or weasis to open the ordered radiology studies from within OpenMRS and create radiology report once a radiology order is completed.

The reporting workflow implementation begins at clicking the "Claim Study" where all the studies being performed through the OHIF viewer are enlisted.

Improvements

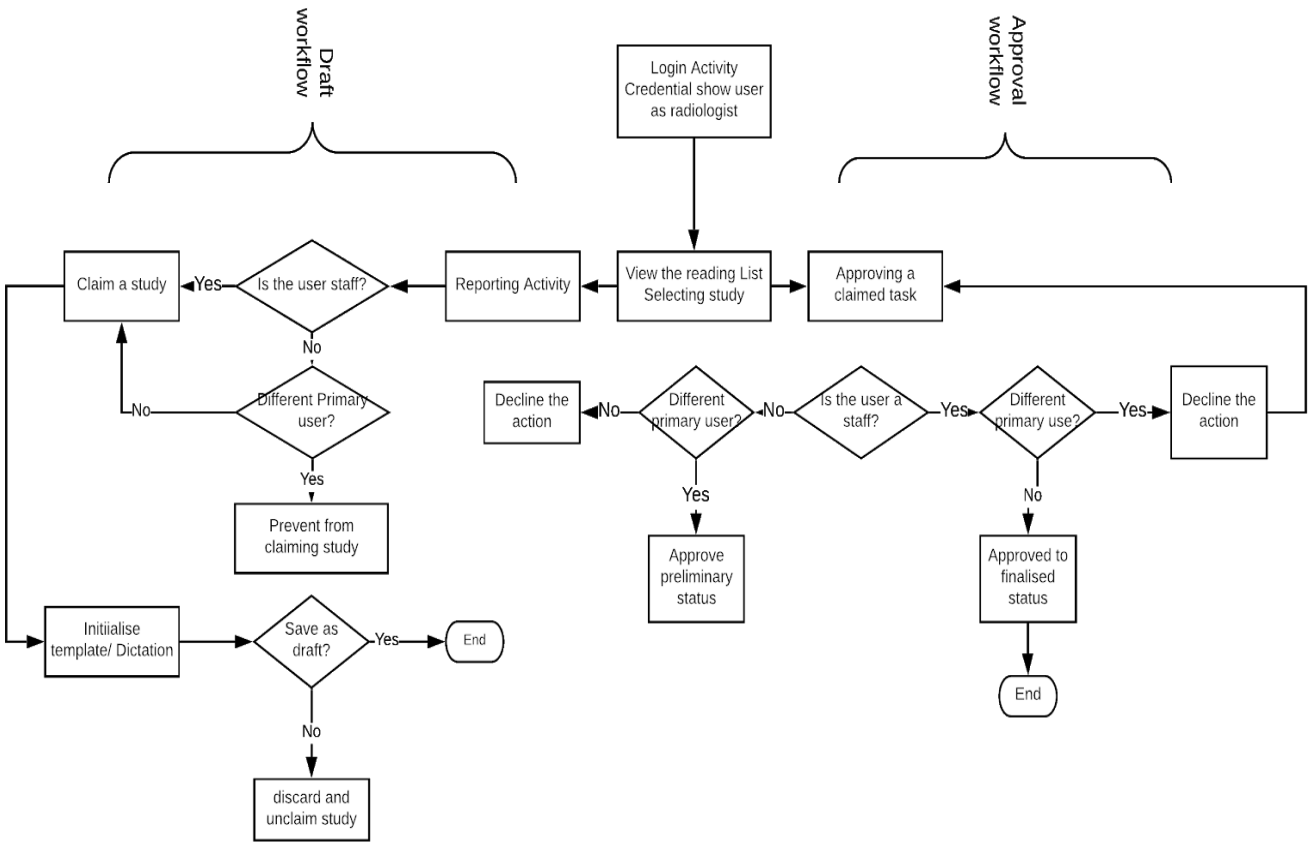
- Make possible a radiologist(trainee or staff) can claim a study
- Make an already claimed study(draft) not to be claimed by another staff
- Add functionality of saving as a draft report or discarding
- Add functionality of a radiologist being able to view and approve a draft report (Changing status from Draft to Complete)
- Implement of study to disappear from the Ohif viewer after it has been approved(Status changed completed)

Nice to Haves

- Incorporating ACR(American College of Radiology)assist modules for real-time decision support.

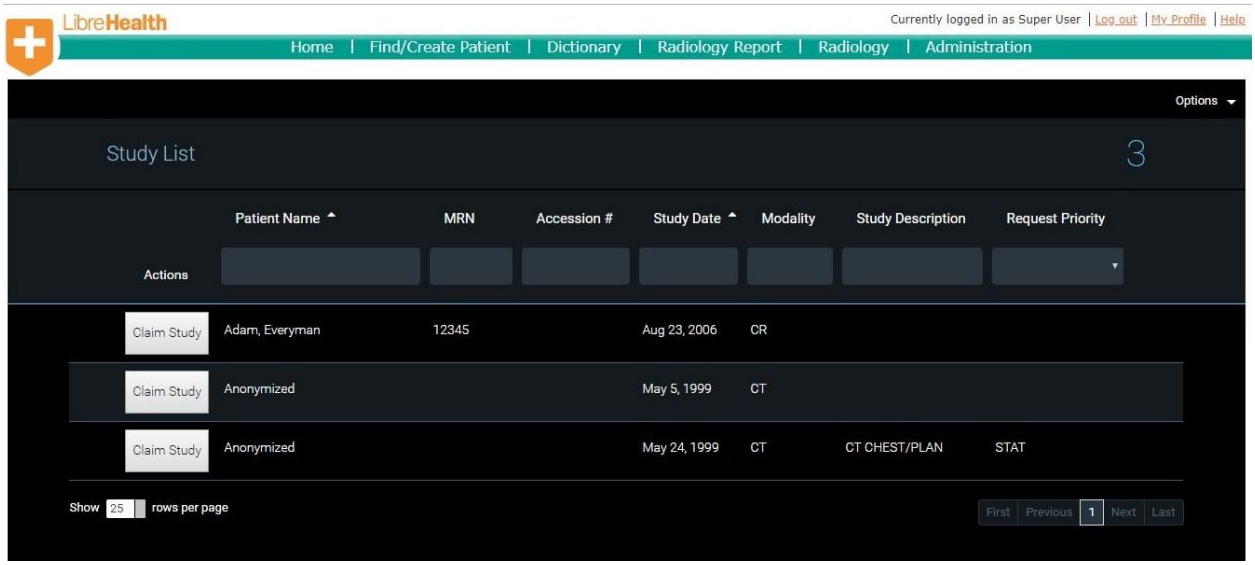
Implementation

The reporting workflow consist of two sub mutually exclusive work flows; The draft workflow and approval workflow. The workflow which begins from claiming a study to start written or voice record report and ends when a draft report has been approved(status changed from preliminary to finalised) is shown in the flow chart that follows.



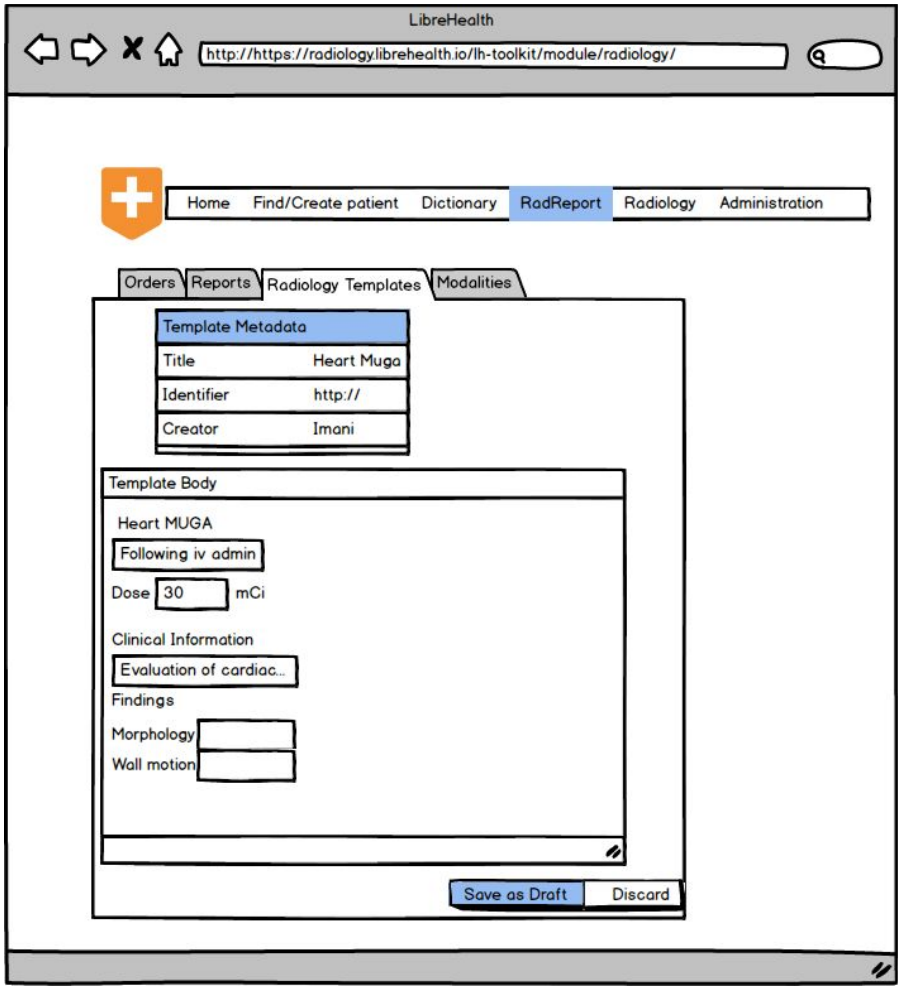
Fig(1)

- With respect to authentication, Radiologists(trainees and staff) can claim and perform a study, After a click on the ‘claim study’ in the Ohif viewer;



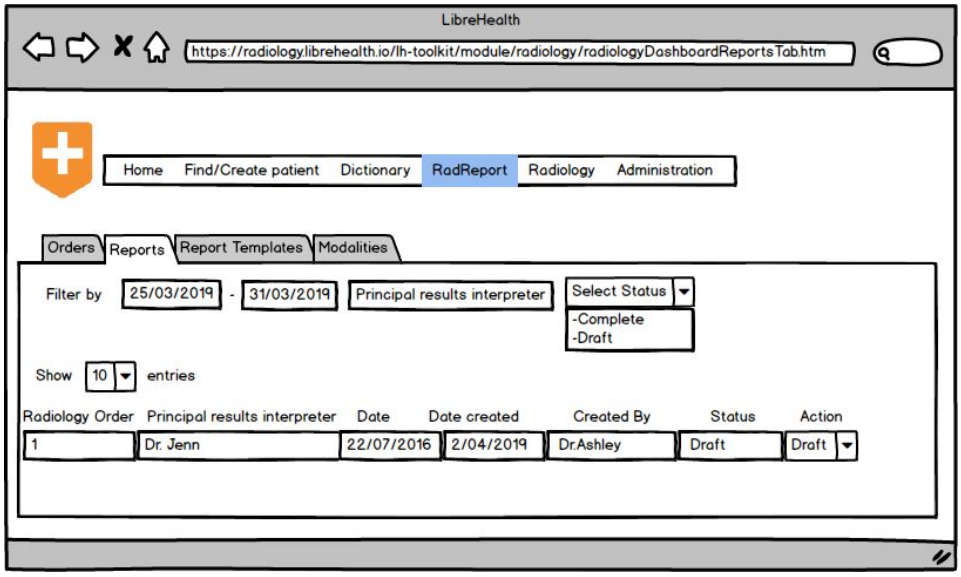
Fig(2)

- The radiology reporting process is initialised, MRRT report templates are imported, text/speech report is done and option to save as draft or discard is implemented as shown below;



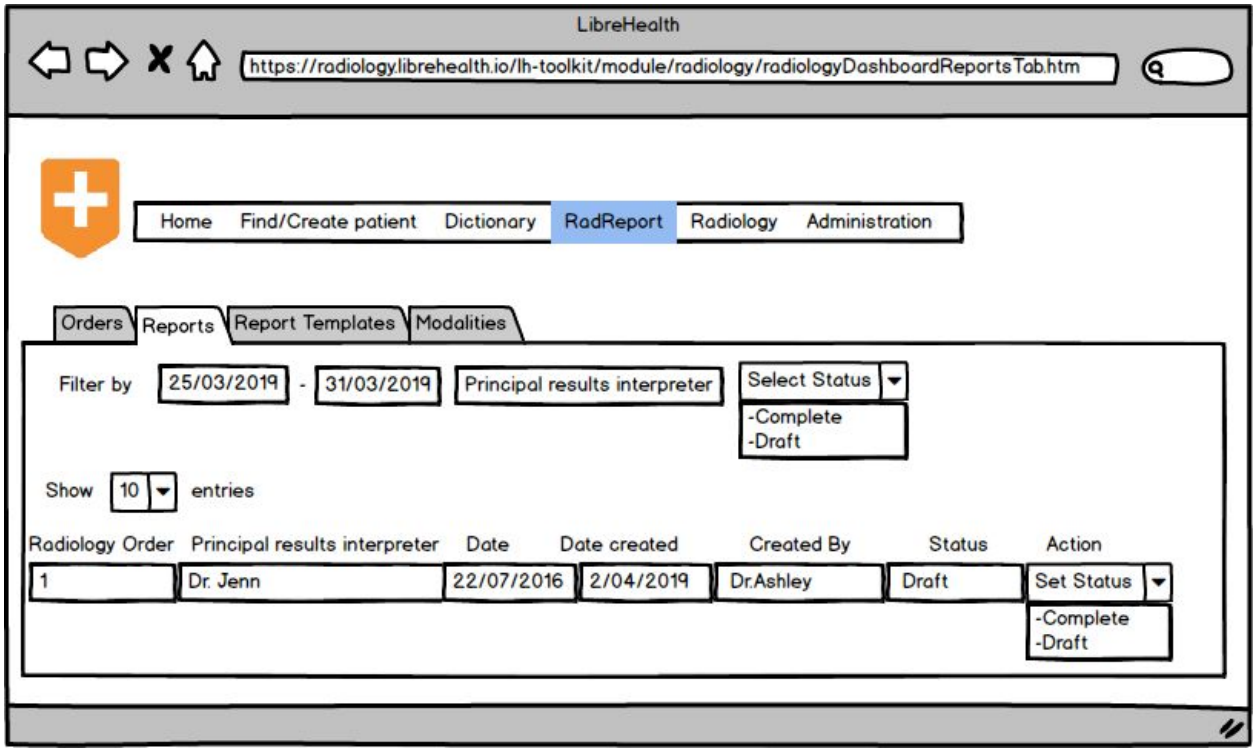
fig(3)

- Reports which have been saved as draft will have status ‘draft’ and will present as an already claimed task to another radiologist. The saved as draft report which awaits approval will appear as thus;



Fig(4)

- After being verified through login authentication as Radiologist(Staff only) , saved reports could be validated and approved(finalized) by changing its status under ‘Action’;



Fig(5)

- After a report has been approved, the study should fall off the list in fig(2).

Timeline

- **25 March - 05 May, PERIOD BEFORE COMMUNITY BONDING**
  - Solve radiology issues
  - Read user documentation and use radiology like user to find bugs
  - Welcome newbies and help setting up their environment

- **07 May - 26 May, COMMUNITY BONDING PERIOD**
    - More communication with mentors
    - Get accustomed with code base
    - Being more regular on chat channel to discuss in detail proposed solutions and refine project plan
    - Work on radiology issues related to my task
    - Setup blog about my work during GSOC

- **27 May - 24 June, CODING PHASE I**

  Deliverable: User should be able to claim task and do report using templates
    - Implement link from 'claim study' to 'Report template tab', such that on clicking 'Claim study' from study list, reporting with Mrrt templates should begin
    - Add functionality to save a template as a draft, with UI.
    - Test changes so far
    - Prepare and submit phase 1 evaluation
- **29 June - July 25, CODING PHASE II**

  Deliverable: Reports can be saved and displayed under report list with respective status

    - Implementation of logic to prevent reporting on a study which has already been claimed
    - Add functionality such that saved draft can be displayed under reports tab(fig 4)

- Persist study with sample data and do tests
- Prepare and submit Phase 2 evaluation

- **27 July - August 25, CODING PHASE III (Final Coding Phase)**

  Deliverable: Radiologist should be able to approve a study and study should disappear from study list

  - Implement approval functionality, such that enlisted reports could be verified and statuses changed to completed(fig 5).
  - Implement logic of completed study falling off the study list
  - Implement tests and fix errors
  - Preparation and submission of final report

- **26 August - September 2, MENTORS SUBMIT FINAL STUDENT EVALUATION**
  - Testing workflow continues

The time frame may not be strictly followed strictly, as i will start coding earlier in other to face time consuming milestones and prevent any other unforeseen circumstance which may lead to late deadline submission.

Will be having a school examination session which spans from the mid 2nd coding phase to beginning of 3rd phase. My mentors will be communicated with, to be informed prior to any irregularities during that period.

- **POST GSoC**
  - Continue contributing to radiology and other LibreaHealth projects

- Stick around for project maintenance
- Apply to Mentor Gsoc 2020/ GCI 2020
- Help others in the community

ABOUT ME

I am **ESIBE ROY NGU,** a final year student in Computer Engineering specializing in software in University of Buea, Cameroon. Having understood the values librehealth, the desire to contribute to code which saves lives and also provides an avenue for me to give back to the open source while growing my software development skills, i strongly look forward to spending a great summer with you.

With past experience of contributing to open source, i have grasped the skills of backend development with MVC frameworks(grails, spring), RESTful API's and other competencies such as communicating, collaborating and researching. I am looking forward grasping more as i continue the journey with librehealth.

Skills: Java, Groovy, Spring, C, HTML/CSS,

Student Information

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LibreHeath Forum: Echo2roy

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PRE-GSOC Contributions

https://gitlab.com/librehealth/radiology/lh-radiology/merge_requests/47

Other Personal Projects and Contributions to Open source

- Contributions to GR8di Backend: A web app backend with Groovy and grails framework https://github.com/Echo2roy/gr8di-backend/commits?author=Echo2roy
- Personal project building ATM with Java Swing https://github.com/Echo2roy/javaprojects/tree/master/src
- Data Structure and Algorithms https://github.com/Echo2roy/Data-Structs-and-Algos-in-Java