# Device Hardware:

* Commercially available, inexpensive (Amazon, DigiKey, etc.). See GitHub repository for list of parts. Contact SLAC RP Admin to order parts on P-Card from Amazon, Digikey, etc.
* Enclosure provided by SLAC with openings for LED, display, scanner, and power cable.
* Mounting plate for hardware provided by SLAC based on existing CAD drawing.
* 10-ft USB-C cable and charger blocks provided by SLAC.
* Includes sourcing and investigation of alternative parts which may be better suited.
* Work includes assembly of quantity of 5 readers (in addition to original supplied prototype).

## Security

* WPA Enterprise for WiFi – must be active on the Pi.
* Secure connection to ODTS.

# Device Software:

Device software development includes modification of existing scripts (modify function as needed and add error handling), development of new scripts, and testing.

## Idle Status

DEFAULT STATUS: [MESSAGE 1], with LCD backlight ON for 30 seconds before turning off while idle. The LED is green and steady in idle state as shown in the table to demonstrate unit is on. The green LED during idle demonstrates the unit is alive while the LCD is off after 30 seconds to conserve power.

## Scanning Status

After a scan the barcode is captured and used to query ODTS. Data is returned and given to the algorithm which carries out actions depending on the conditions. Unit will always return to default status when idle.

Scanner configuration: TRIGGER DELAY MODE (3 or 5 SECONDS). See scanner manual for barcodes for setting. This setting will turn off the red light after 3 or 5 seconds. The scanner, which is camera based, remains active.

## Algorithm

1. Scan successful: CAPTURE BARCODE FROM SCANNER DEVICE [MESSAGE 2]
   1. Connection to ODTS Succeeded [MESSAGE 3] (QUERY DOSIMETER NUMBER, NAME, EMAIL, SUPERVISOR EMAIL, RETURN DATE, PERIOD CODE, SLAC ID)
      1. Dosimeter number NOT NULL [MESSAGE 4]
         * 1. Return date NULL: UPDATE RETURN DATE TO “NOW” [MESSAGES 6a, 5]. INCREMENT COUNTER FOR SYSTEM HEALTH TALLY (add record to SQLite table, see 2.4)

eMail NOT NULL: Send email [MESSAGE 9], email body 1 or 2, section 2.6.2.

email NULL: Send email to supervisor [MESSAGE 9], email body 1 or 2, section 2.6.2.

both NULL: email to [esh-DREP@slac.stanford.edu](mailto:esh-DREP@slac.stanford.edu), email body 3, section 2.6.2.

* + - * 1. Return date NOT NULL [MESSAGE 6a, 6b]
    1. Dosimeter number NULL [MESSAGE 7]
  1. Connection to ODTS Failed [MESSAGE 8]

1. Scan not successful [MESSAGE 7]

## Local Database:

* SQLite or equivalent to capture record of successful “returns”, for query and tabulation in System Health Viewer. Fields include but not limited to MAC Address, hostname, IP address, SLAC ID, return date, dosimeter number.

## Table of Messages:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **MESSAGE #** | **MESSAGE TEXT (2 X 16 LCD)** | **LED BEHAVIOR** | **MESSAGE DURATION** | **LCD Backlight** |
| MESSAGE 1 (Idle Status) | READY | GREEN STEADY | CONTINUOUS WHILE IDLE | ON 30 seconds then OFF |
| TO SCAN |
| MESSAGE 2 (where #### is BARCODE VALUE) | [#####] | BLUE FLASHING | WHILE WAITING | ON |
| SEARCHING… |
| MESSAGE 3 | CONNECTED… | BLUE FLASHING | WHILE WAITING | ON |
|  |
| MESSAGE 4 | RECORD FOUND… | BLUE FLASHING | WHILE WAITING | ON |
|  |
| MESSAGE 5 | RETURN | GREEN FLASHING | WHILE WAITING | ON |
| SUCCESSFUL |
| MESSAGE 6a | LAST NAME | GREEN FLASHING | 0.5 SECOND | ON |
| FIRST NAME |
| MESSAGE 6b | RETURNED ON | GREEN FLASHING | 0.5 SECOND | ON |
| YYYY-MM-DD |
| MESSAGE 7 | UNKNOWN DOSI | YELLOW FLASHING | 0.5 SECOND THEN Idle status | ON |
| PLEASE TRY AGAIN |
| MESSAGE 8 | NETWORK | RED FLASHING | CONTINUOUS UNTIL CONNECTED THEN Idle Status | FLASHING |
| FAILURE |
| MESSAGE 9 | CONFIRMATION | GREEN FLASHING | 0.5 seconds then Idle Status | ON |
| SENT VIA EMAIL |
| MESSAGE 10 | REBOOTING | PURPLE FLASHING | 2 seconds then reboot, then Idle status | ON |
| SCANNER… |

## Outgoing Email:

Prior to sending email, check whether there are any other unreturned dosimeters by performing a group by query on the SLAC ID, and counting the number of rows. Then, create a table in the body of the email when using Email Text 2.

### Connection details:

|  |
| --- |
| SERVER: smtpout.slac.stanford.edu  PORT: 25 |

* Service: RESTful API (HTTP instead of email)

### Email details:

**To:** [email address]

**From:** [No-Reply@slac.stanford.edu]

**Subject:** Dosimeter Return Confirmation

|  |
| --- |
| **Email Text 1 (if no other unreturned dosimeters):** [First Name, Last Name]’s dosimeter [Dosimeter Number] from [Period Code] was returned on [Return Date]. Thank you! |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Email Text 2 (still has other dosimeters unreturned):** [First Name, Last Name]’s dosimeter [Dosimeter Number] from [Period Code] was returned on [Return Date].  Our records indicate that you still have the following dosimeter(s) which are unreturned:   |  |  |  |  | | --- | --- | --- | --- | | Name | SLAC ID | Dosimeter Number | Period Code | | Row 1 |  |  |  | | Row 2 |  |  |  | | Row n |  |  |  |   Please either return the remaining dosimeter(s) or fill out a damaged/lost dosimeter form which you can find on the ESH/RP website. |

|  |
| --- |
| **Email Text 3 (both emails null):** [First Name, Last Name]’s dosimeter [Dosimeter Number] from [Period Code] was returned on [Return Date]. There was no email on file for user or supervisor so this email was sent to esh-DREP@slac.stanford.edu |

Thank you!

## Reset Button

The reset button on the bottom of the unit displays message 10 before rebooting and returning to idle status

# System Health Viewer (SLAC Internal Web):

Includes development of web-based system health viewer which is visible within [SLAC/RP sharepoint](https://www-group.slac.stanford.edu/esh/rp/drep.htm) area. Report refreshes when loaded in the browser, and has a refresh button. Expect about 1500 “return” transactions per quarter.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | Tally | | | |  |
| Host Name | Mac Address | IP Address | Location | Last 24 hours | Last 30 days | Last 365 Days | Lifetime | Status\* |
| **SSRL1** | **AB:CD:6F:12** | **162.158.149.1** | **B140-223** | **50** | **120** | **400** | **800** | **ONLINE** |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

\*Online or Offline

# ODTS

## Connection Details:

* TBD

## Queries:

1. **Pass** DOSIMETER NUMBER, **return** DOSIMETER NUMBER, NAME, EMAIL, SUPERVISOR EMAIL, RETURN DATE, PERIOD CODE, SLAC ID.
   1. Expect 1 record only.
2. Update RETURN DATE and HOST name for a given dosimeter number (field that tells you who returned it, right now it’s who’s logged into ODTS. With the readers the HOST name of the raspberry pi will be the user.).
3. **Pass** SLAC ID, **return** NAME, SLAC ID, DOSIMETER NUMBER, PERIOD CODES, where RETURN DATE is NULL.
   1. Expect 0 to 3 records of additional unreturned dosimeters.

# Testing

Working with SLAC, supply testing unit and make corrections as identified by the person testing.

# Documentation

Add all final python files to the GitHub repositories, and update associated .md files. Establish Version 0 details in ReadMe.md

# Comments from meeting with Cyber:

PII but not SPII

Review of the [CUI](https://www.archives.gov/cui/registry/category-list) (50 some categories. PII is one category)

# Statement of Work

When estimating work, please take into account work already performed in supplying prototype. [Work is available at GitHub](https://github.com/ryanfordSLAC/ODTS-mini-Scan).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SOW # | Section Number | Description | Estimate (hours) | Comments |
| 1 |  | Project Setup and Management, kick off meeting, billing. |  |  |
| 2 | 1 | Quantity of 5 readers (assembly) |  |  |
| 3 | 1.1 | Device software compliant with security requirements |  |  |
| 4 | 2.1 | Idle Status |  |  |
| 5 | 2.2 | Scanning Status |  |  |
| 6 | 2.3 | Algorithm |  |  |
| 7 | 2.4 | Local Database |  |  |
| 8 | 2.5 | Table of messages |  |  |
| 9 | 2.6.1 | Outgoing email connection |  |  |
| 10 | 2.6.2 | Outgoing email body |  |  |
| 11 | 2.7 | Reset Button |  |  |
| 12 | 3 | System Health Viewer |  |  |
| 13 | 4.1 | ODTS Connection |  |  |
| 14 | 4.2 | Queries |  |  |
| 15 | 5 | Testing |  |  |
| 16 | 6 | Documentation |  |  |
| 17 |  | Closeout meeting |  |  |