Prototype Documentation

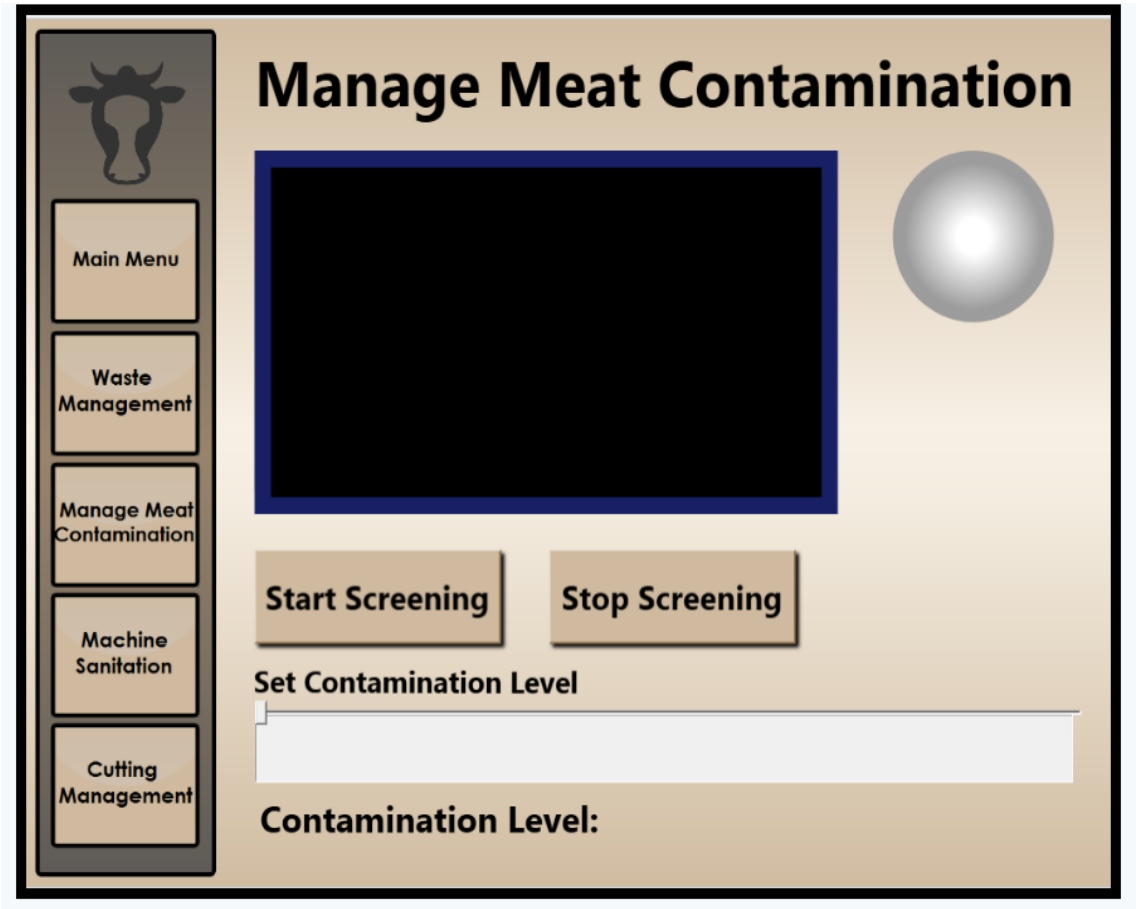
Group details

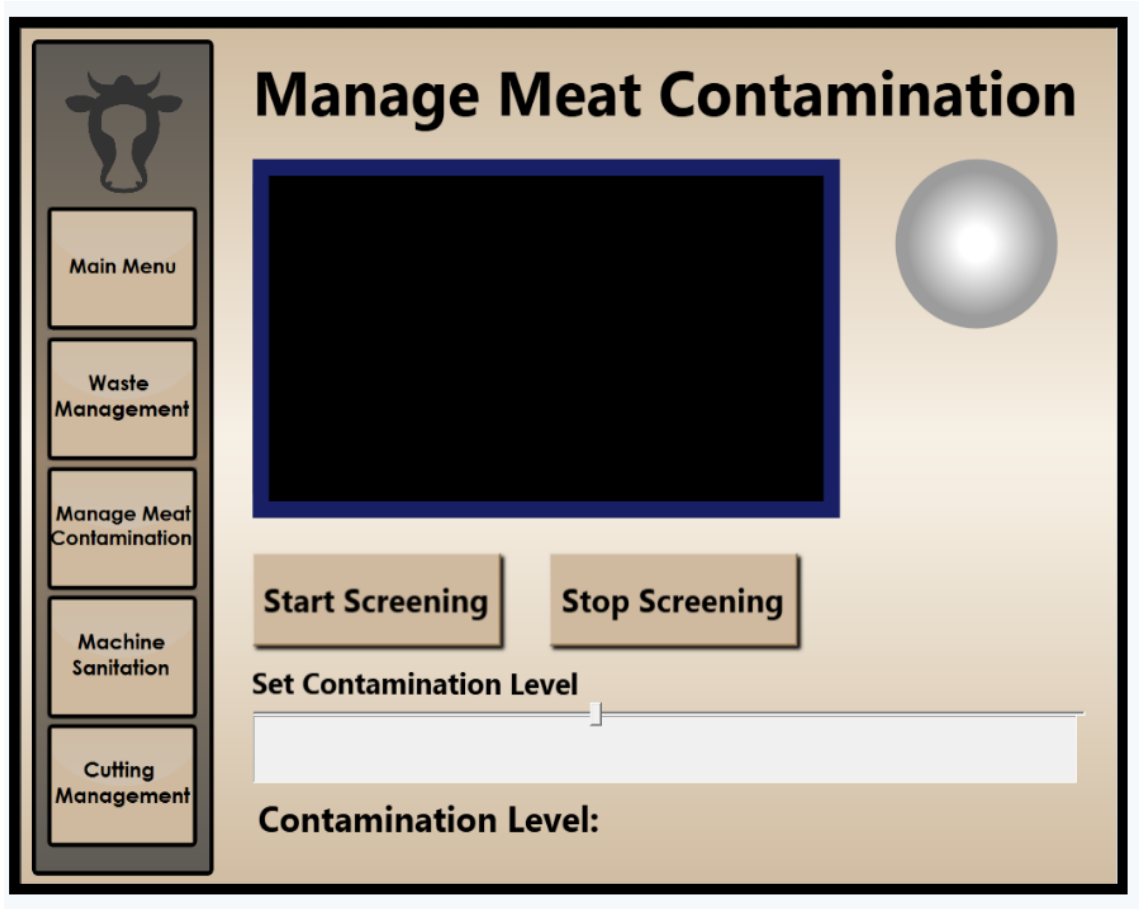
Group number	12
Member names and UPIs	1. Pete Kongthong– pkon966 2. Suzy Lee– slee900 3. Emily Tan– tyea527 4. Callum Cory– ccor311 5. Yohan Lim– dlim057
Group name	SPYCE
System name	Clean Cut Red Meat System

UC#1: Manage Red Meat Hygiene

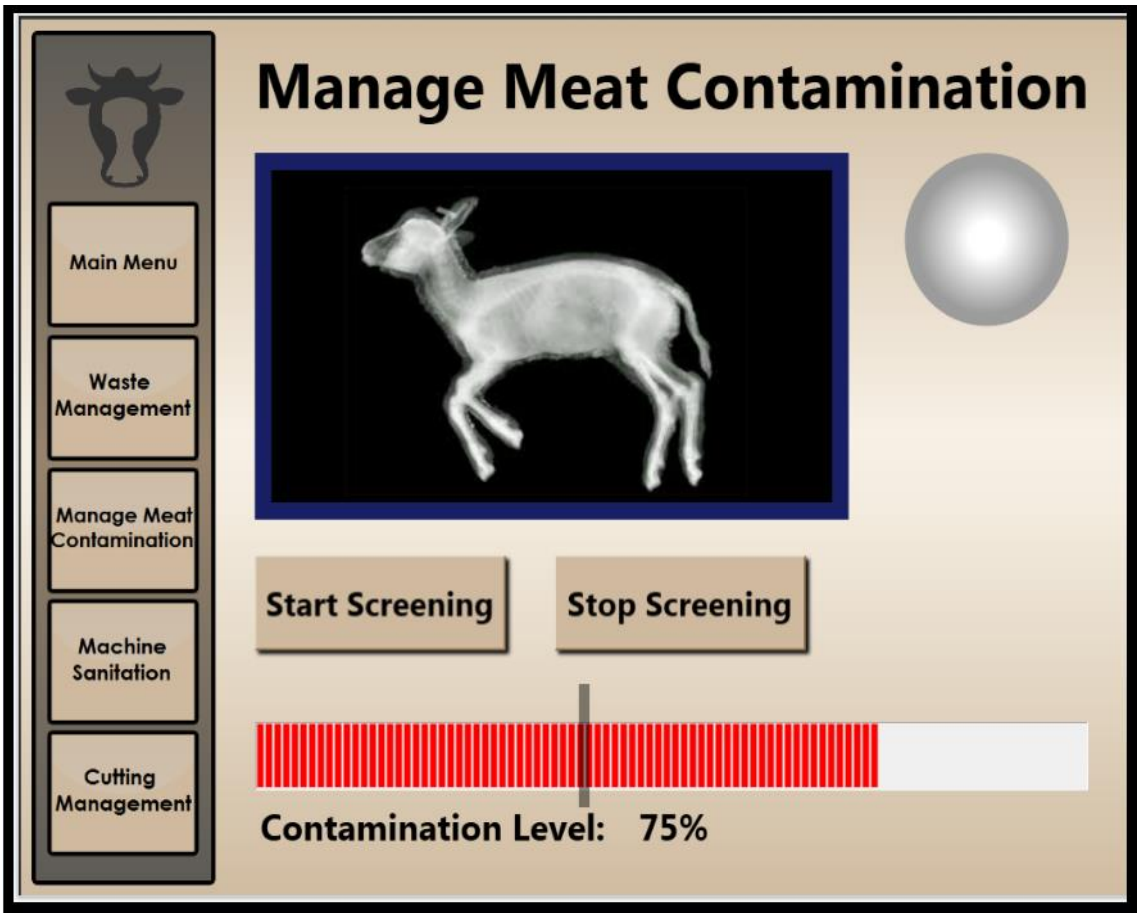
UC#1 Functionality

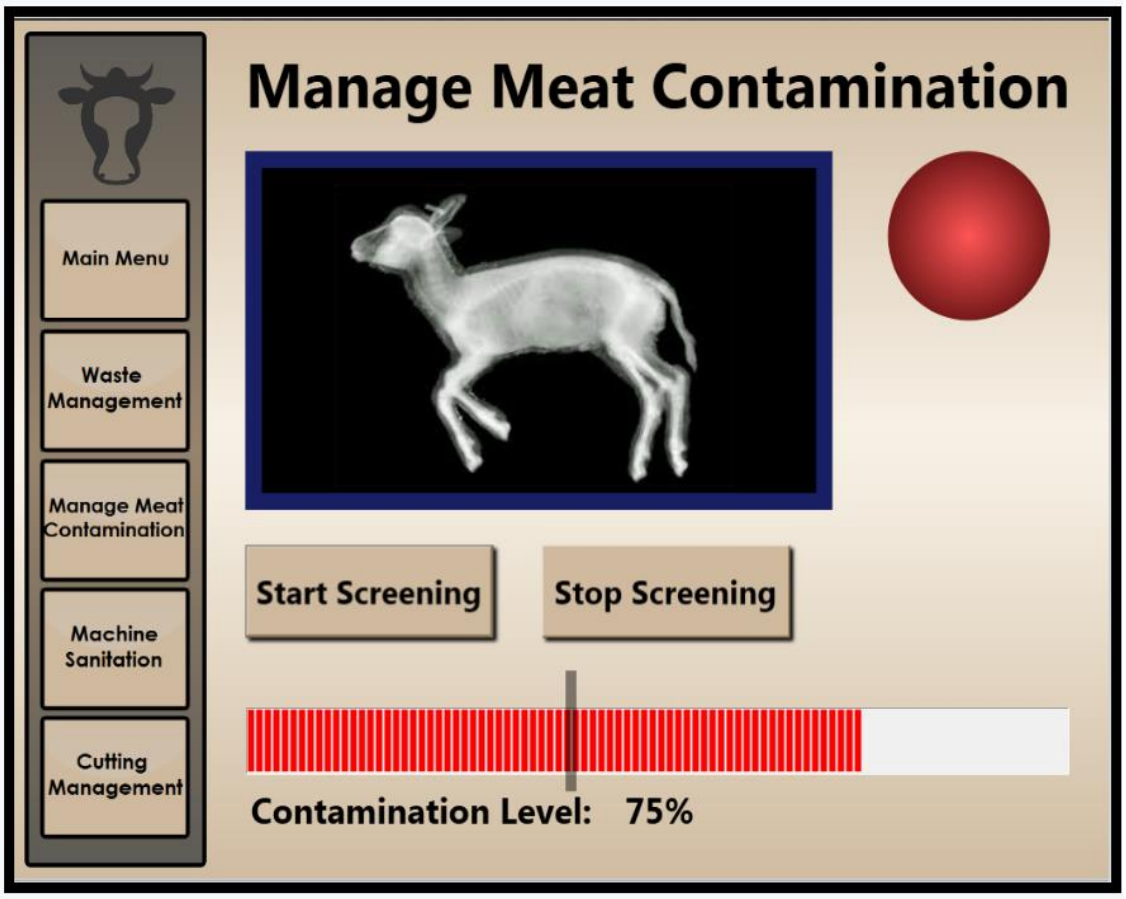
F#1: Operator sets contamination level threshold



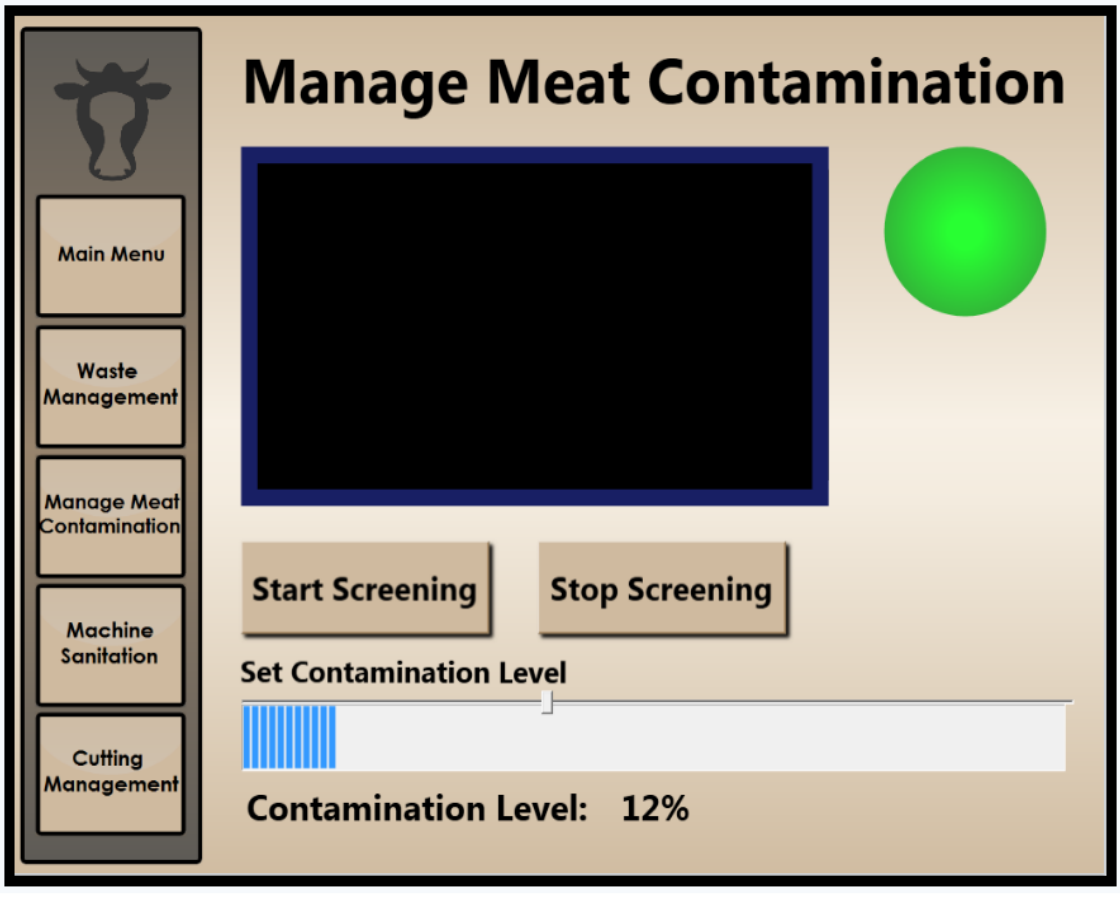


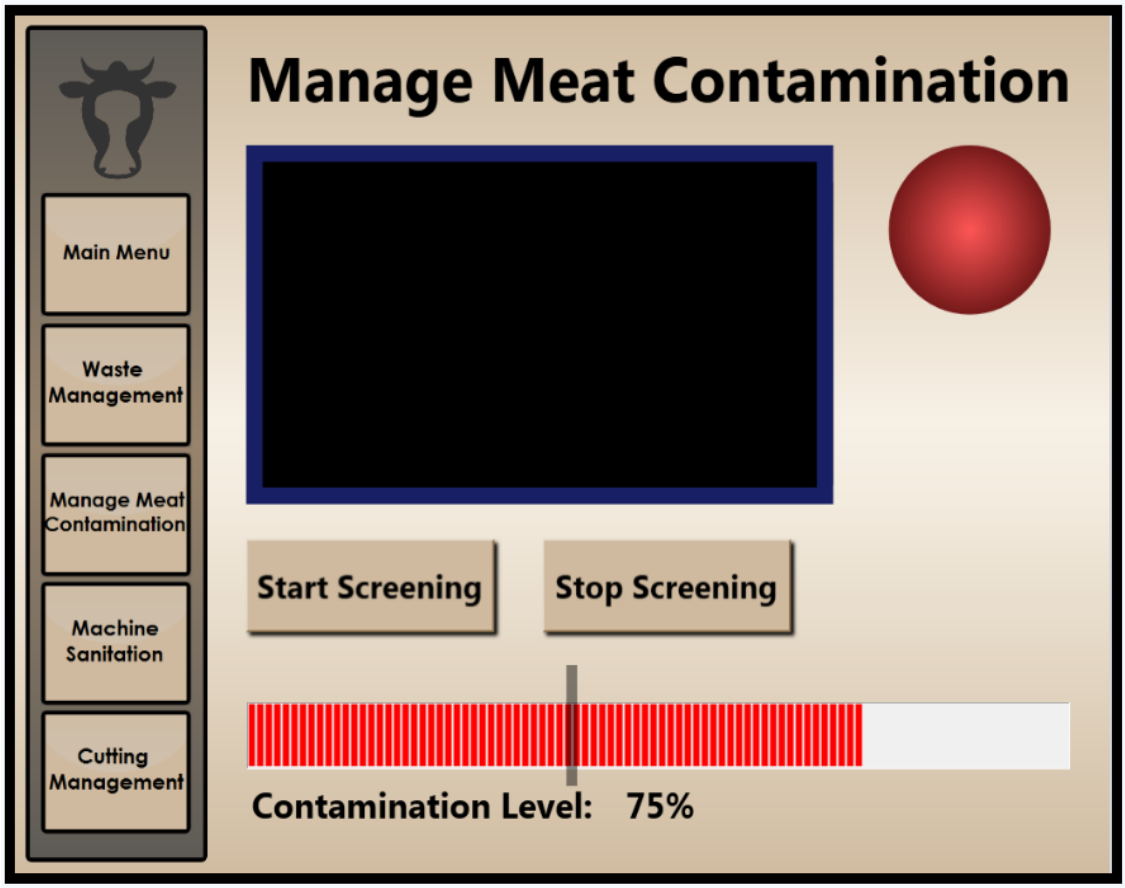
F#2: Red meat on a conveyor is scanned to detect bacteria/viruses





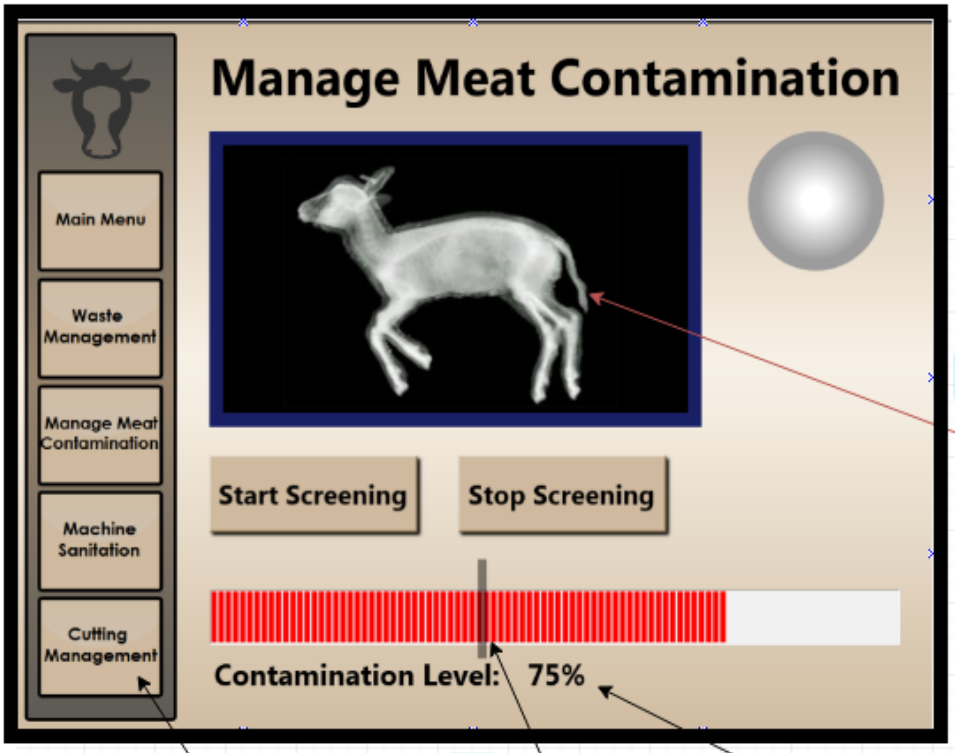
F#3: Clean red meat is moved to packaging station. Contaminated red meat is moved to waste bin

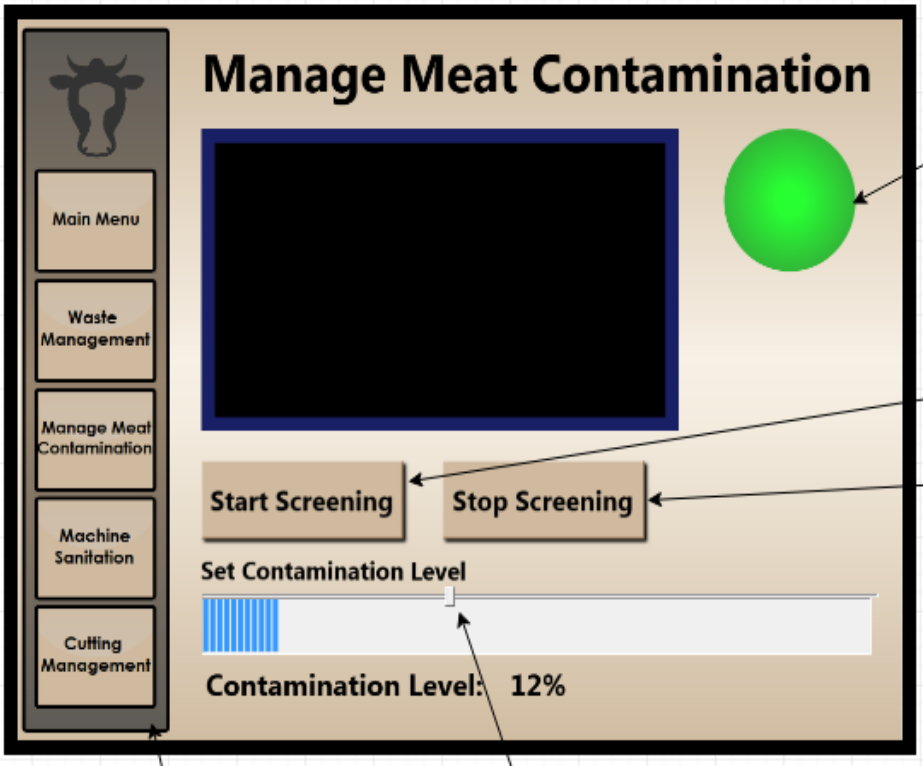




UC#1 Data

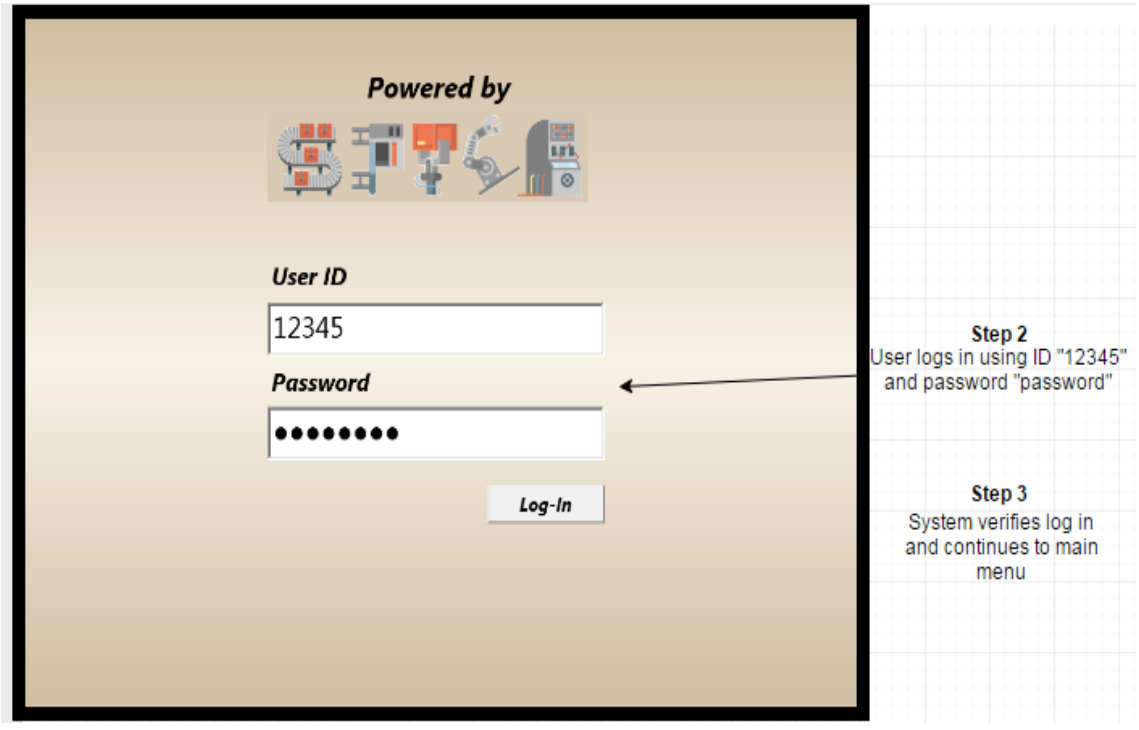
Entity name: ContaminationLevel	Entity name: Menu
Attributes: - currentMaximumContamination - newMaximumContamination - contaminationPercentage	Attributes: - menuName - menuID - colourNo
Entity name: Colour	Entity name: ScanStatus
Attributes: - colourNo (FK) - colourName	- startScan - stopScan - scanResult - scanObject

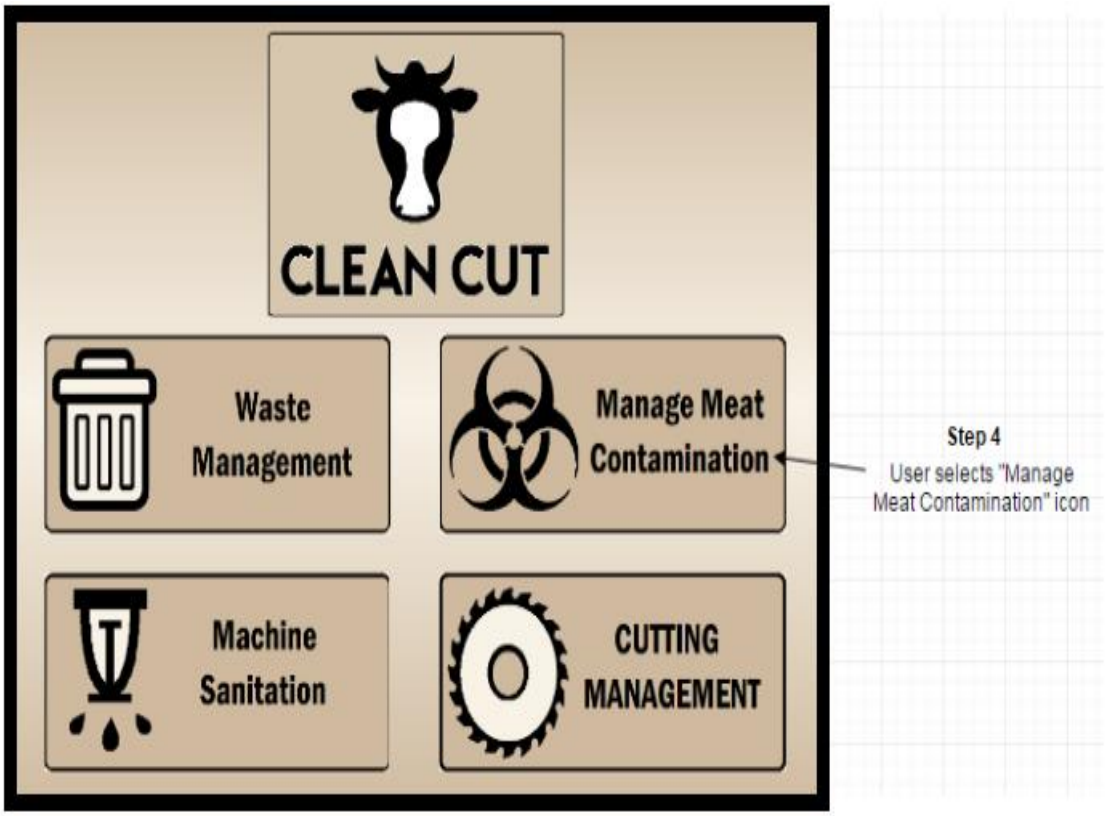

Manage Meat Contamination
Main Menu
Waste Management
Manage Meat Contamination
Machine Sanitation
Cutting Management
Start Screening
Stop Screening
Contamination Level: 75%
scanObject
Menu Entity Set:
- menuName
- menuID
- colourNo
currentMaximumContamination
contaminationPercentage

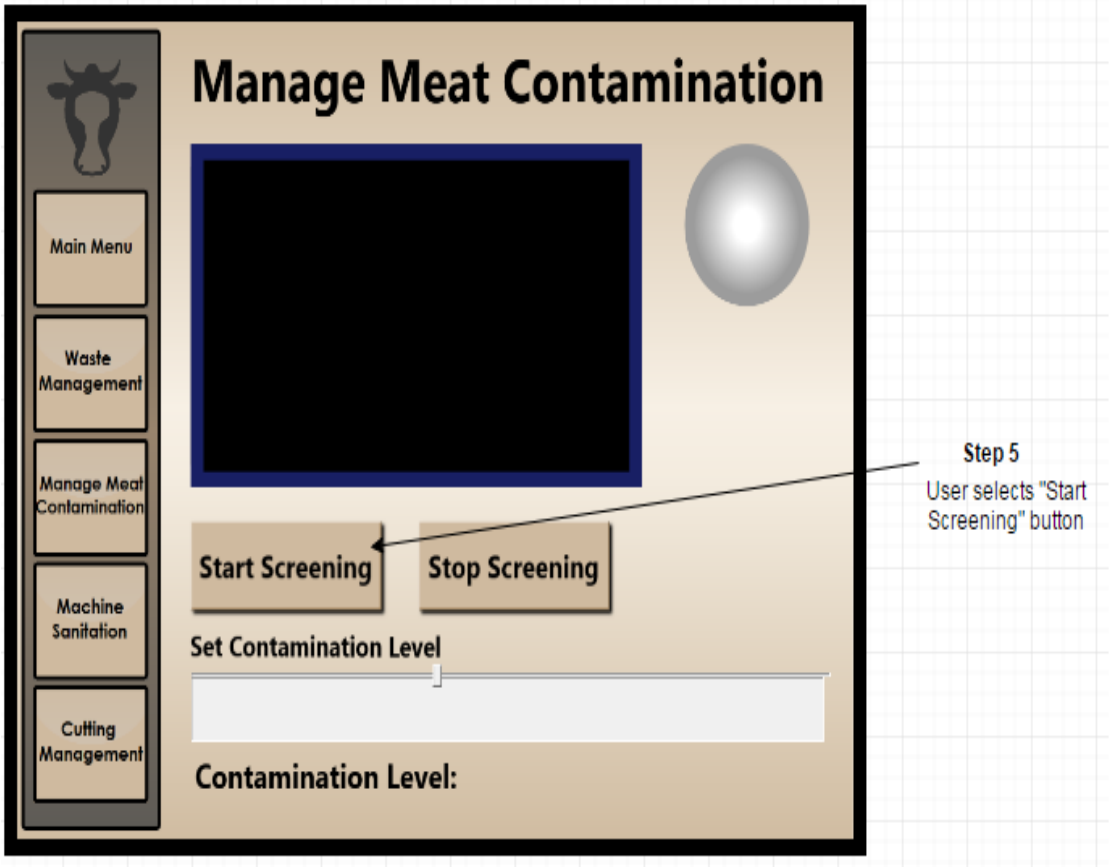

Manage Meat Contamination
Main Menu
Waste Management
Manage Meat Contamination
Machine Sanitation
Cutting Management
scanResult
startScan
stopScan
Start Screening
Stop Screening
Set Contamination Level
Contamination Level: 12%
Colour Entity Set:
- colourNo (FK)
- colourName
newMaximumContamination

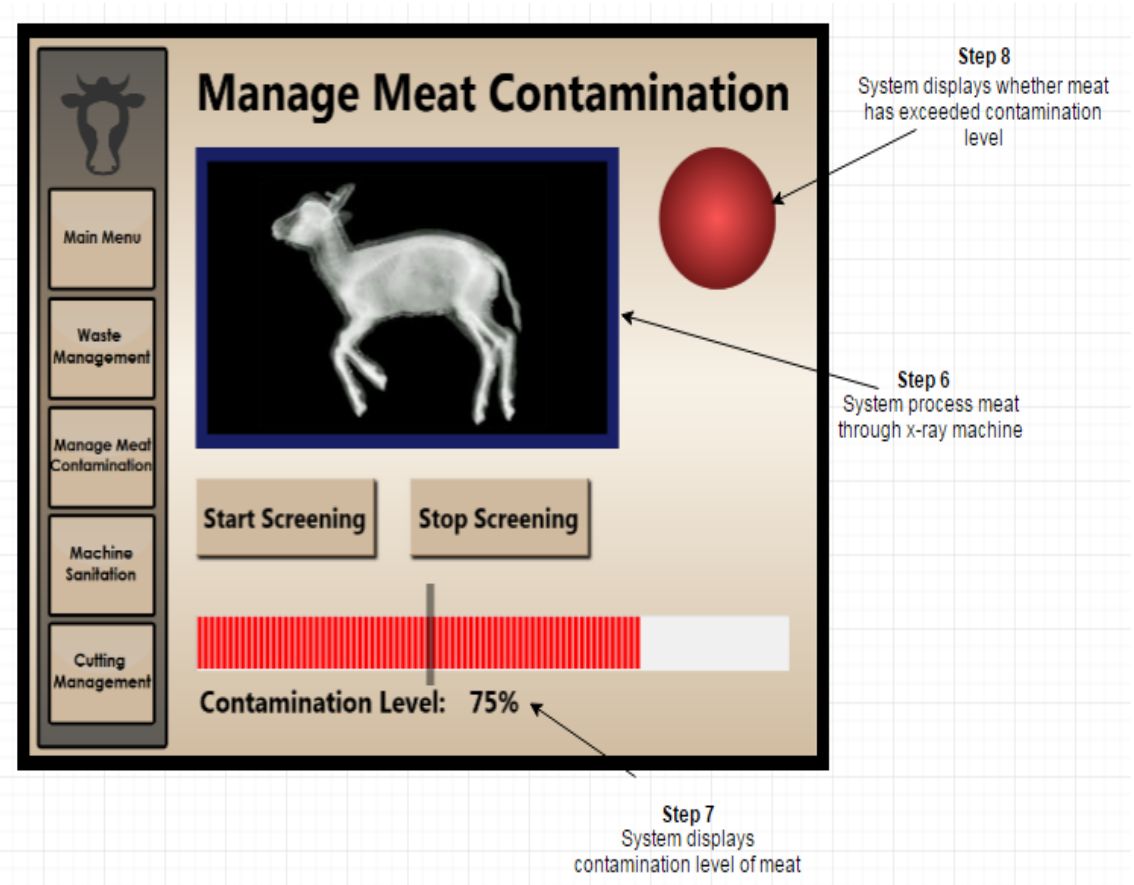
UC#1 Demonstration/simulation

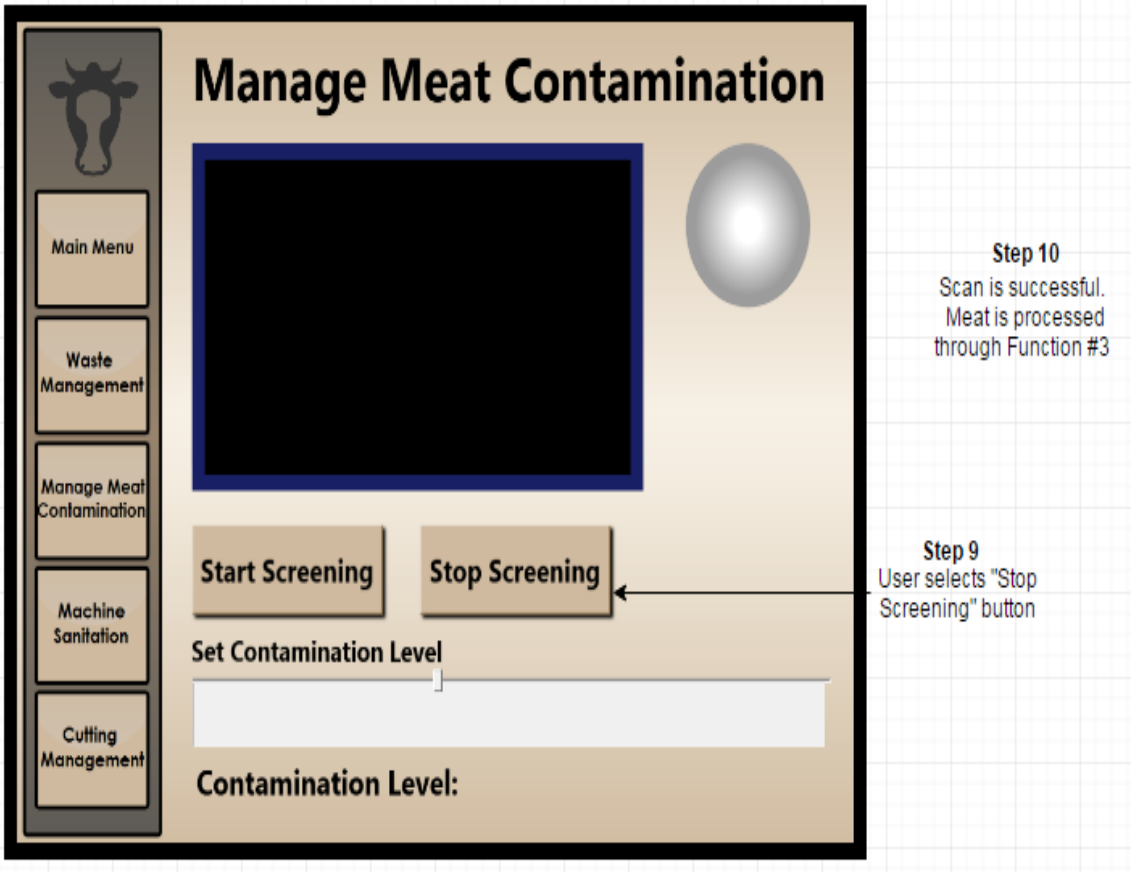
Chosen function number: F#2
Chosen function name: Red meat on a conveyor is scanned to detect bacteria/viruses.




CLEAN CUT
Waste Management
Manage Meat Contamination
Machine Sanitation
CUTTING MANAGEMENT
Step 4
User selects "Manage Meat Contamination" icon


Manage Meat Contamination
Main Menu
Waste Management
Manage Meat Contamination
Machine Sanitation
Cutting Management
Start Screening
Stop Screening
Set Contamination Level
Contamination Level:
Step 5
User selects "Start Screening" button


Manage Meat Contamination
Main Menu
Waste Management
Manage Meat Contamination
Machine Sanitation
Cutting Management
Start Screening
Stop Screening
Contamination Level: 75%
Step 8
System displays whether meat has exceeded contamination level
Step 6
System process meat through x-ray machine
Step 7
System displays contamination level of meat


Manage Meat Contamination
Main Menu
Waste Management
Manage Meat Contamination
Machine Sanitation
Cutting Management
Start Screening
Stop Screening
Set Contamination Level
Contamination Level:
Step 10
Scan is successful. Meat is processed through Function #3
Step 9
User selects "Stop Screening" button

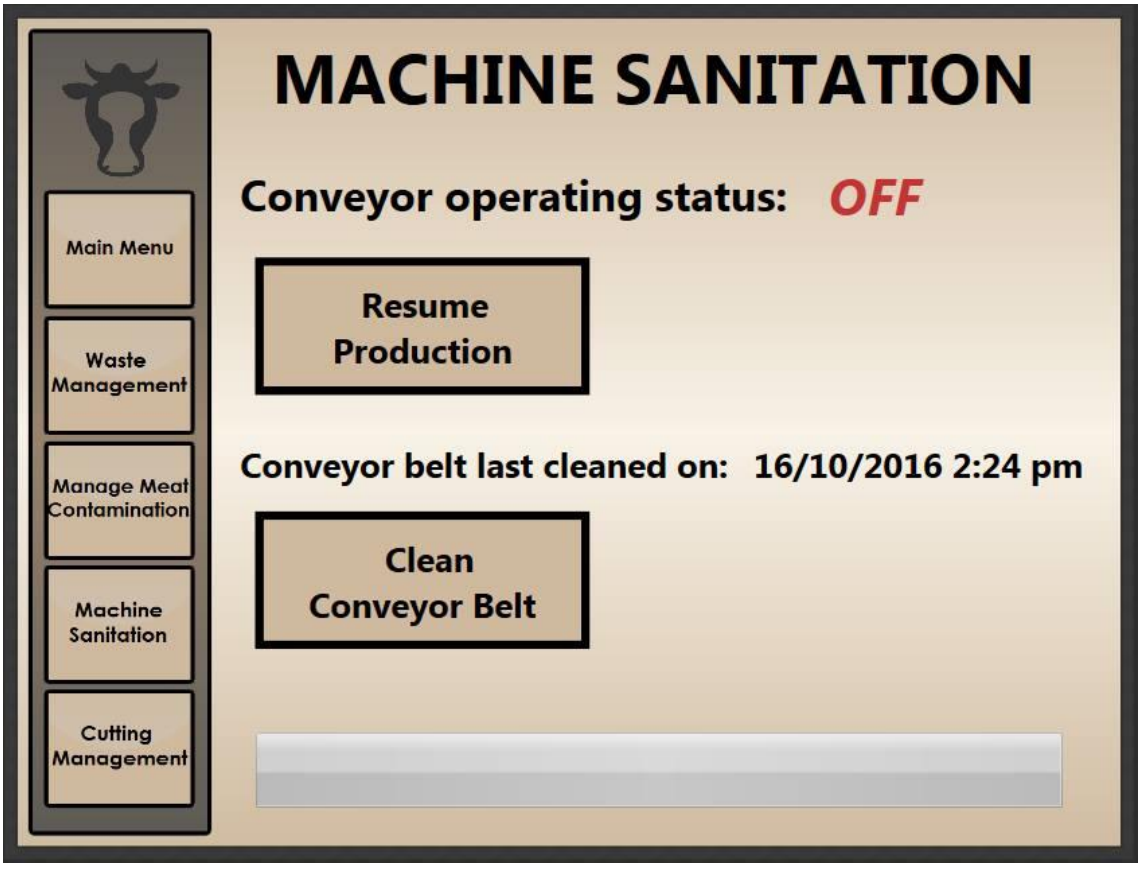
F#2 Red meat on a conveyor is scanned to detect bacteria/viruses Test plan

Goal/Description of test plan	*A member of staff will be able to scan meat using an x-ray machine to detect bacteria or viruses.*
Testing method	1. User initializes control panel 2. User logs in using ID and password 3. System verifies user log in details and proceeds to main menu (if log in attempt is successful) 4. User selects the Manage Meat Contamination icon 5. User selects the "Start Screening" button 6. System processes meat through the X-Ray machine. 7. System displays contamination level of meat 8. System displays whether meat has exceeded the set contamination level 9. User selects "Stop Screening" button. 10. Scan is successful. System processes scanned meat to Function #3
Expected successful result	*The meat will be successfully scanned and any bacteria or viruses will be identified. The results (contamination level) of the scan will be displayed by the system and visible to the user.*
Other notes (optional)	

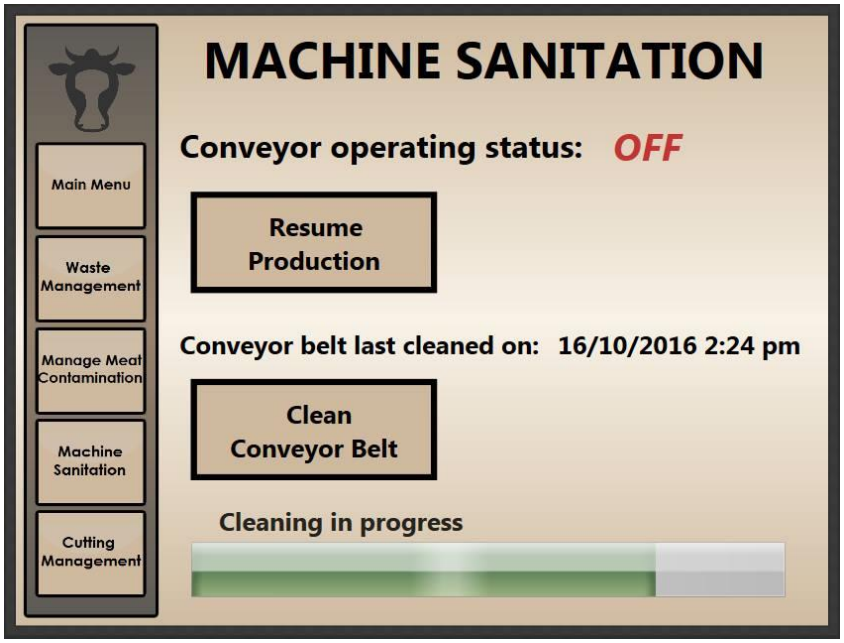
UC#2: Maintain machine sanitation

UC#2 Functionality

F#4: Operator selects option to initiate cleaning process



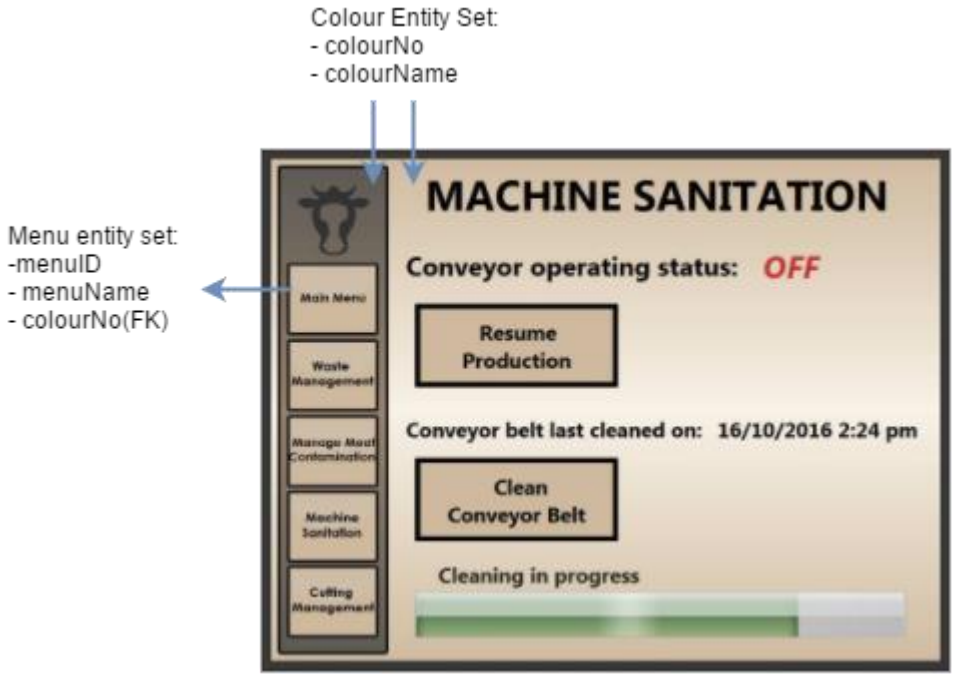
F#5: System starts machine cleaning process



UC#2 Data

Entity name: MachineSanitation	Entity name: LastCleaned
Attributes: • conveyorOperationStatus • cleaningStatus • cleaningProgress • date (FK) • time(FK)	Attributes: • date • dateFormat • time • timeFormat
Entity name: Colour	Entity name: Menu
Attributes: colourNo colourName	Attributes: • menuID • menuName • colourNo (FK)

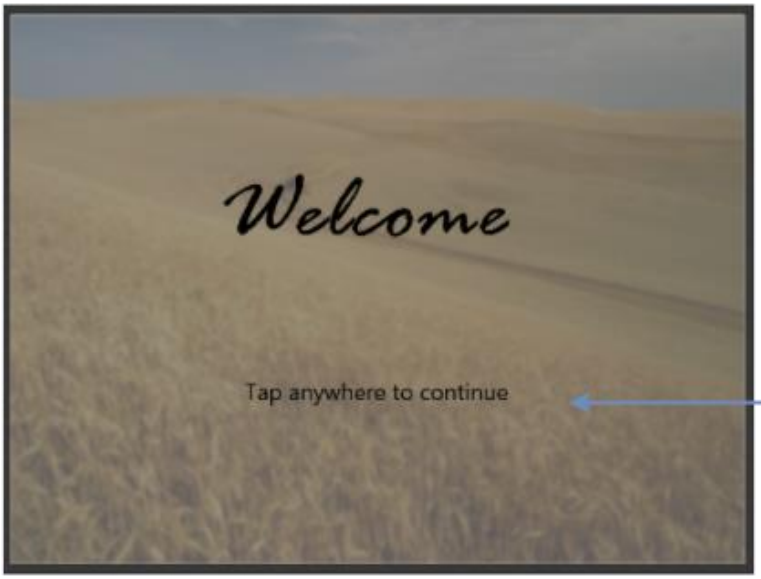

MACHINE SANITATION
Conveyor operating status: OFF
Resume Production
Conveyor belt last cleaned on: 16/10/2016 2:24 pm
Clean Conveyor Belt
Cleaning in progress
Main Menu
Waste Management
Manage Meat Contamination
Machine Sanitation
Cutting Management
conveyorOperationStatus
date (FK)
time (FK)
cleaningStatus
cleaningProgress


Colour Entity Set:
- colourNo
- colourName
MACHINE SANITATION
Conveyor operating status: OFF
Resume Production
Conveyor belt last cleaned on: 16/10/2016 2:24 pm
Clean Conveyor Belt
Cleaning in progress
Main Menu
Waste Management
Manage Meat Contamination
Machine Sanitation
Cutting Management
Menu entity set:
-menuID
- menuName
- colourNo(FK)


MACHINE SANITATION
Conveyor operating status: OFF
Resume Production
Conveyor belt last cleaned on: 16/10/2016 2:24 pm
Clean Conveyor Belt
Cleaning in progress
Main Menu
Waste Management
Manage Meat Contamination
Machine Sanitation
Cutting Management
date
dateFormat
time
timeFormat

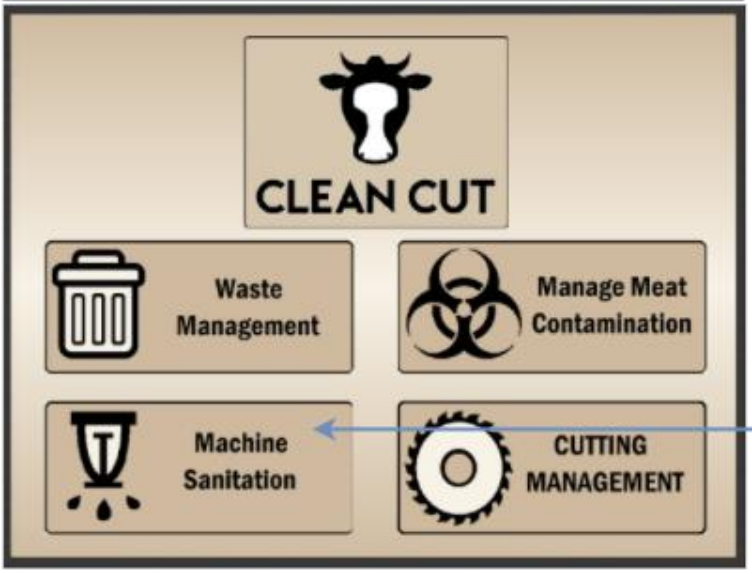
UC#2 Demonstration/simulation

Chosen function number: F#4
Chosen function name: Operator selects option to initiate cleaning process



Step 1:
User taps screen to continue

Step 2:
User logs in using ID '12345' and password 'password'



Step 3:
After successful login, user will be directed to main menu. User selects the 'Machine Sanitation' tab.

Step 4:
ON status indicates that conveyor is still operating.

Step 5:
User unable to select 'Clean Conveyor Belt', because the conveyor is still operating.

Step 6:
User pause the conveyor operation by clicking on 'Pause Production'

Step 7:
Conveyor operating status change from ON to OFF

Step 8:
Use cleans machine by clicking on 'Clean Conveyor Belt'

Step 9:
User able to view cleaning progress

Step 10:
User sees that the machine cleaning is successful, the last cleaned date is updates

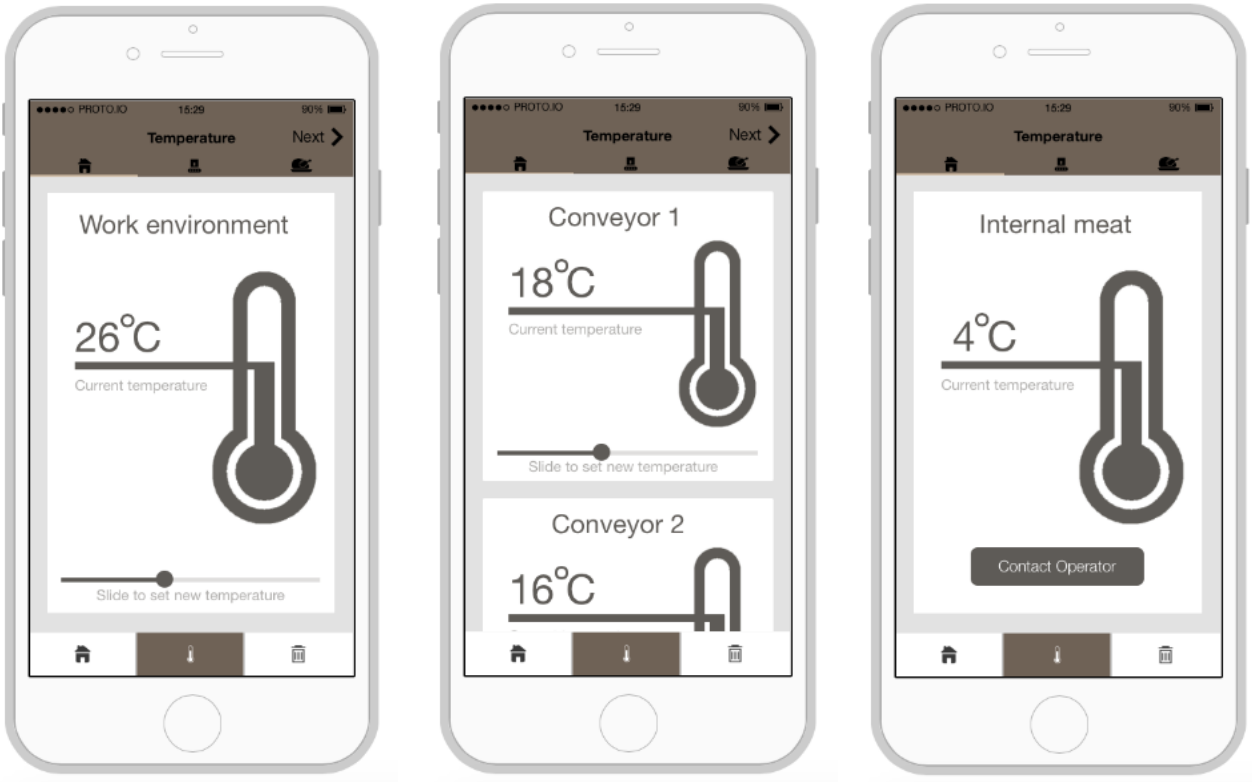
F#4 Operator selects option to initiate cleaning process Test plan

Goal/Description of test plan	This test plan test whether the user could select the option to initiate cleaning process
Testing method	1. User taps on the screen leading to the log-in screen. 2. User enters user ID and password. 3. System verifies log in details and if successful, system directs user to main menu page. 4. User selects the 'Machine Sanitation 'option' in the main menu. 5. If the conveyor operating status is 'on', then user selects 'pause production'. 6. When the conveyor operating status is 'off', user selects 'clean conveyor belt'
Expected successful result	The tester will be able to initiate cleaning process, and see that the 'cleaning in progress' bar is moving.
Other notes (optional)	

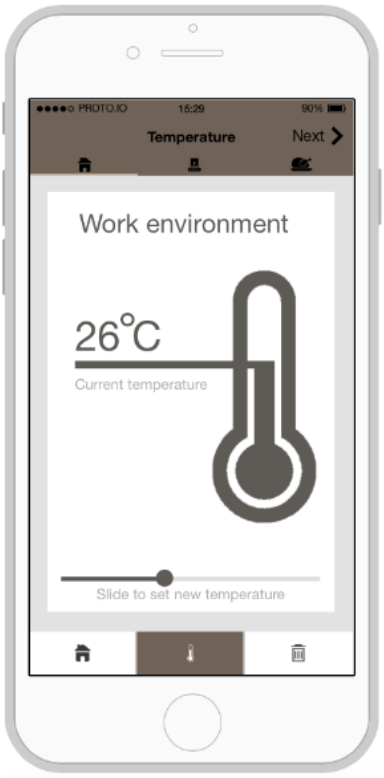
UC#3: Maintain temperature

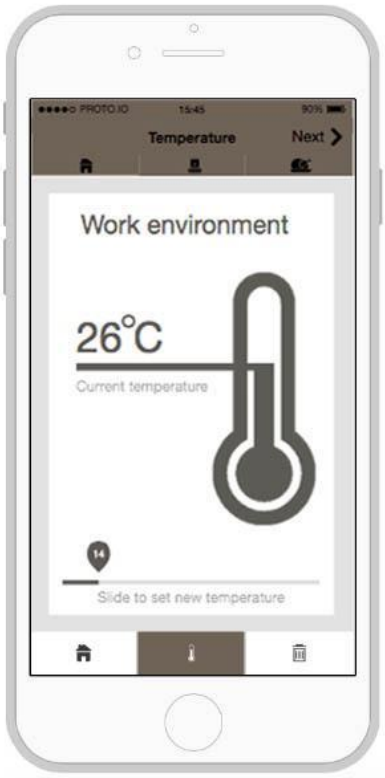
UC#3 Functionality

F#6 System displays current temperature levels

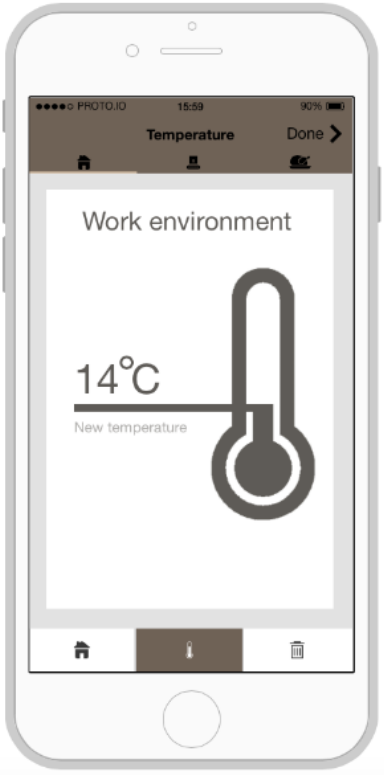


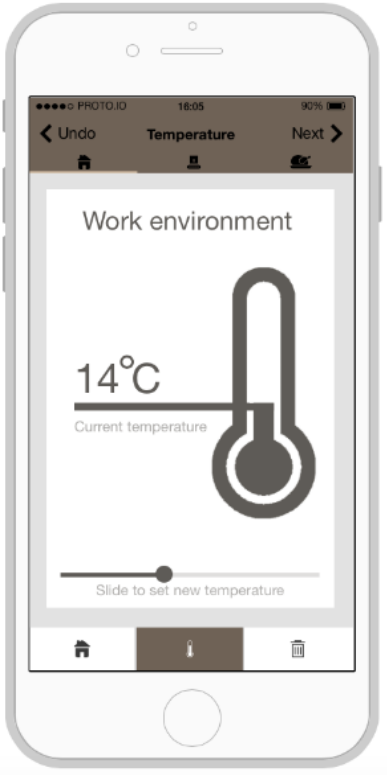
F#7 Manager adjusts temperature



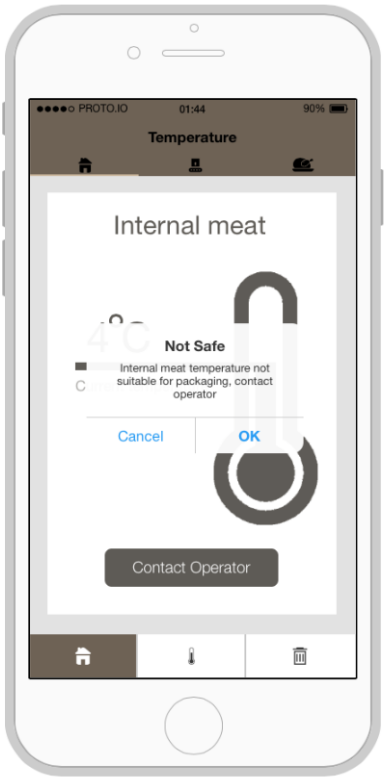


F#8 System automatically alters temperature according to manager's configuration



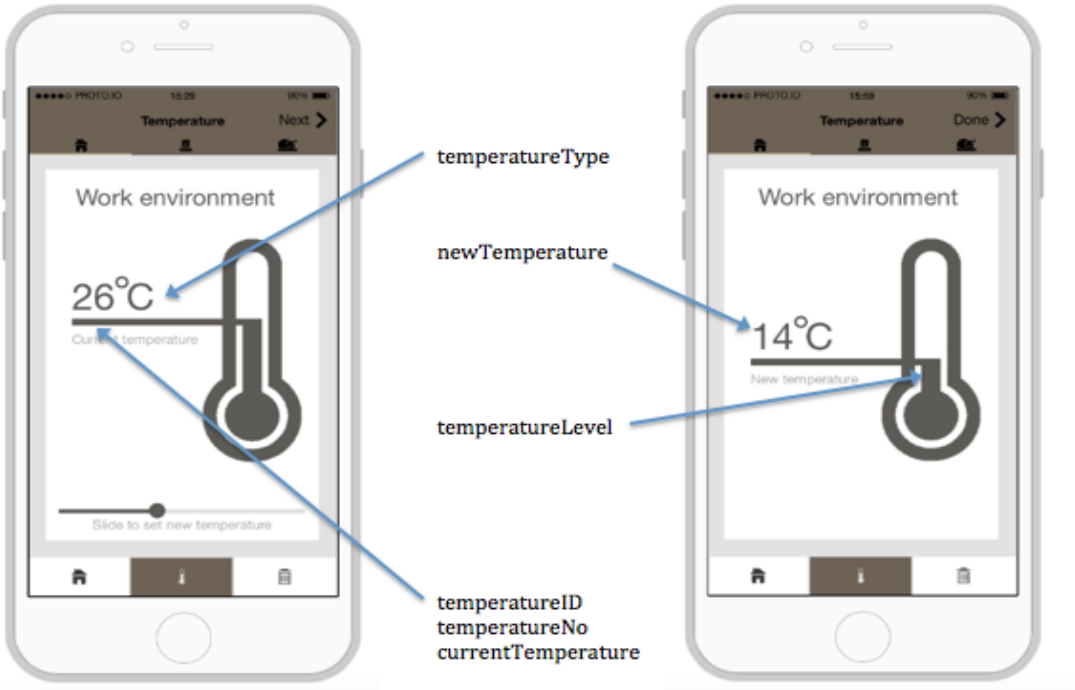


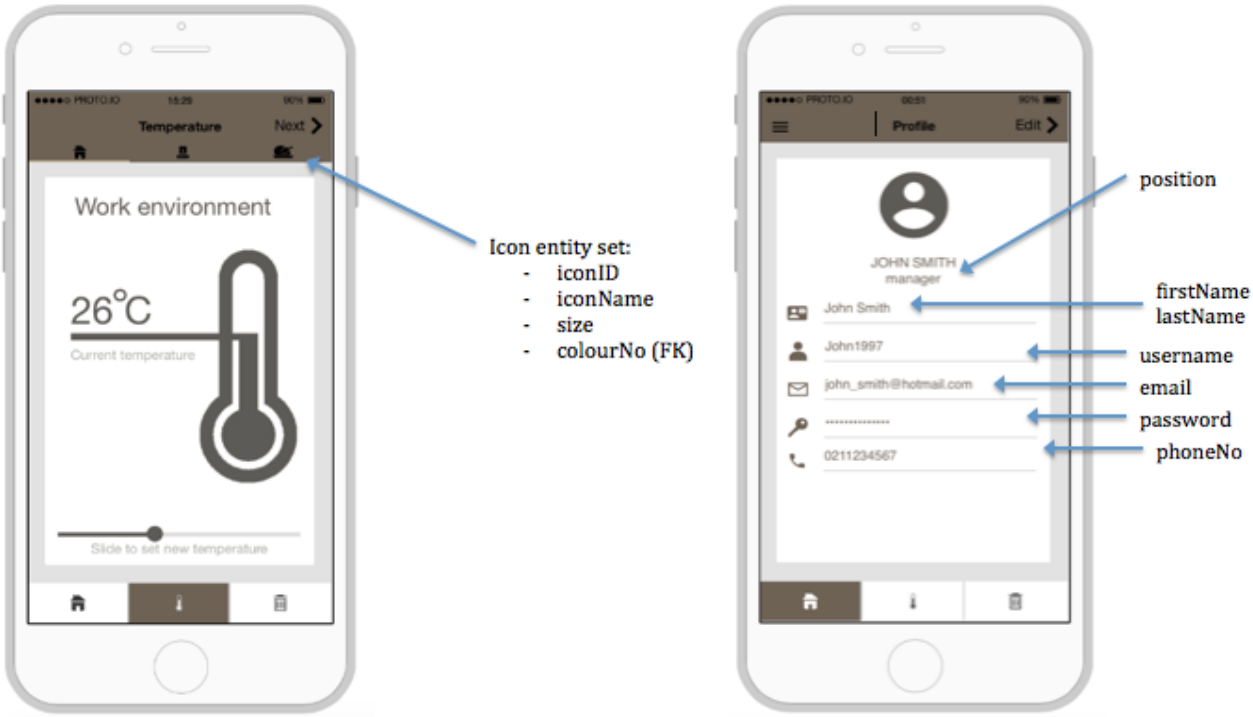
F#9 System checks if internal temperature of red meat is suitable for packaging

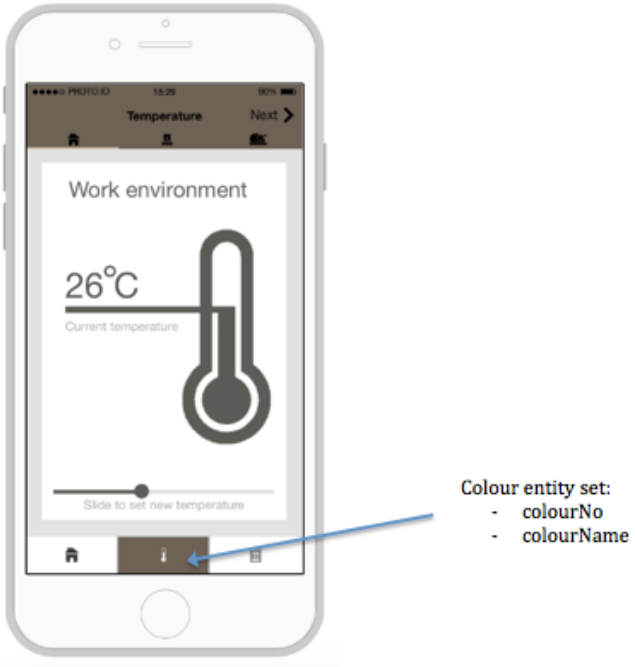


UC#3 Data

Entity name: Temperature	Entity name: Icon	Entity name: People
Attributes: • temperatureID • temperatureType • temperatureNo • currentTemperature • newTemperature • temperatureLevel	Attributes: • iconID • iconName • size • colourNo (FK)	Attributes: • username • password • firstName • lastName • email • phoneNo • position
Entity name: Query	Entity name: Colour	
Attributes: • queryName • querySubject • queryMessage	Attributes: • colourNo • colourName	

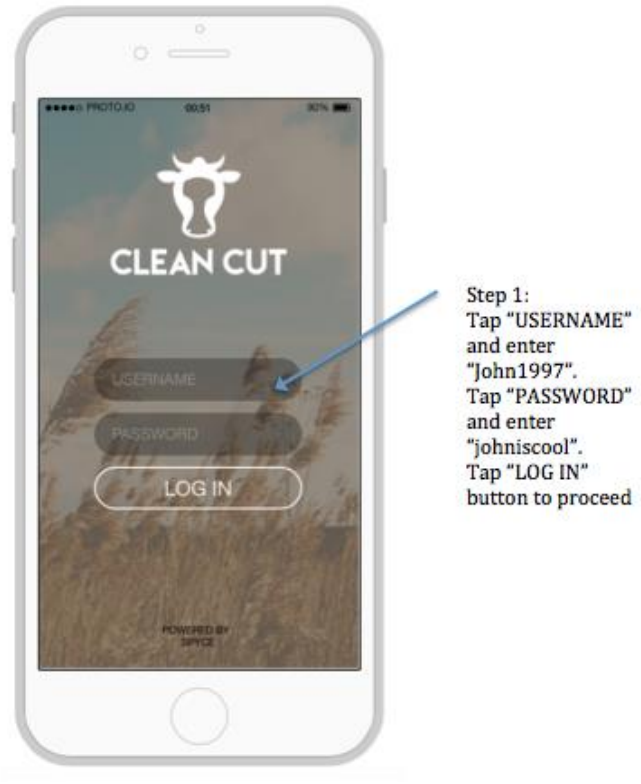

Temperature
Next
Work environment
26°C
Current temperature
Slide to set new temperature
temperatureType
newTemperature
temperatureLevel
temperatureID
temperatureNo
currentTemperature
Temperature
Done
Work environment
14°C
New temperature

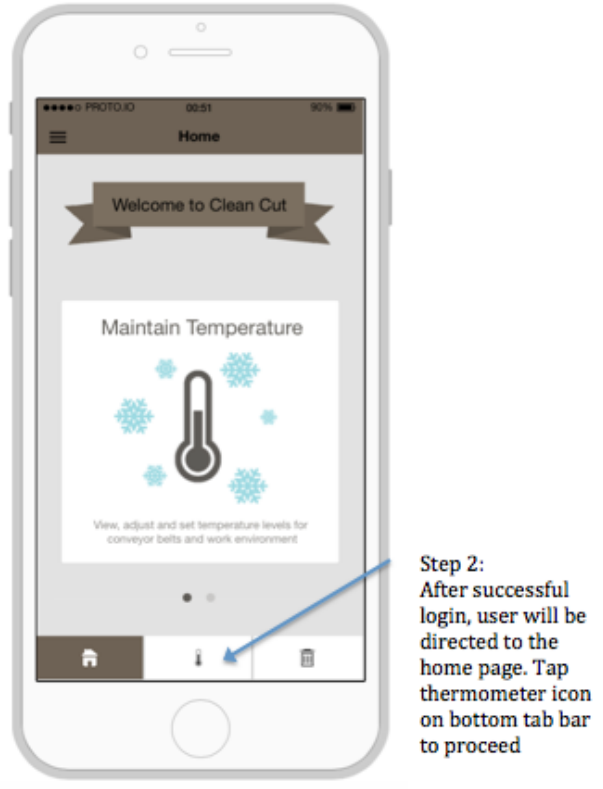

Temperature
Next
Work environment
26°C
Current temperature
Slide to set new temperature
Icon entity set:
- iconID
- iconName
- size
- colourNo (FK)
Profile
Edit
JOHN SMITH
manager
John Smith
John1997
john_smith@hotmail.com
0211234567
position
firstName
lastName
username
email
password
phoneNo

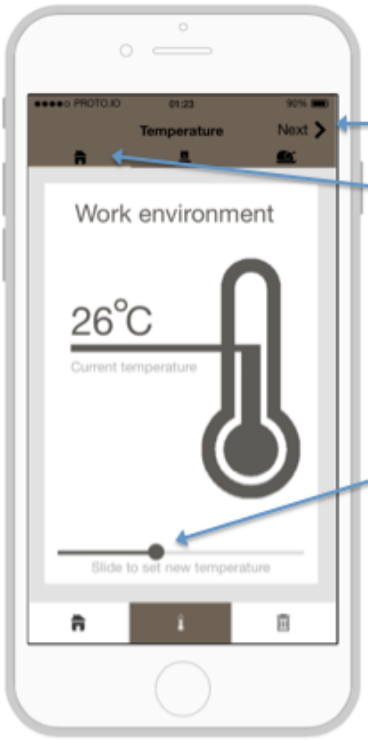


UC#3 Demonstration/simulation

Chosen function number: F#7
Chosen function name: Manager adjusts temperature







Step 5:
Tap "Next" to proceed

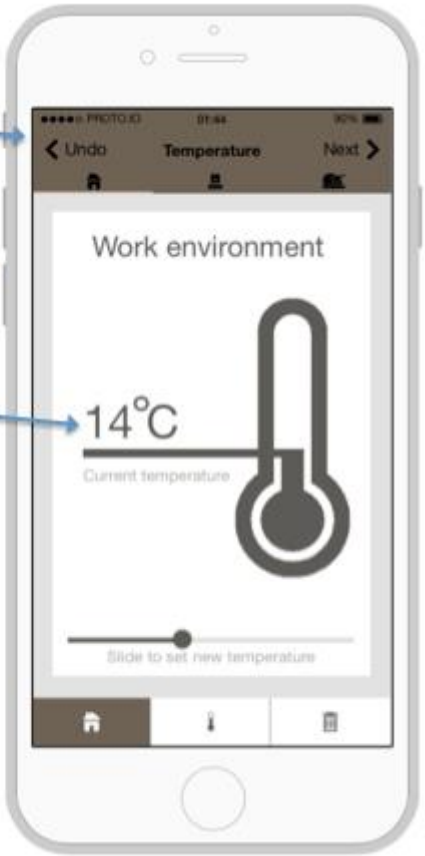
Step 3:
User taps the house icon to adjust temperature for the work environment

Step 4:
User use slider to set new temperature, in this demonstration, slide to the left until number reaches 14

Step 6:
System displays new temperature, user taps "Done" to proceed

Step 8:
Function complete, unless user decides to undo action then user can tap "Undo" to revert back to old temperature

Step 7:
System records and displays user's new temperature as current temperature

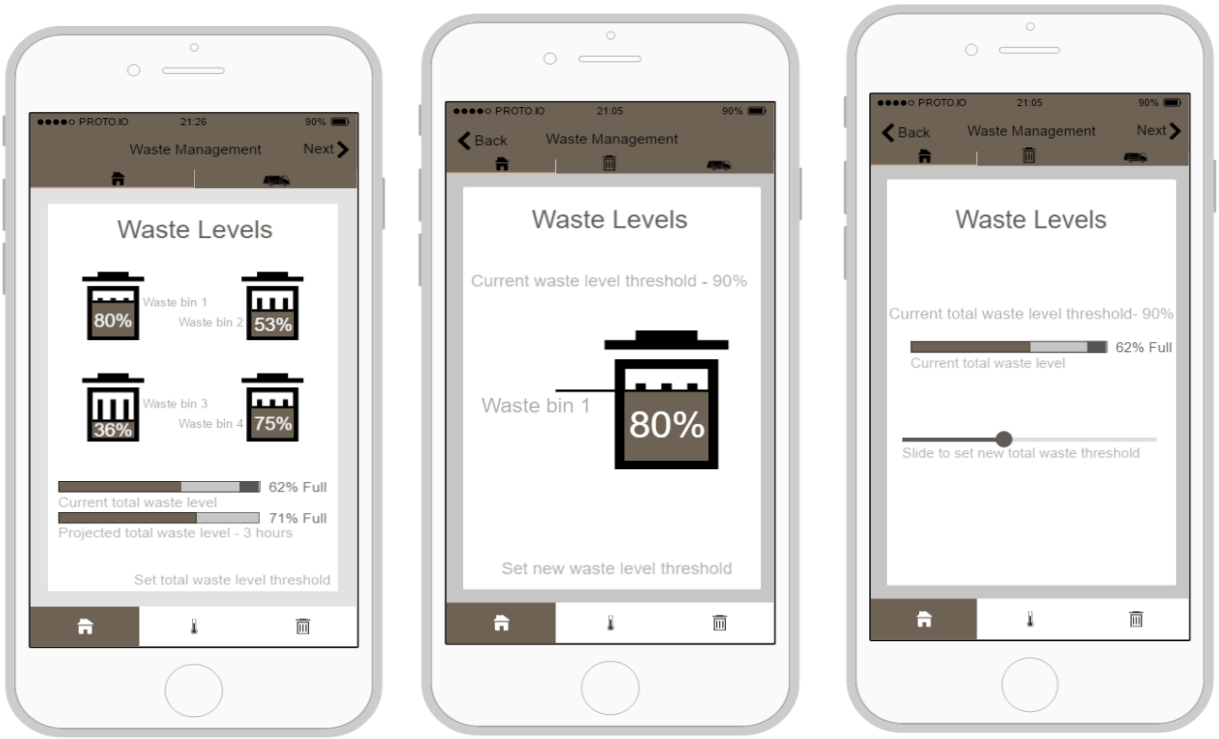


F#7 Manager adjusts temperature Test plan

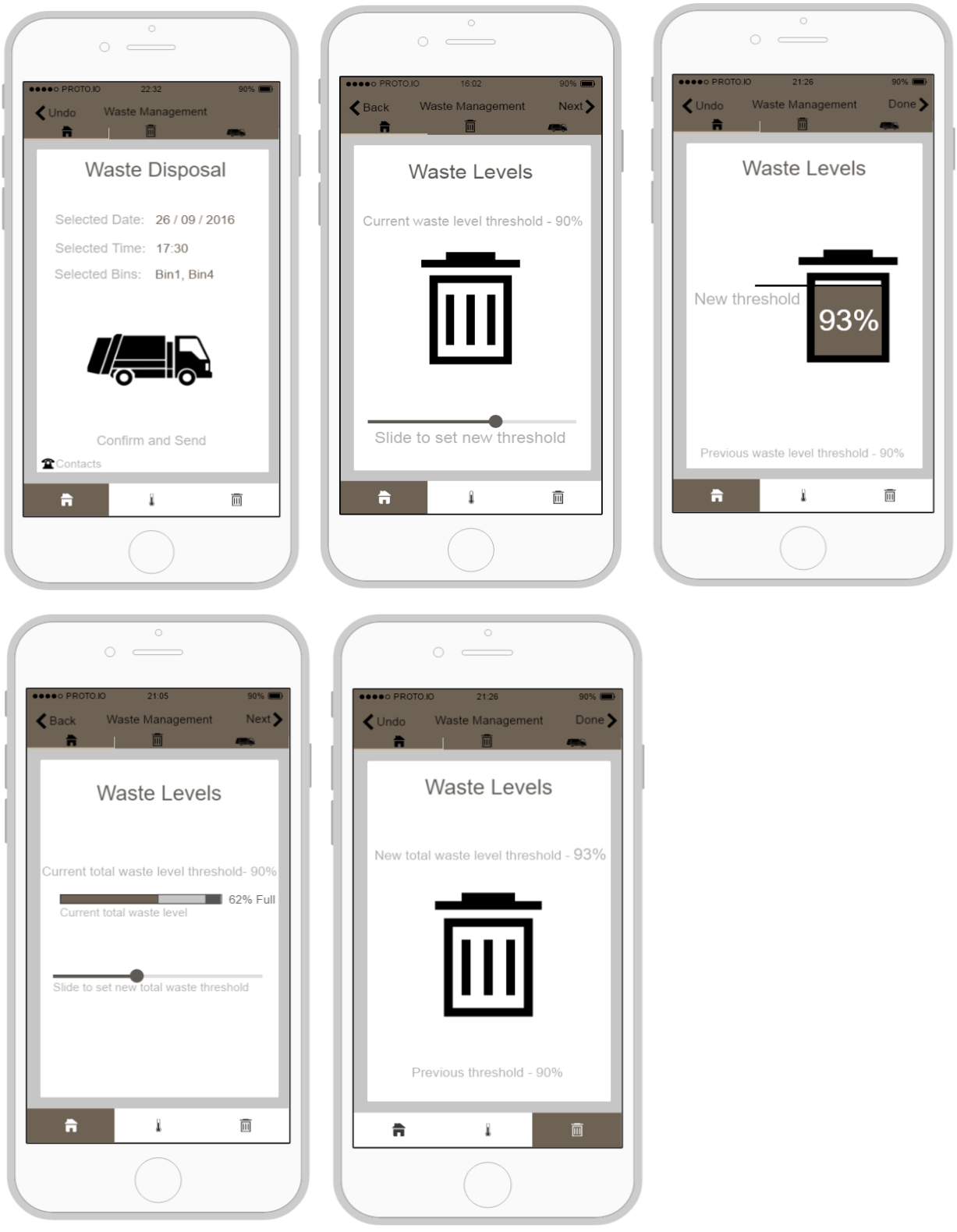
Goal/Description of test plan	*The tester will be able to adjust the temperature of the work environment through the mobile application without having to adjust it in person at the workplace.*
Testing method	1. *User (managers only) logs onto application using their unique username and password* 2. *System verifies log in details and if successful, system directs user to the homepage* 3. *User taps the thermometer icon on the bottom tab bar to go to the temperature page* 4. *User tabs the house icon on the top tab bar to view the current work environment temperature* 5. *User use slider at the bottom of the screen to select the new temperature level* 6. *User taps the "Next" button at the top right of the screen to proceed* 7. *System displays user's selected temperature level and labels it as "new temperature"* 8. *User taps the "Done" button at the top right of the screen to proceed* 9. *Test successful when system records and displays the user's selected temperature level as the "current temperature"* 10. *If user makes a mistake, user can tap the "Undo" button at the top left of the screen to revert the temperature back to the old temperature*
Expected successful result	*The tester will be able to adjust the temperature of the work environment to any temperature the tester chooses. In response, the system will automatically adjust the work environment temperature according to the tester's input*
Other notes (optional)	

UC#4: Manage waste
UC#4 Functionality

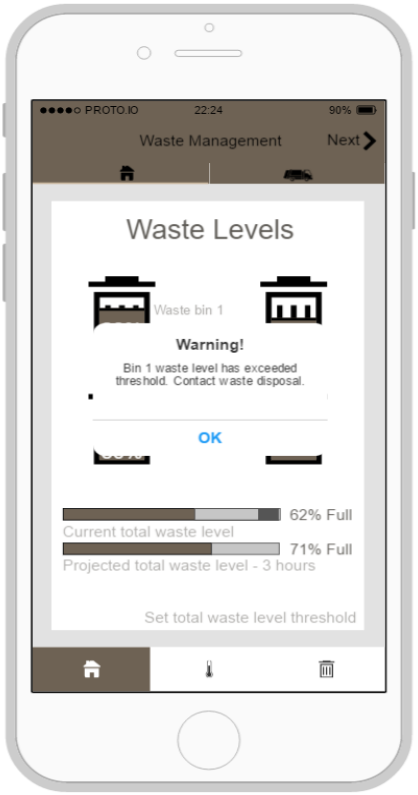
F#10 System displays current waste levels



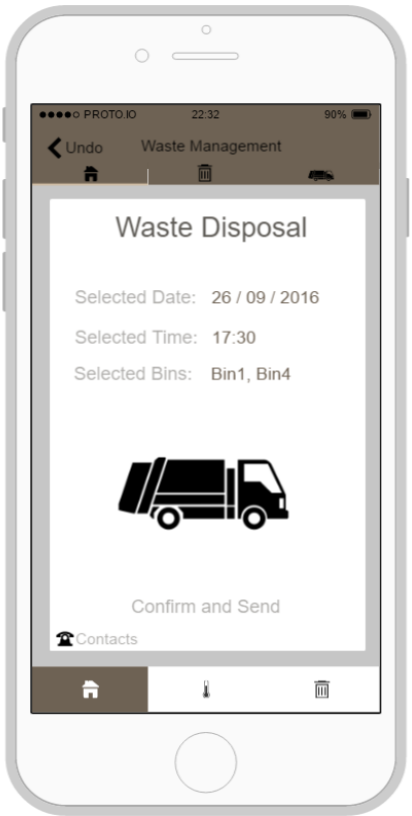
F#11 Manager sets waste level threshold

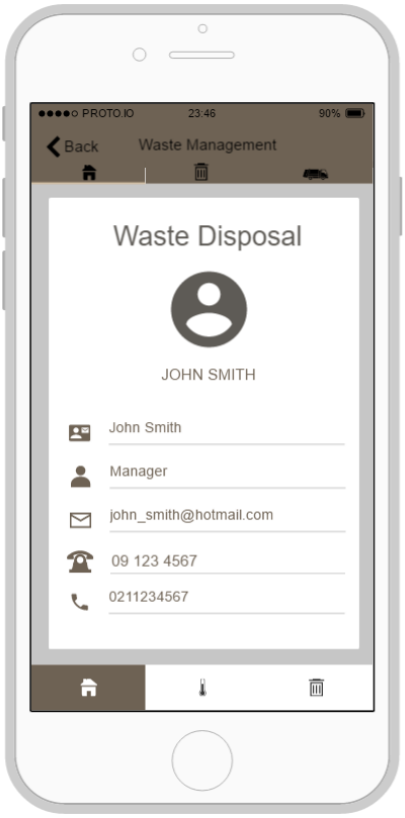


F#12 System notifies manager if waste level exceeds threshold



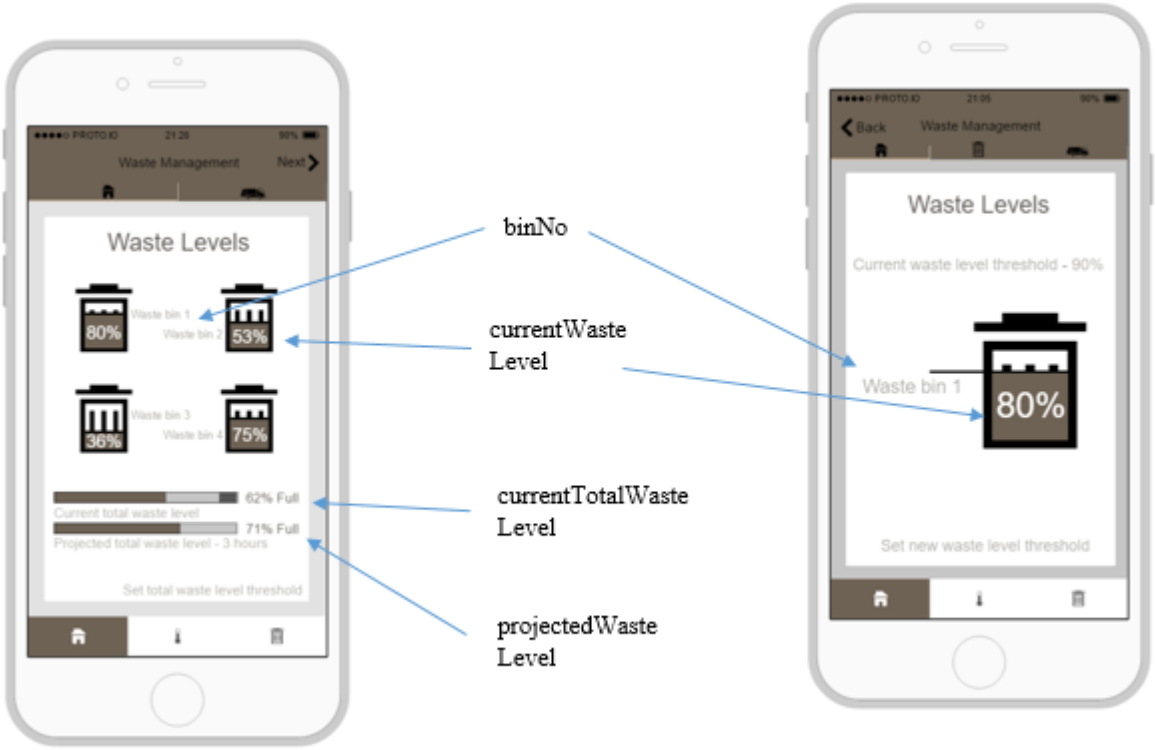
F#13 Manager contacts waste disposal company

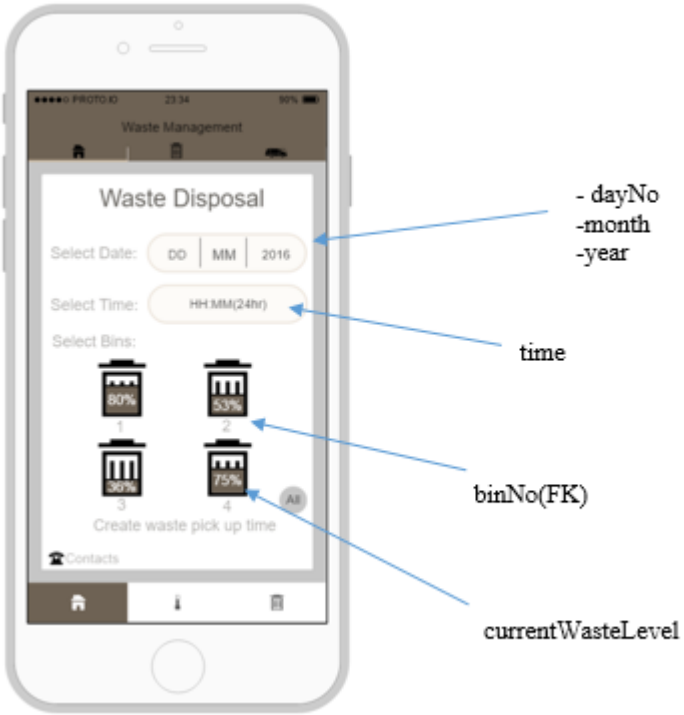


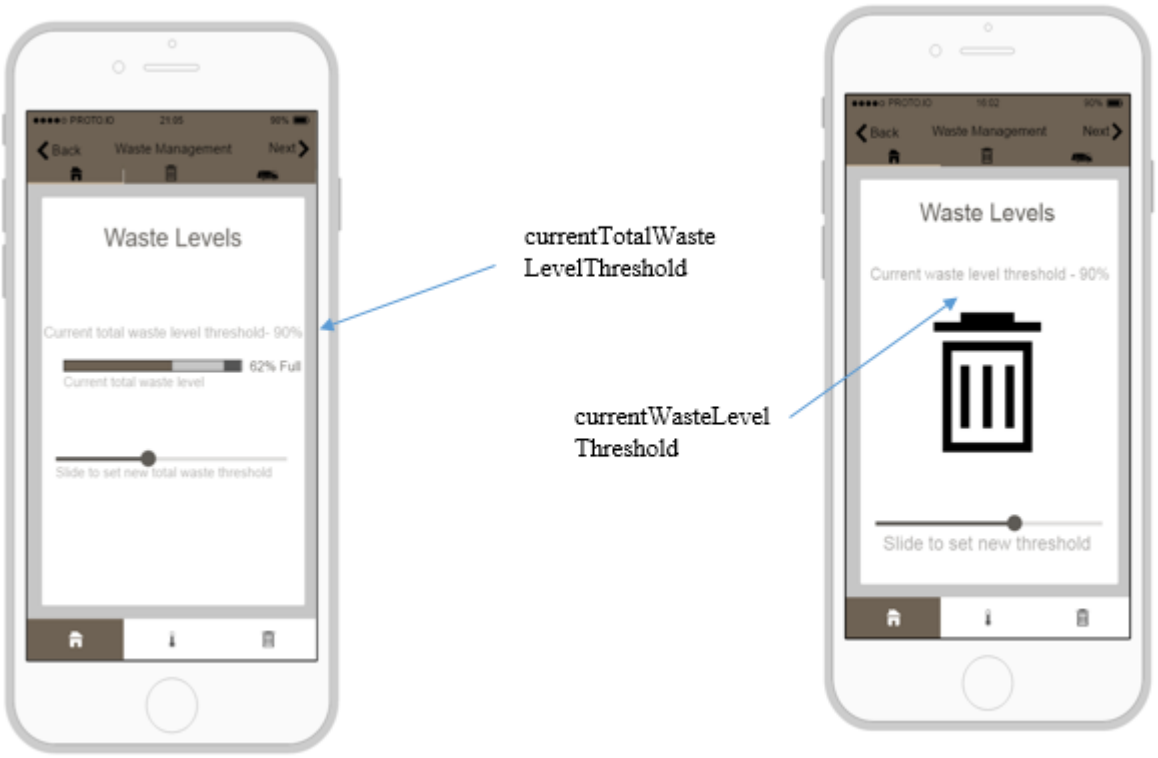


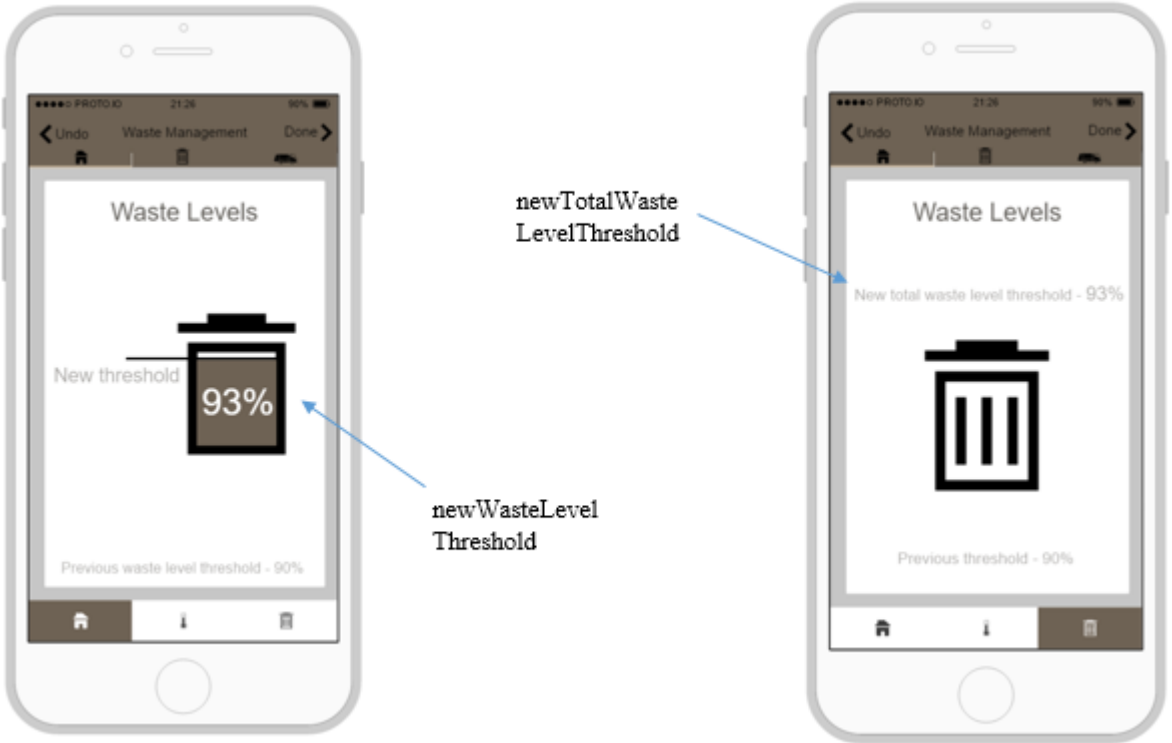
UC#4 Data

Entity name: WasteLevels	Entity name: wasteDisposal	Entity name: wasteContactPerson
Attributes: ● binNo ● currentWasteLevel ● currentTotalWasteLevel ● projectedTotalWasteLevel	Attributes: ● binNo(FK) ● dayNo ● month ● year ● time ● currentWasteLevel	Attributes: ● email ● firstName ● lastName ● companyPhoneNo ● mobilePhoneNo ● position
Entity name: icon	Entity name: colour	Entity name: setThreshold
Attributes: ● iconID ● iconName ● size ● colourNo (FK)	Attributes: ● colourNo ● colourName	Attributes: ● currentWasteLevelThrehold ● currentTotalWasteLevelThreshold ● newWasteLevelThreshold ● newTotalWasteLevelThreshold


Waste Management
Next
Waste Levels
80%
53%
36%
75%
62% Full
Current total waste level
71% Full
Projected total waste level - 3 hours
Set total waste level threshold
binNo
currentWaste Level
currentTotalWaste Level
projectedWaste Level
Back
Waste Management
Waste Levels
Current waste level threshold - 90%
Waste bin 1
80%
Set new waste level threshold


Waste Management
Waste Disposal
Select Date:
DD
MM
2016
Select Time:
HH:MM(24hr)
Select Bins:
80%
53%
36%
75%
All
Create waste pick up time
Contacts
- dayNo
-month
-year
time
binNo(FK)
currentWasteLevel


Back
Waste Management
Next
Waste Levels
Current total waste level threshold- 90%
62% Full
Current total waste level
Slide to set new total waste threshold
currentTotalWaste
LevelThreshold
currentWasteLevel
Threshold
Waste Levels
Current waste level threshold - 90%
Slide to set new threshold

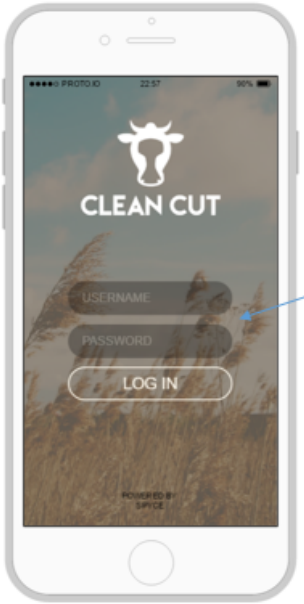

Undo
Waste Management
Done
Waste Levels
New threshold
93%
Previous waste level threshold - 90%
newTotalWaste
LevelThreshold
newWasteLevel
Threshold
Waste Levels
New total waste level threshold - 93%
Previous threshold - 90%

Icon Entity Set:
-iconID
-iconName
-size
-colourNo(FK)

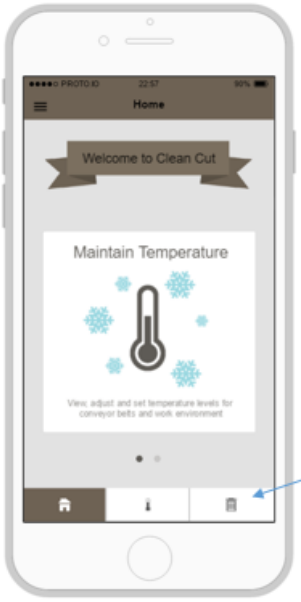
Colour Entity Set:
-colourNo
-colourName

UC#4 Demonstration/simulation

Chosen function number: F#13
Chosen function name: Manager contacts waste disposal company

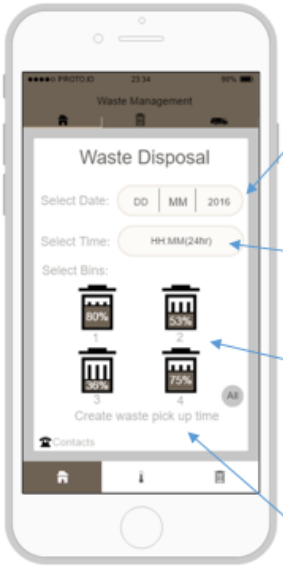


Step 1:
Tap and enter USERNAME and PASSWORD.
Tap 'LOGIN' button to sign in and proceed



Step 2:
After signing in successfully, the user is directed to a home page. Tap on the bin icon located on the bottom tab bar to proceed.

Step 3:
The user is directed to the waste management page which displays waste levels. After determining which waste bin needs to be emptied, the user taps on the waste truck icon.

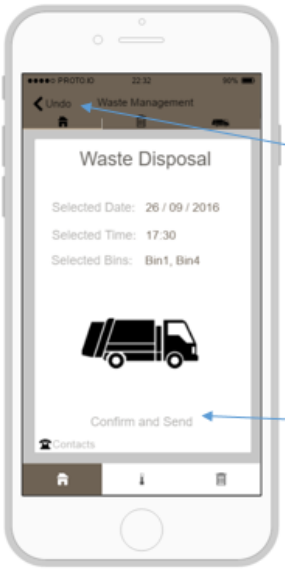


Step 4:
The user is directed to the waste disposal page. Tap 'DD' and enter day number and tap 'MM' and enter month to create date wished to empty waste bins.

Step 5:
Tap 'HH:MM(24hr)' and enter time wished to empty waste bins in 24 hour time.

Step 6:
Tap to select bins wished to be emptied. (May select 'All' if wishing to empty all bins). Waste levels of each bin are displayed.

Step 7:
Tap the 'Create waste pick up time' button to proceed.



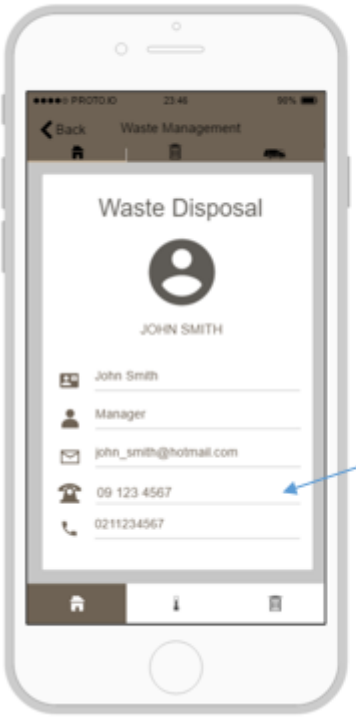
Step 8:
System displays the selected time, date and bins wished to be emptied for confirmation.

If the user wishes to change any attribute, then the user can tap 'Undo' to be directed back to the previous page and repeat any of the steps from 4 to 6.

If the user wishes to proceed, tap 'Confirm and send'.

Step 8:
After successful submission, the system displays 'sent' to show the user the arrangement has been set. User taps 'Done' to proceed.

Step 9:
If the user wishes to cancel arrangement, tap 'Contacts' to proceed to waste disposal contacts.



Step 10:
The user is directed to the waste disposal contact page to allow the user to obtain direct contact information.

F#13 Manager contacts waste disposal company Test plan

Goal/Description of test plan	*The tester is able to quickly create and arrange a time and date in which waste bins are to be emptied through the mobile application. This is done by the tester keeping an eye on the levels of waste of each bin themselves instead of people at the workplace constantly checking to make sure waste levels have not exceeded thresholds manually.*
Testing method	1. *User (managers only) signs into the application using their unique username and password.* 2. *System verifies username and password.* 3. *System directs user to homepage if verification of username and password is successful.* 4. *User taps the bin icon to view current waste levels of each bin, current total waste level and projected total waste level.* 5. *User taps the waste truck icon on the top tab bar to go to the waste disposal page.* 6. *User taps and enters details of time and date wished to empty waste bins.* 7. *User selects the bins needed to be emptied.* 8. *User selects 'Create waste pick up time'.* 9. *System directs user to confirmation page.* 10. *User taps 'Confirm and send' to proceed or taps 'Undo' to change details.* 11. *If the user taps 'Undo' then repeat steps 6 to 8.* 12. *System displays sent message if user selected 'Confirm and send'.* 13. *If the user wishes to cancel, they can tap 'Contacts' to obtain direct contact information and contact the waste disposal department.*
Expected successful result	*The tester arranges a time and date of bins needed to be emptied. In response, the system will send the details of the arrangement to the waste disposal department.*
Other notes (optional)	

UC#5: Manage red meat cutting

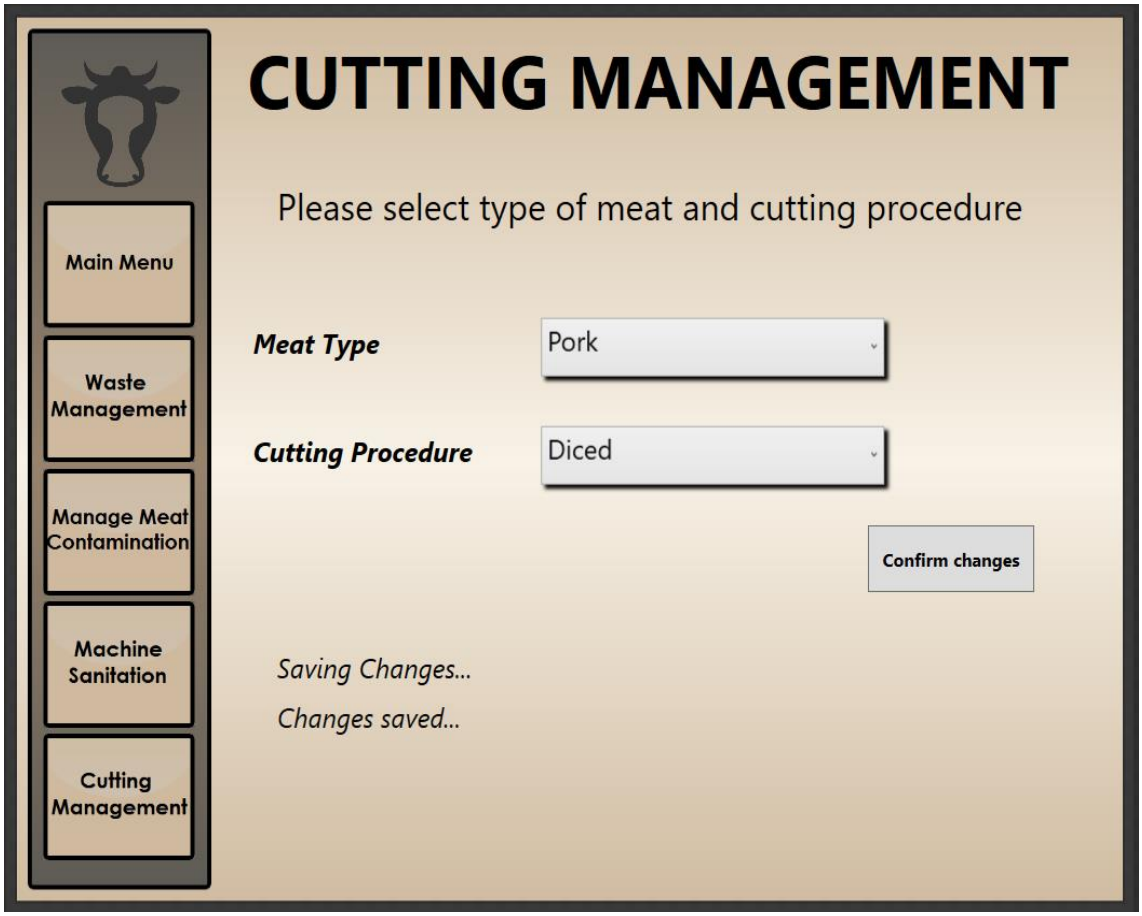
UC#5 Functionality

F#14: Operator selects different cutting procedures


CUTTING MANAGEMENT
Please select type of meat and cutting procedure
Main Menu
Waste Management
Manage Meat Contamination
Machine Sanitation
Cutting Management
Meat Type
Pork
Cutting Procedure
Sirloin
Ribs
Minced
Fillet
Diced
Confirm changes

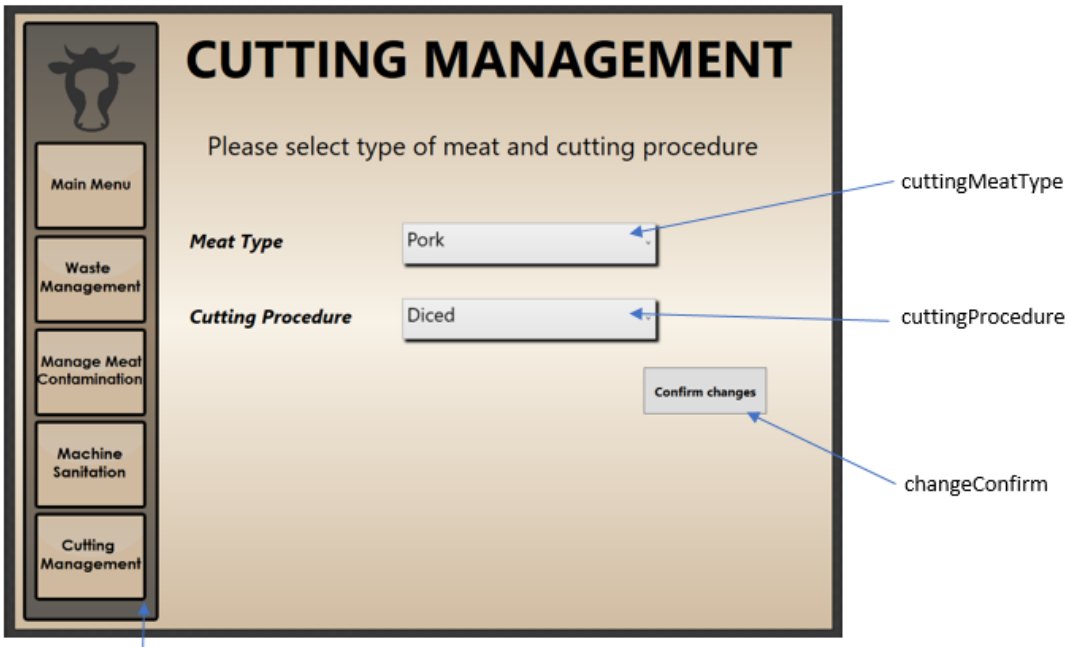

CUTTING MANAGEMENT
Please select type of meat and cutting procedure
Main Menu
Waste Management
Manage Meat Contamination
Machine Sanitation
Cutting Management
Meat Type
Pork
Cutting Procedure
Diced
Confirm changes

F#15: System portions red meat according to operator's selection



UC#5 Data

Entity name: CuttingManagement	Entity name: ChangeStatus
Attributes: ● cuttingMeatType ● cuttingProcedure	Attributes: ● changeConfirm ● changeSaved
Entity name: Menu	Entity name: Colour
Attributes: ● menuID ● menuName ● colorNo (FK)	Attributes: ● colourNo ● colourName



Menu Entity Set:

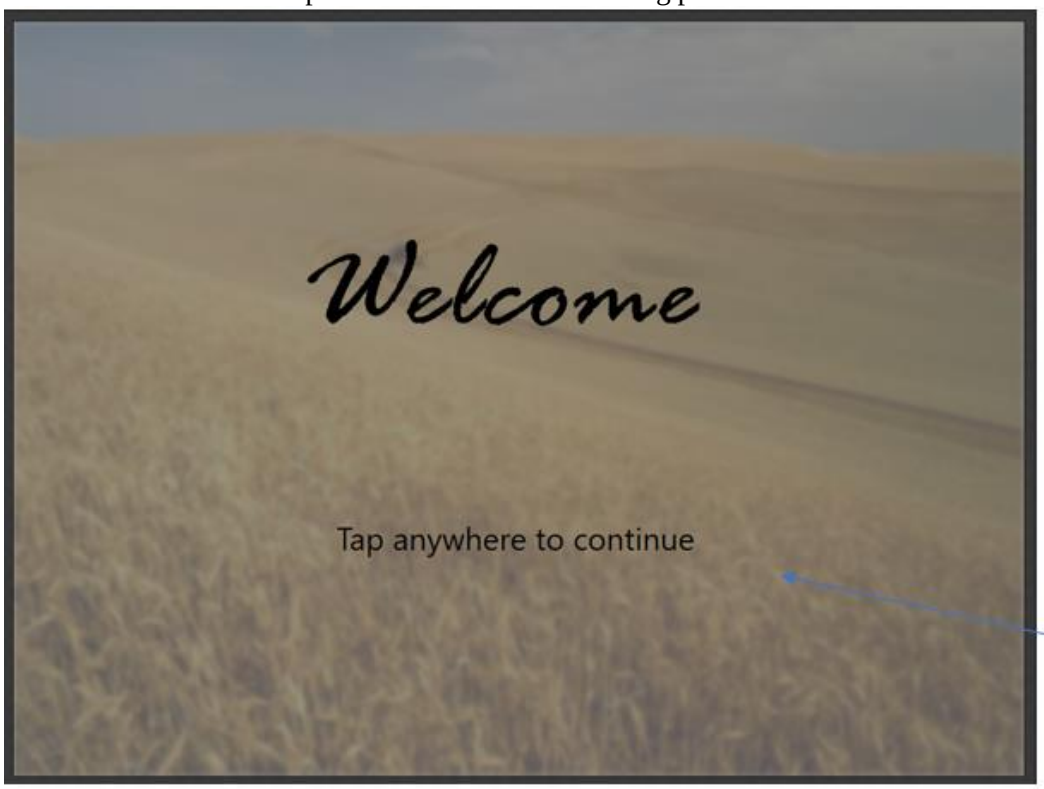
- menuName
- menuID
- colourNo (FK)

Colour Entity Set:

- colourNo
- colourName

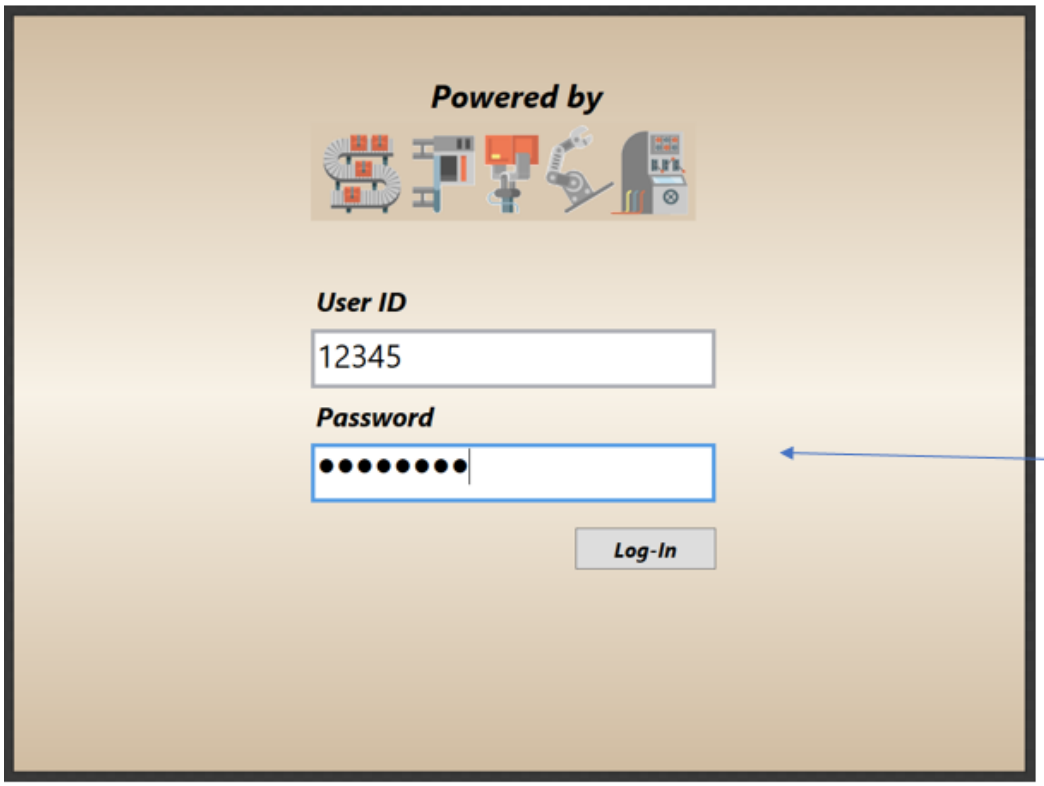
UC#5 Demonstration/simulation

Chosen function number: F#14 & F#15
Chosen function name: Operator selects different cutting procedures



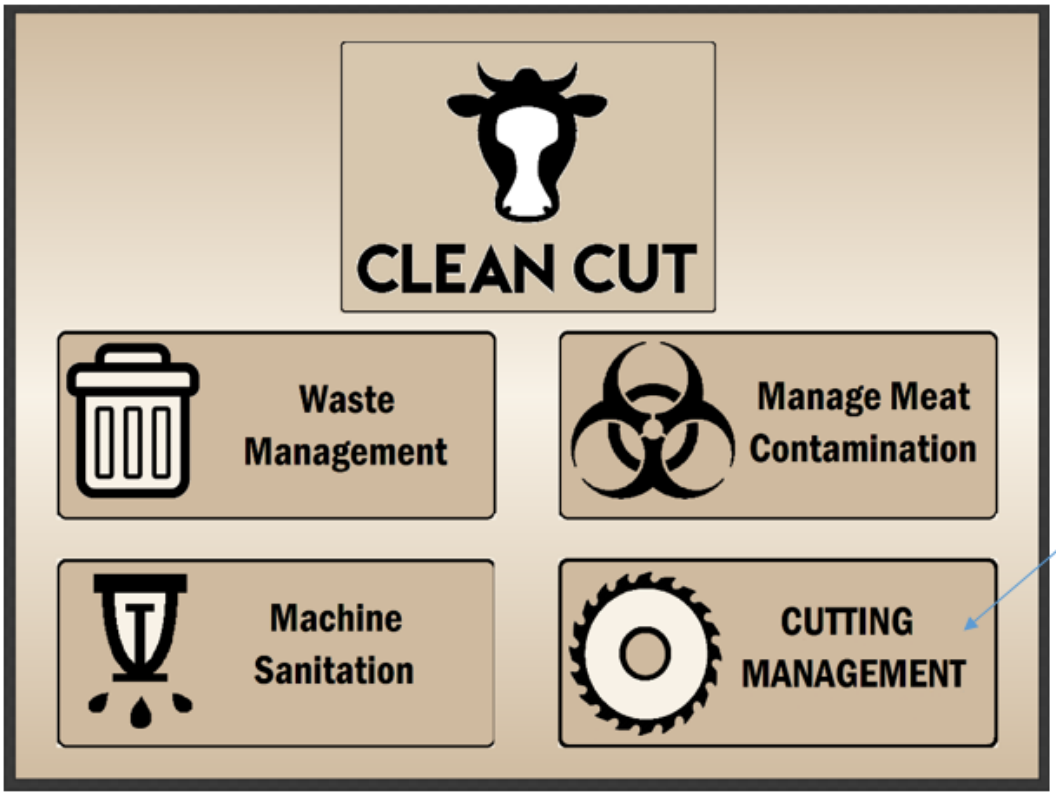
Step 1:

User taps screen to continue



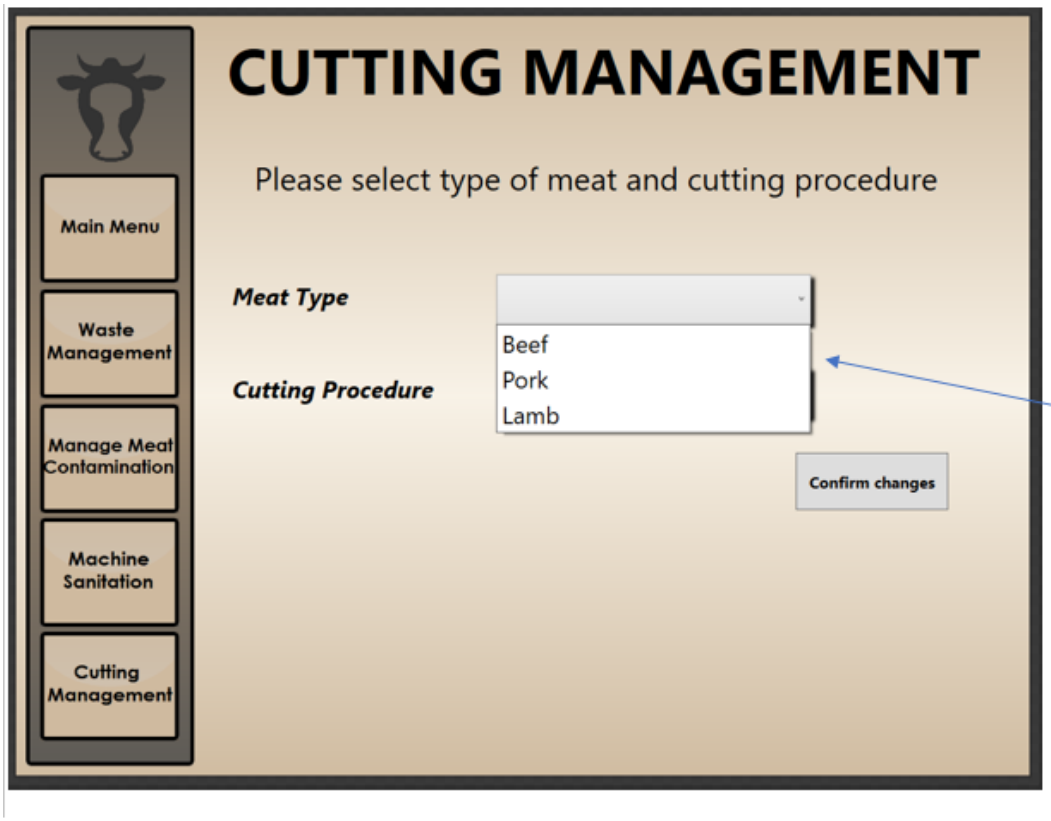
Step 2:

User inputs the User ID: "12345" and password: "password"



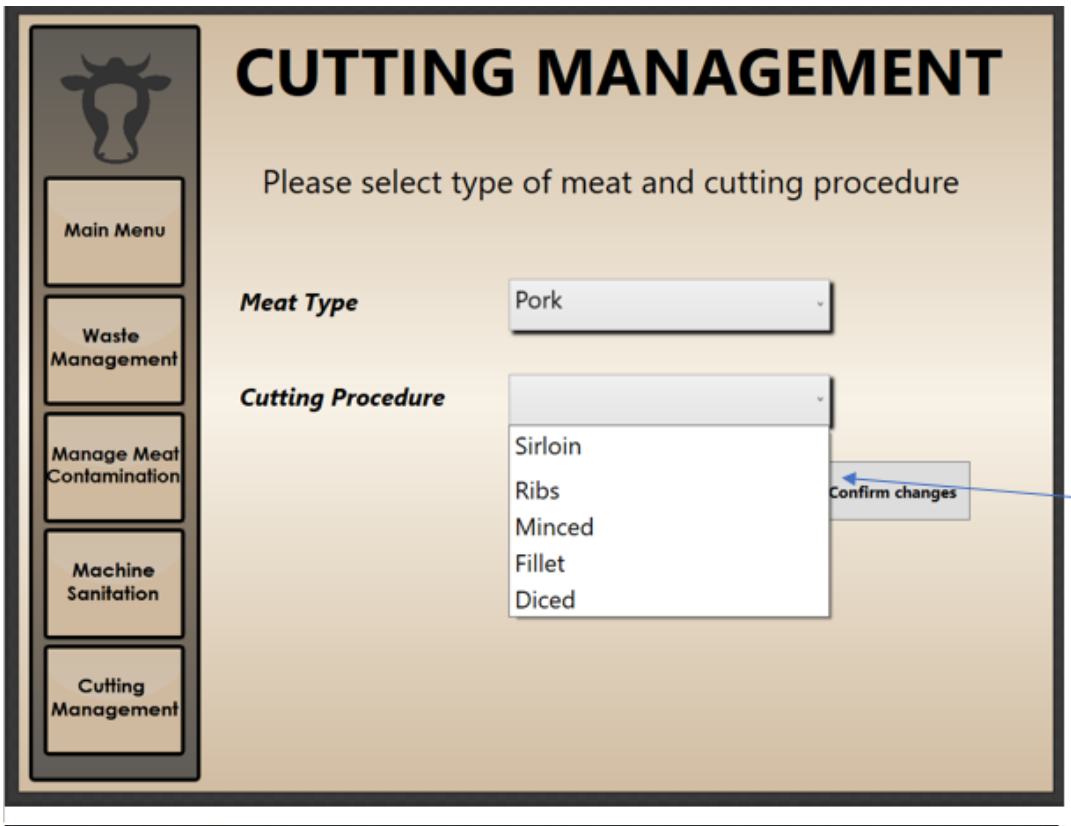
Step 3:

When in the main menu, user selects the 'Cutting Management' option.



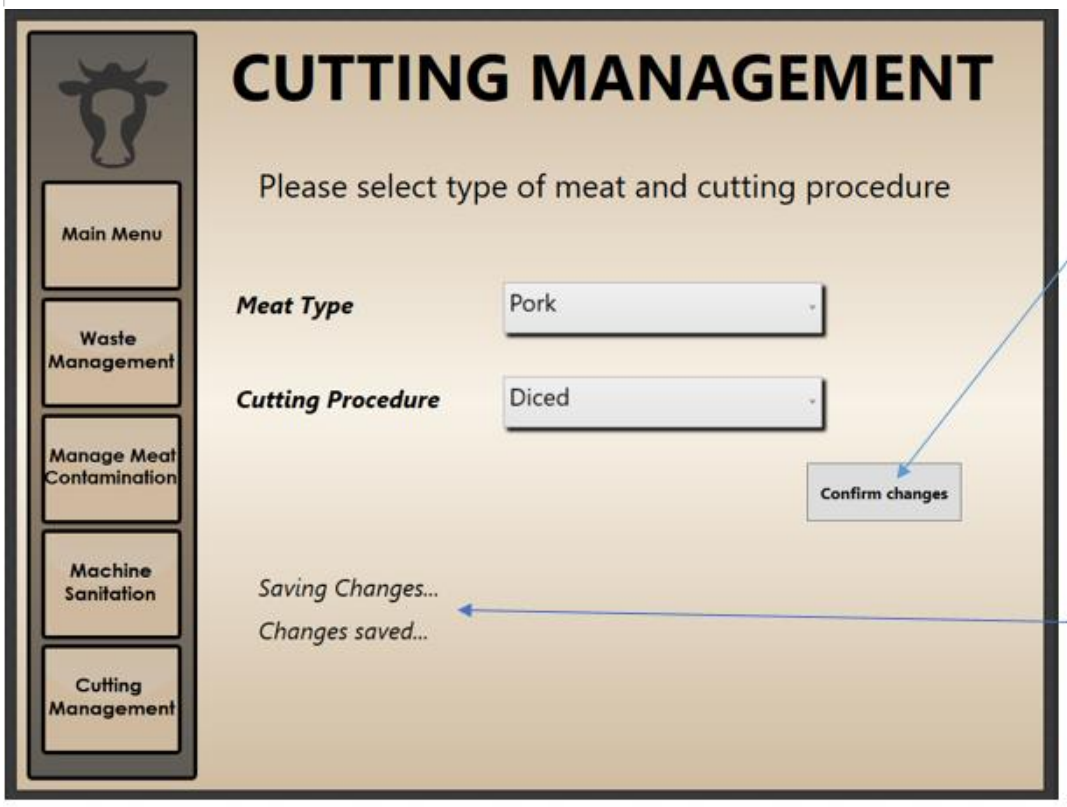
Step 4:

User selects the type of meat. Either beef, pork or lamb



Step 5:

User selects the cutting procedure of the meat type



Step 6:

User taps on the 'Confirm changes' button to confirm the change in cutting procedure

Step 7:

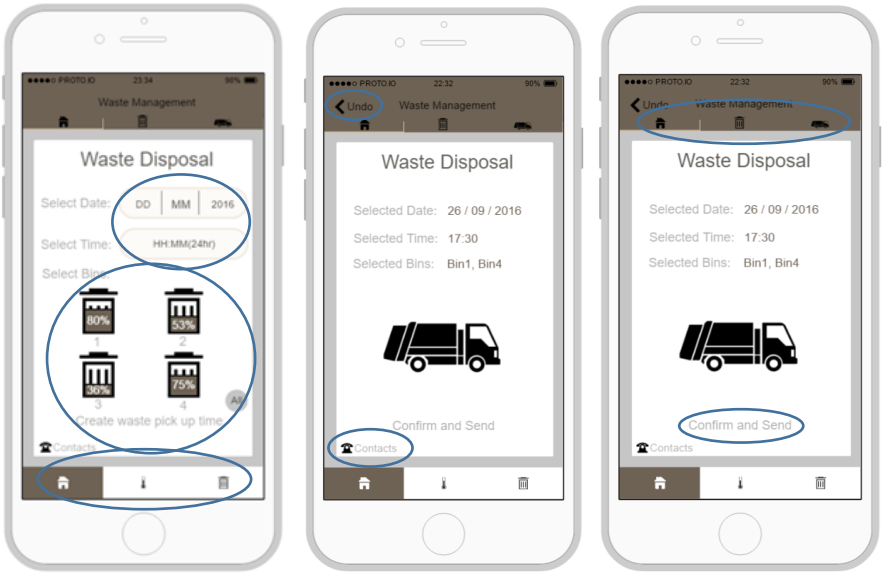
User sees the system indicating that the new cutting procedure has been saved.

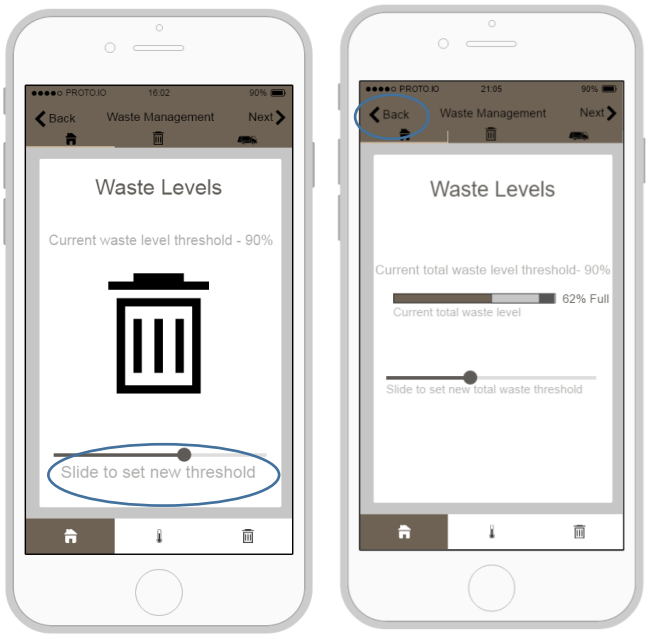
F#14 & F#15 Test plan

Goal/Description of test plan	A member of the staff will be able to select the meat type and cutting procedure for the system to portion.
Testing method	1. User taps on the screen leading to the log-in screen. 2. User will enter their ID and password. 3. System will verify the details and if successful, will allow access to the main menu. 4. User selects the 'Cutting Management' option in the main menu. 5. User selects the meat type the cutting procedure will be applied to. 6. User selects the cutting procedure. 7. User taps on the 'Confirm changes' button to apply the new cutting procedure to the meat type. 8. If the changes were successfully applied, the system will display 'Changes saved…'.
Expected successful result	The meat type will be portioned according to the cutting procedure it was applied to.
Other notes (optional)	

Design principles

1. User in control



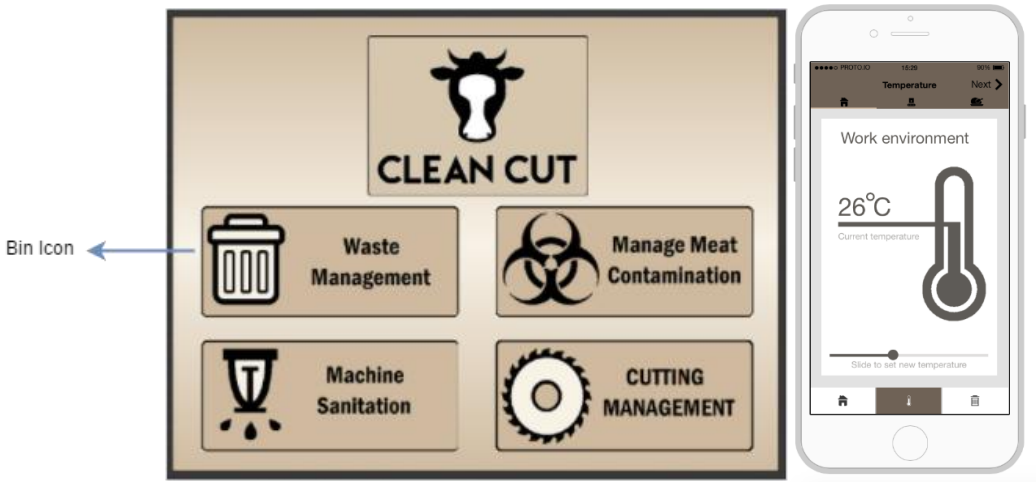


Users do not like being extremely limited to controls of a system and therefore a system must make sure the user feels in control of the system rather than following it's formatted instructions. Allowing the user to make actions without restrictions help to ensure this quality is met.

- Selecting to 'Undo' actions when wished
- Selecting time and date of disposal by their needs
- Selecting multiple bins of their choice when creating disposal arrangement
- Selecting to view each bin and set individual thresholds by their wanted standards
- Being able to switch between different pages swiftly and easily

These are some of many attributes that help ensure the user feels in control.

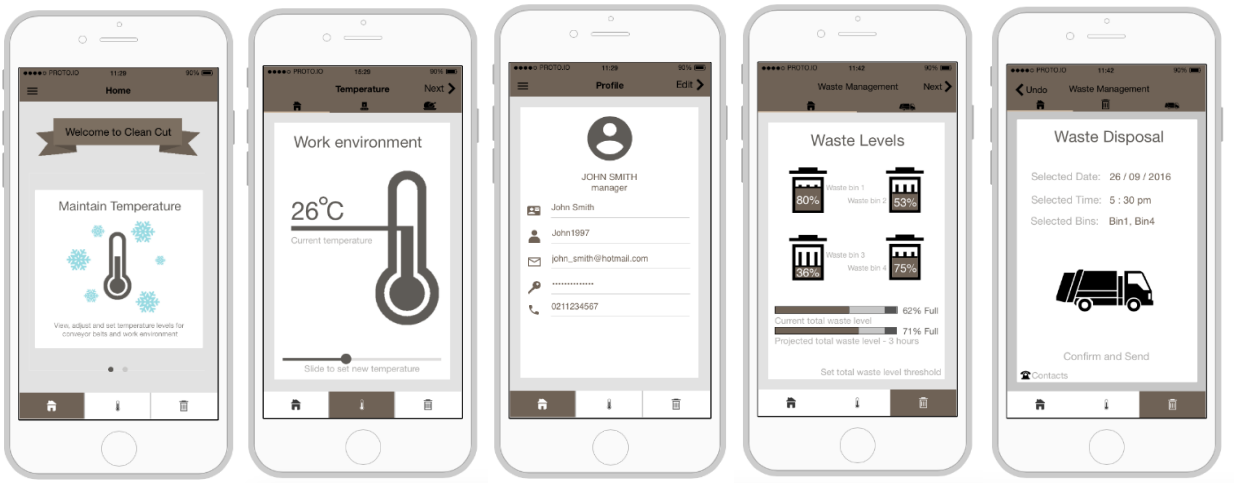
2. Directness



Familiar metaphors are used as icons to provide direct and intuitive interface for the users. The bin icon is familiar to users as it indicates waste and something to be thrown away.

The thermometer icon indicates that it has something to do with temperature. These metaphors are used to support user's recognition and makes it easier to learn the system.

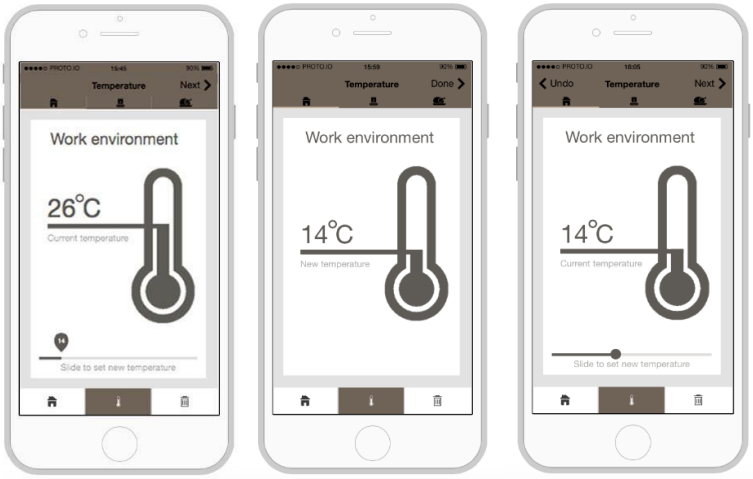
3. Consistency



Users don't like to spend time remembering the differences in interaction, they want to focus more attention on tasks. Consistency makes the interface familiar and predictable

- Bottom tab bar to switch between "Home", "Temperature", and "Waste" always in the same place
- "Next", "Done, and "Undo" buttons are always in the same place
- A standard set of colours are used to demonstrate familiarity and consistency

4. Forgiveness



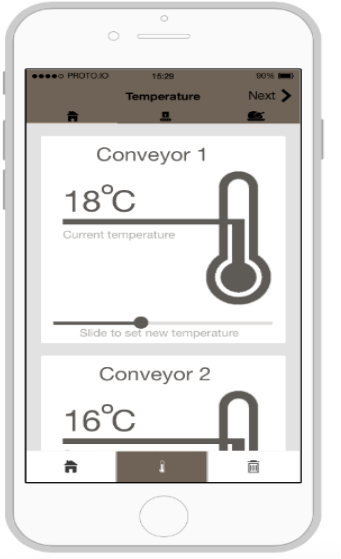
Users like to explore an interface and learn by trial and error, forgiveness allows users to make mistakes and makes it easy for the user to recover from the mistakes.

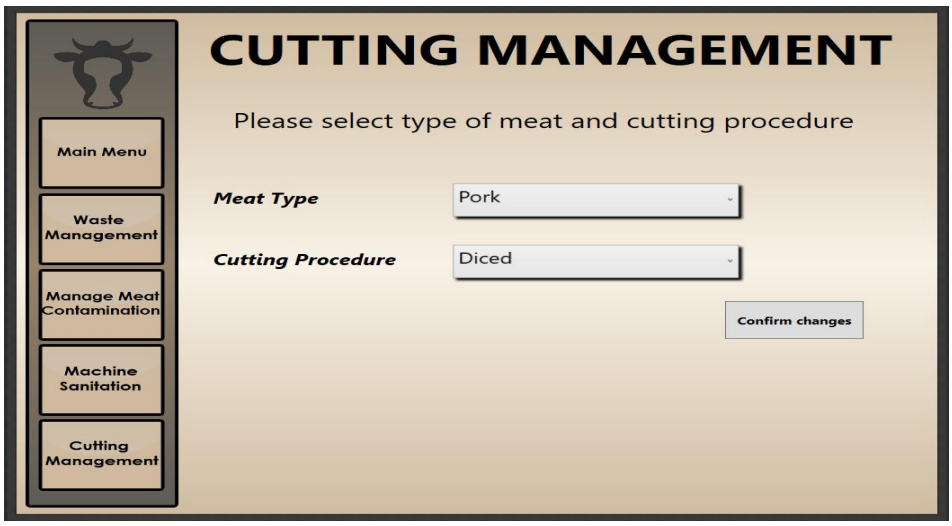
Screenshot 1 allows user to adjust the temperature level and tap "Next" to proceed. Screenshot 2 displays the user's new temperature selection, user then taps "Done" to proceed. Screenshot 3 successful records, and displays the user's new temperature selection as the "current temperature", indicating that the temperature adjustment is successful. At this point, user has the option to tap "Undo" on the top left corner to revert the temperature level back to the old temperature, this demonstrates forgiveness.

5. Feedback

The system provide sufficient feedback the user's action. After user have selected ‘Clean Conveyor Belt’, the system provides feedback by displaying a progress bar, it shows the user that machine sanitation has been initiated and indicates the progress of the cleaning process.
The user understands that cleaning is in progress as the green bar is animated.

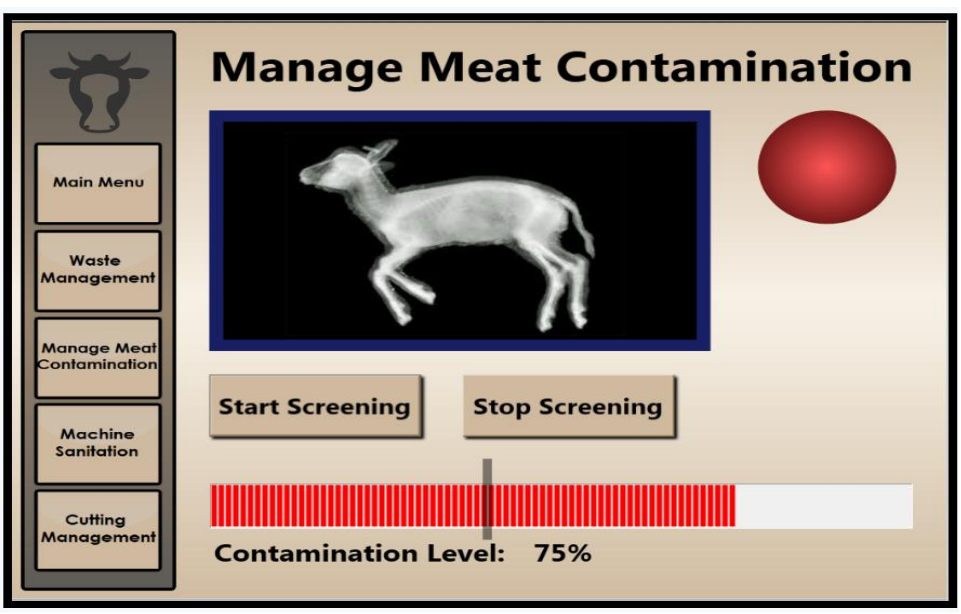
6. Aesthetics





Aesthetically, the user wants an interface that is easy to look at and displays all the important information with emphasis. Both the interfaces have kept a consistent brown/beige colour scheme to make it pleasing to the eye. Bright colours we’re not used unless it displayed crucial information. The interactive elements of the interface are outlined by black borders to catch the user's attention. Navigation bars for the mobile application is at the bottom and top part of the screen to keep the information displayed in the middle, while for the control panel the navigation bar is kept in the left side of the display for less clutter on the screen.

7. Simplicity



Users want to be able to obtain only important information from a system, with unnecessary information being left out of the display. However, the system also needs to display all important information in a way that is clearly understandable and not too simple. For example, when scanning meat the system only displays information that is needed for the user. Users can easily start and stop screening, and they can clearly see whether the scanned meat has exceeded the maximum contamination level or not using the colour coded progress bar and light. They do not need to see areas of contamination found by the system, and so this is not displayed to the user. In the mobile application, the waste level screen displays only critical information, such as the new threshold for waste.

Appendix: Progress reports

INFOSYS 220 / INFOMGMT 291

Group assignment progress report

Reporting period	Monday 15/9 to Sunday 16/10
Group number	Group 12
Group members	Pete Kongthong (PK); Suzy Lee (SL); Emily Tan (ET); Callum Cory (CC); Yohan Lim (YL)

Meeting #1 minutes and actions

Date of meeting: 15/9
In attendance: Everyone
Meeting start time: 3pm
Meeting end time: 5pm
Items discussed:

- We chose to specialise in meat, as we found there was an opening in the industry that we could discuss.
- We allocated tasks for the initial prototype to different members and set a deadline for when we should submit our first proposal.

Meeting #2 minutes and actions

Date of meeting: 23/9
In attendance: Everyone
Meeting start time: 1pm
Meeting end time: 3pm
Items discussed:

- After our first proposal was rejected we made a variety of changes, mostly aimed towards changing how the GUI should work and fixing errors with some of the functions in use cases.

Meeting #3 minutes and actions

Date of meeting: 10/10
In attendance: Everyone
Meeting start time: 2pm
Meeting end time: 5pm
Items discussed:

- We recreated most of our use cases to create more specific functions within each use case and reflected the changes in our UCM and GUIs and submitted our final proposal that was later approved.

Meeting #4 minutes and actions

Date of meeting: 11/10
In attendance: Everyone
Meeting start time: 2pm
Meeting end time: 5pm
Items discussed:

- We allocated tasks for completing the final documentation, including dividing use cases between each person and allocating GUI design/systems architecture between each member

Meeting #5 minutes and actions

Date of meeting: 15/10
In attendance: Everyone
Meeting start time: 2pm
Meeting end time: 3pm
Items discussed:

- Finalising of each GUI. We made sure each member was familiar with both GUIs for the presentation the following week. Made sure that everyone knew what they were doing for the Use Case Documentation and established deadlines.

Main tasks accomplished

Task	Who contributed
Initial proposal	Everyone
Multiple subsequent proposals, mostly minor editing	Everyone
GUI creation, systems architecture design	Everyone
Use Case Documentation, then editing and finalising	Everyone