

# Sri Lanka Institute of Information Technology



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Information Technology

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## System diagram

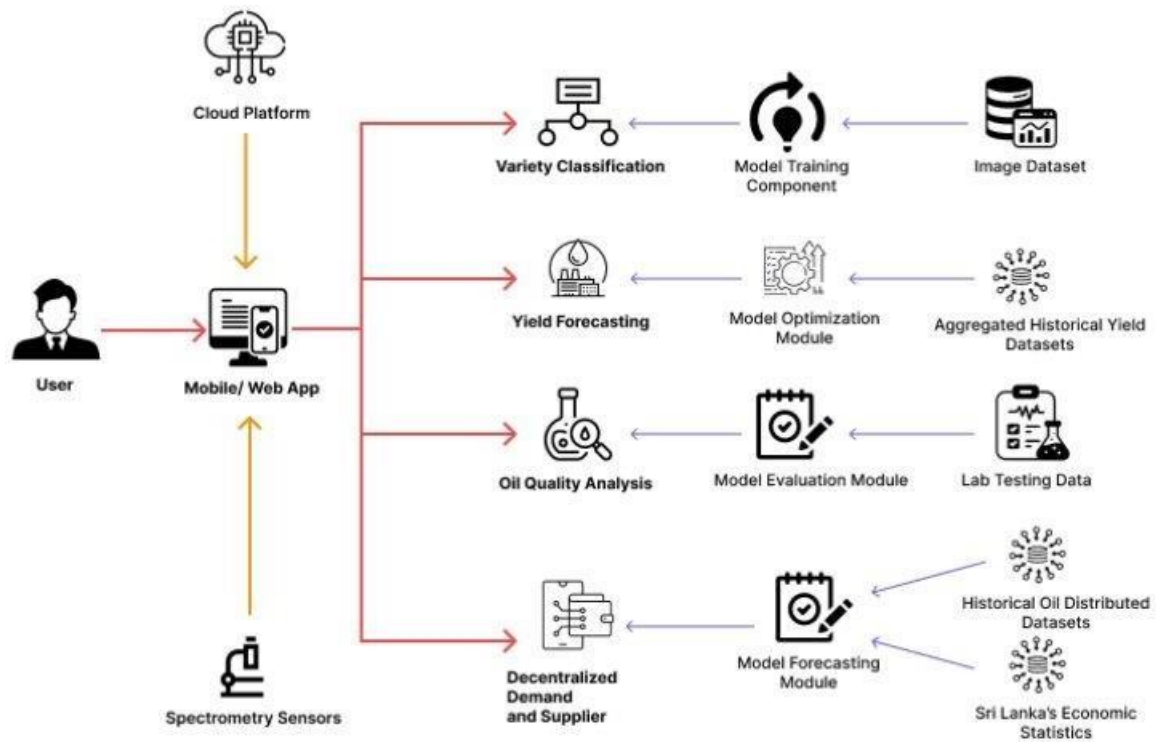


Figure 1-System diagram

**Component:** live coconut oil quality measuring feature

## Progress

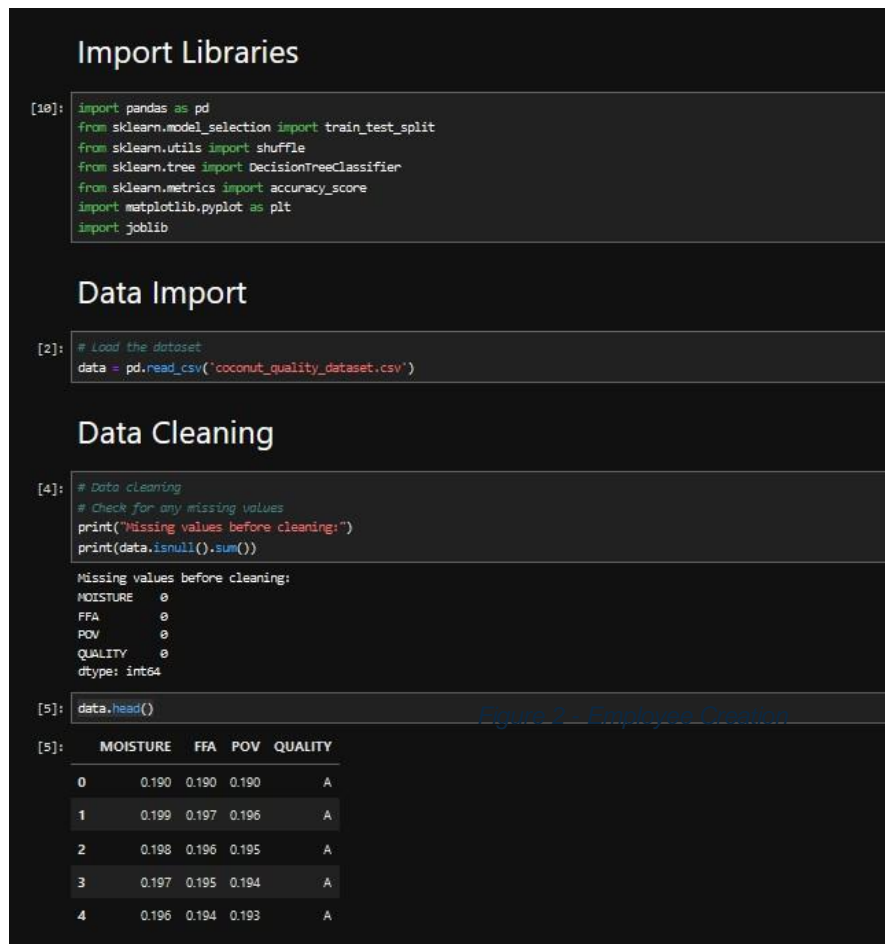
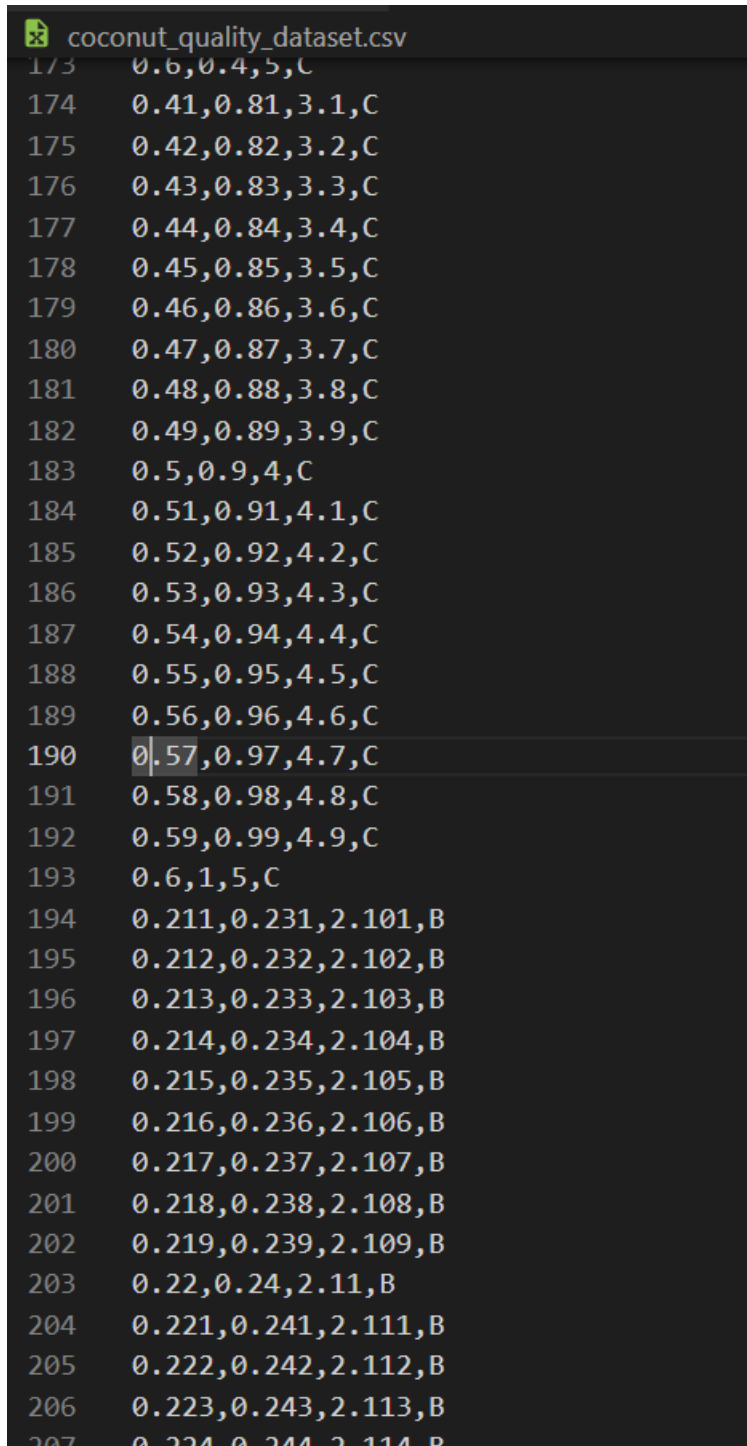


Figure 2 - Employee Creation

Figure 2-import libraries



Index	Value 1	Value 2	Value 3	Category
173	0.6	0.4	5	C
174	0.41	0.81	3.1	C
175	0.42	0.82	3.2	C
176	0.43	0.83	3.3	C
177	0.44	0.84	3.4	C
178	0.45	0.85	3.5	C
179	0.46	0.86	3.6	C
180	0.47	0.87	3.7	C
181	0.48	0.88	3.8	C
182	0.49	0.89	3.9	C
183	0.5	0.9	4	C
184	0.51	0.91	4.1	C
185	0.52	0.92	4.2	C
186	0.53	0.93	4.3	C
187	0.54	0.94	4.4	C
188	0.55	0.95	4.5	C
189	0.56	0.96	4.6	C
190	0.57	0.97	4.7	C
191	0.58	0.98	4.8	C
192	0.59	0.99	4.9	C
193	0.6	1	5	C
194	0.211	0.231	2.101	B
195	0.212	0.232	2.102	B
196	0.213	0.233	2.103	B
197	0.214	0.234	2.104	B
198	0.215	0.235	2.105	B
199	0.216	0.236	2.106	B
200	0.217	0.237	2.107	B
201	0.218	0.238	2.108	B
202	0.219	0.239	2.109	B
203	0.22	0.24	2.11	B
204	0.221	0.241	2.111	B
205	0.222	0.242	2.112	B
206	0.223	0.243	2.113	B
207	0.224	0.244	2.114	B

Figure 3-dataset

## Data Visualization

```
[68]: plt.scatter(data['MOISTURE'], data['QUALITY'], label='MOISTURE vs. QUALITY')
plt.xlabel('MOISTURE')
plt.ylabel('QUALITY')
plt.legend()
plt.title('Scatter Plot')
plt.show()
```

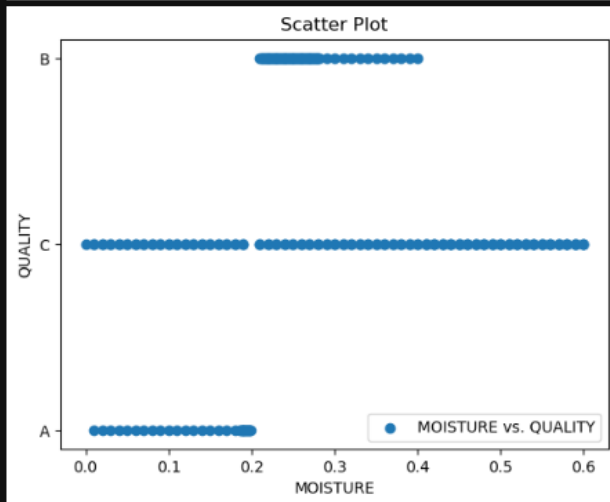
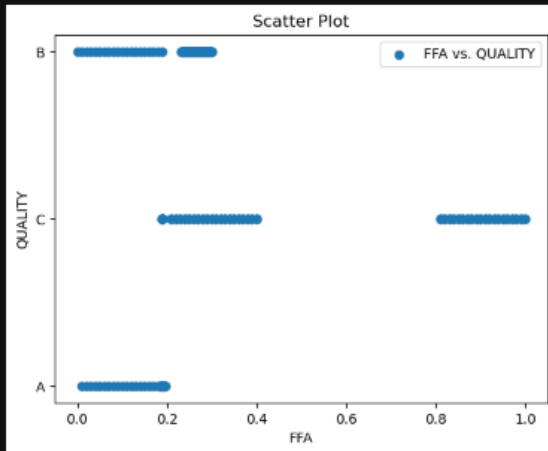


Figure 4-data visualization

```
[69]: plt.scatter(data['FFA'], data['QUALITY'], label='FFA vs. QUALITY')
plt.xlabel('FFA')
plt.ylabel('QUALITY')
plt.legend()
plt.title('Scatter Plot')
plt.show()
```



```
[70]: plt.scatter(data['POV'], data['QUALITY'], label='POV vs. QUALITY')
plt.xlabel('POV')
plt.ylabel('QUALITY')
plt.legend()
plt.title('Scatter Plot')
plt.show()
```

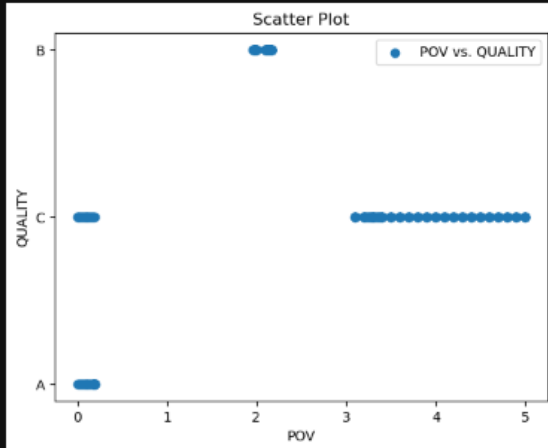


Figure 5-visualization.



## Data Pre-processing

```
[71]: # Shuffle the dataset  
data_shuffled = shuffle(data, random_state=42)
```

```
[72]: data_shuffled.head()
```

```
[72]:
```

	MOISTURE	FFA	POV	QUALITY
115	0.240	0.840	3.400	C
120	0.290	0.890	3.900	C
259	0.278	0.298	2.168	B
226	0.248	0.265	2.135	B
66	0.060	0.940	3.340	C

```
[73]: # Splitting the data into features and target variable  
X = data_shuffled.drop(columns=['QUALITY'])  
y = data_shuffled['QUALITY']
```

## Model Training

```
[74]: # Split the data into training and testing sets  
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.3, random_state=42)  
  
# Initialize the Decision Tree Classifier  
model = DecisionTreeClassifier(random_state=42)  
  
# Train the model  
model.fit(X_train, y_train)
```

```
[74]: DecisionTreeClassifier(random_state=42)  
In a Jupyter environment, please rerun this cell to show the HTML representation or trust the notebook.  
On GitHub, the HTML representation is unable to render, please try loading this page with nbviewer.org.
```

```
[75]: # Make predictions on the testing set  
predictions = model.predict(X_test)  
  
# Evaluate the model  
accuracy = accuracy_score(y_test, predictions)  
print("Accuracy:", accuracy)  
  
Accuracy: 1.0
```

## Dump Model

```
[80]: joblib.dump(model, 'coconut-oil-quality-classifier.pkl') # Save model to PC
```

```
[81]: ['coconut-oil-quality-classifier.pkl']
```

## Test Model

```
[82]: import joblib  
  
model = joblib.load('coconut-oil-quality-classifier.pkl')  
  
prediction = model.predict([[0.35, 0.85, 3.975]])  
print("Predicted Quality level: " + prediction[0])  
  
Predicted Quality level: B  
E:\New Folder\lib\site-packages\sklearn\base.py:439: UserWarning: X does not have valid feature names, but DecisionTreeClassifier was fitted with fe  
ature names  
  warnings.warn(  
  
[ ]:
```

Figure 6-model training

## Team Communication

The team chose Microsoft Teams as their primary communication channel, forming a dedicated Team with all four group members. We also used Zoom to communicate with supervisors, provide updates, and receive comments on the project's progress.

## Teams Channel

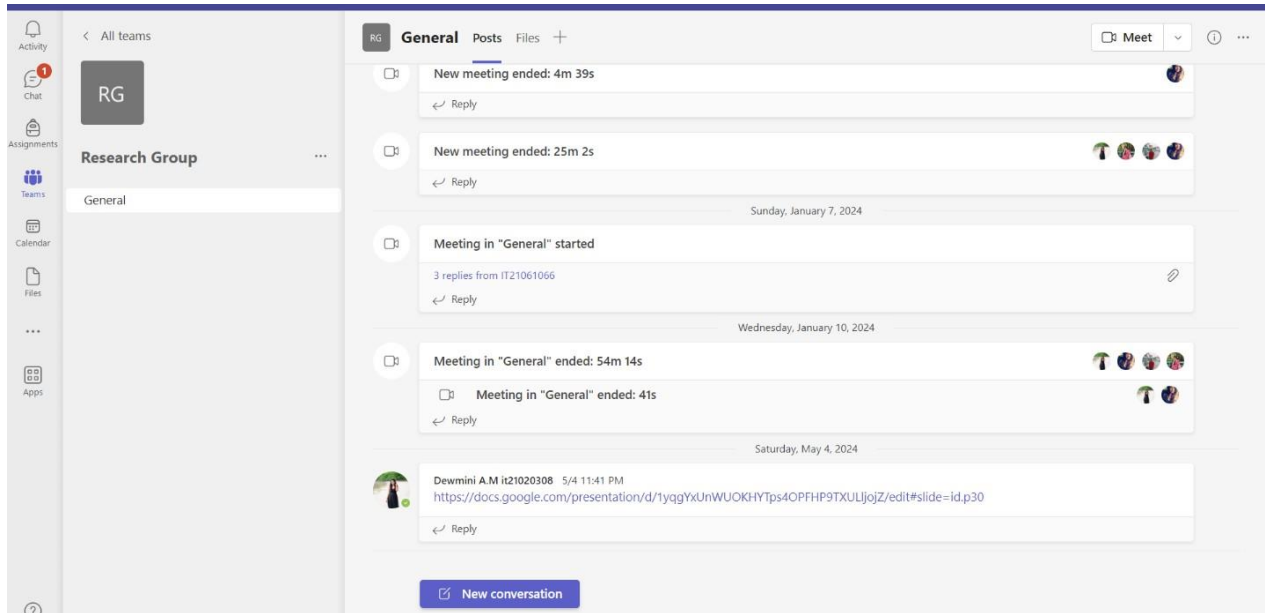
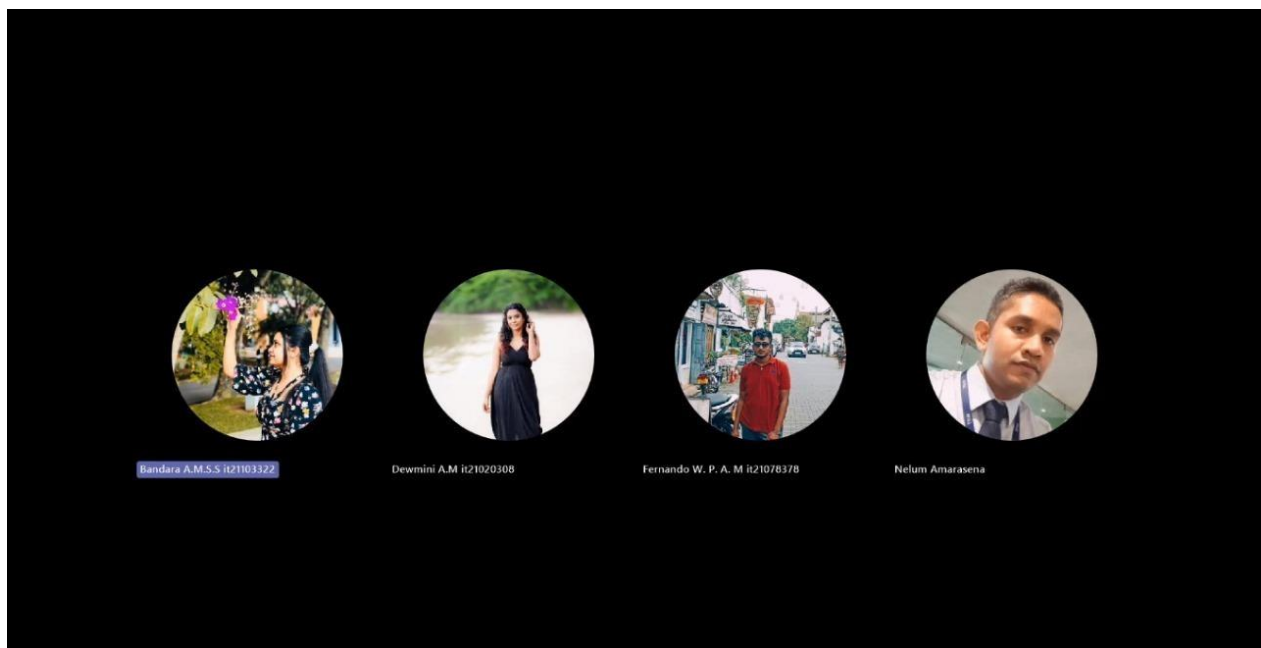


Figure 7-teams channel creation

## Teams Calls with the Research Team



*Figure 8-overview of Team Calls and Communication*

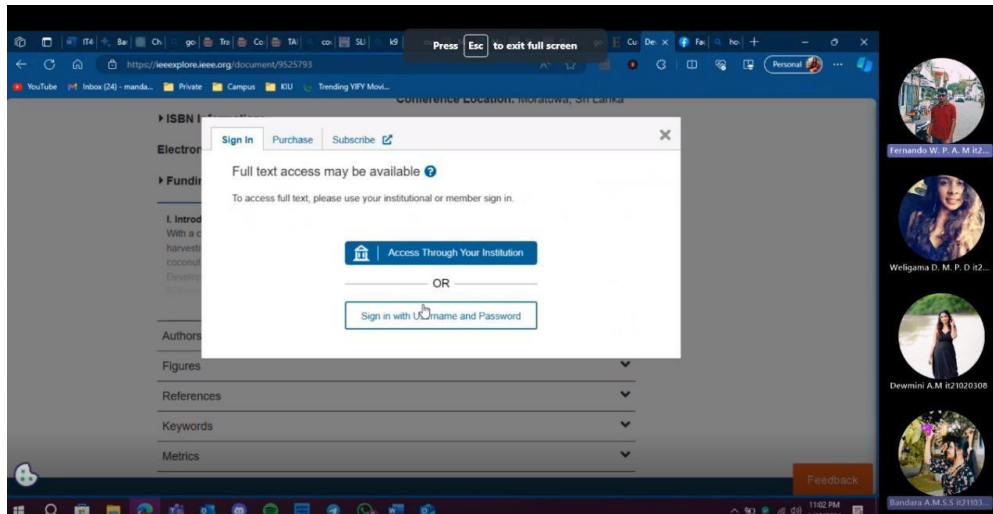


Figure 9

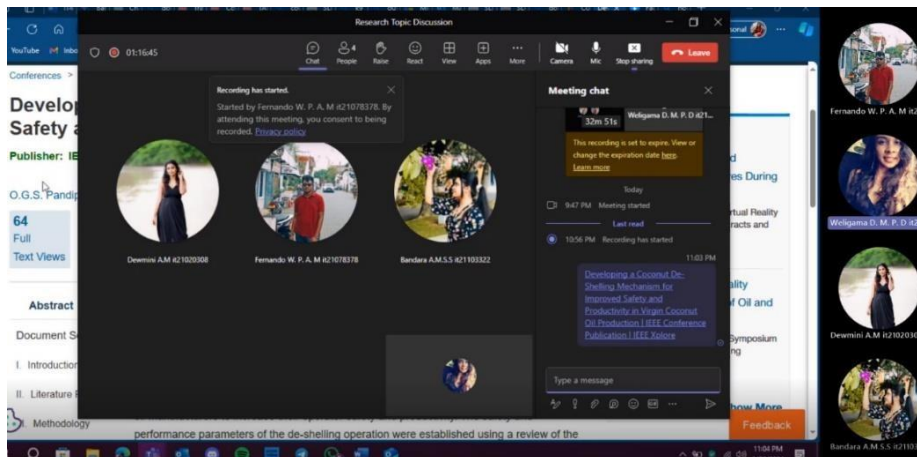


Figure 10-team members call sample 1

## **WhatsApp Group Creation & meetings**

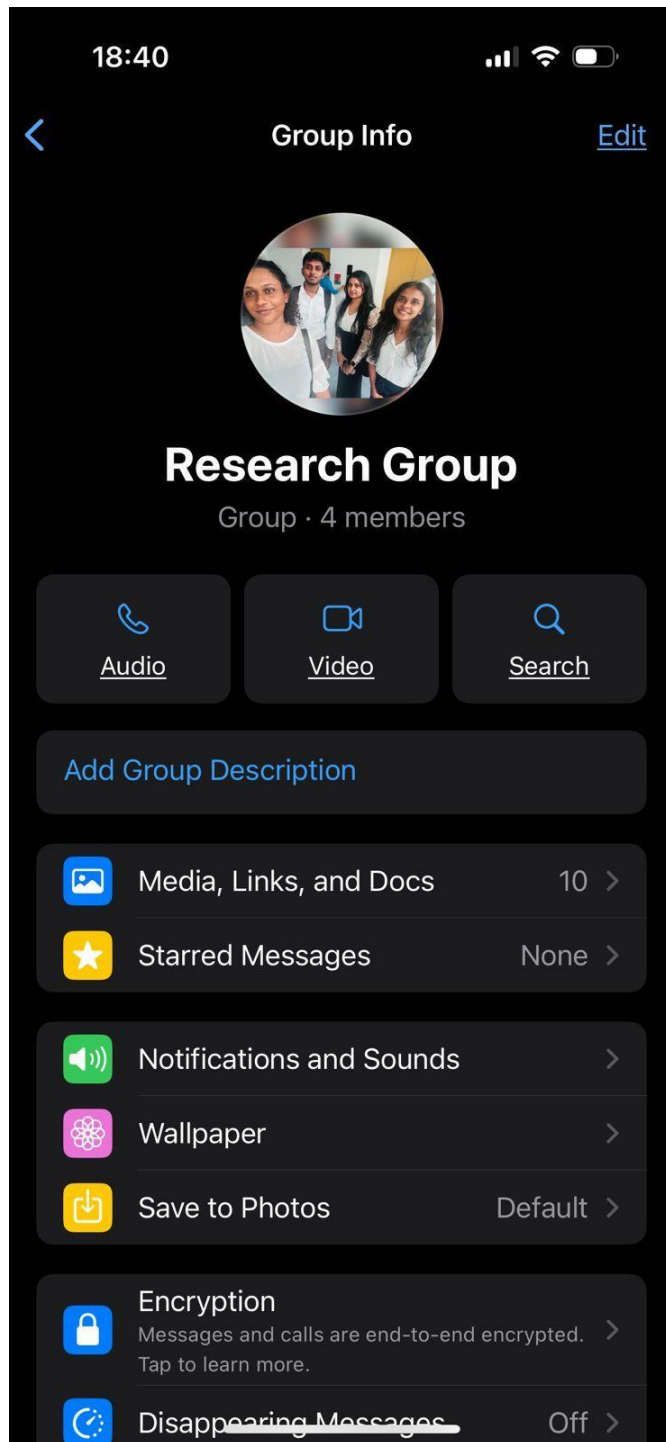


Figure 11-whatsapp group creation

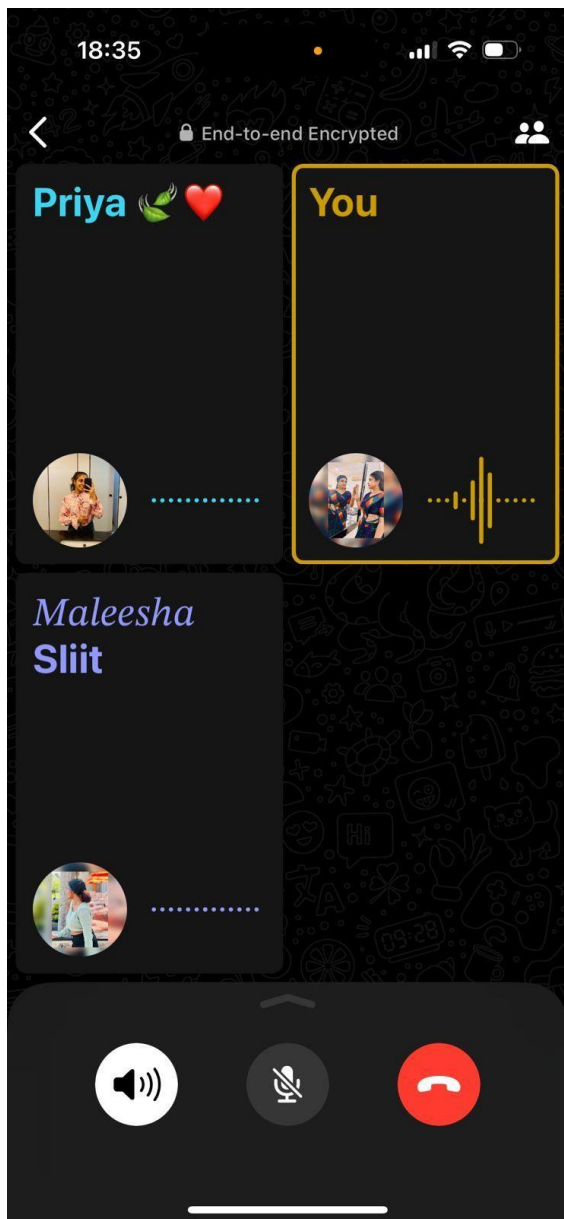


Figure 12-whatsapp call sample1



Figure 13-whatsapp call sample2



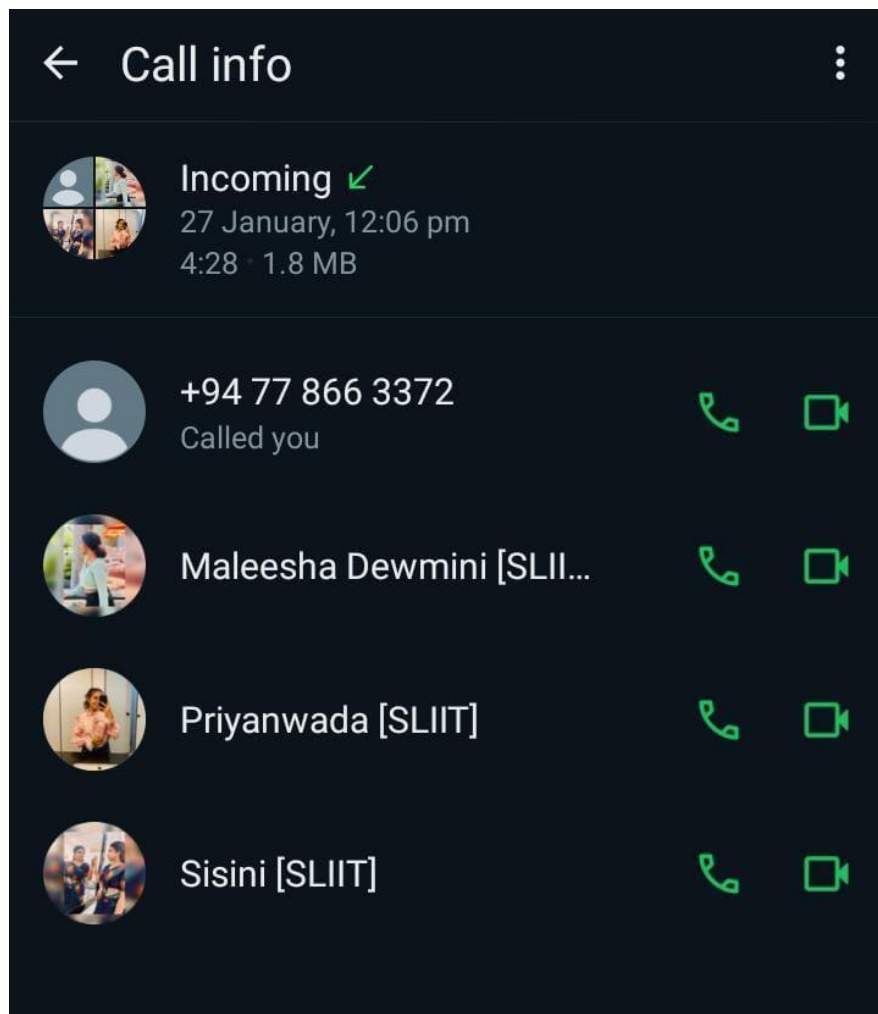


Figure 14-group call 3



Figure 15-group call 4

## Online Calls with Supervisor

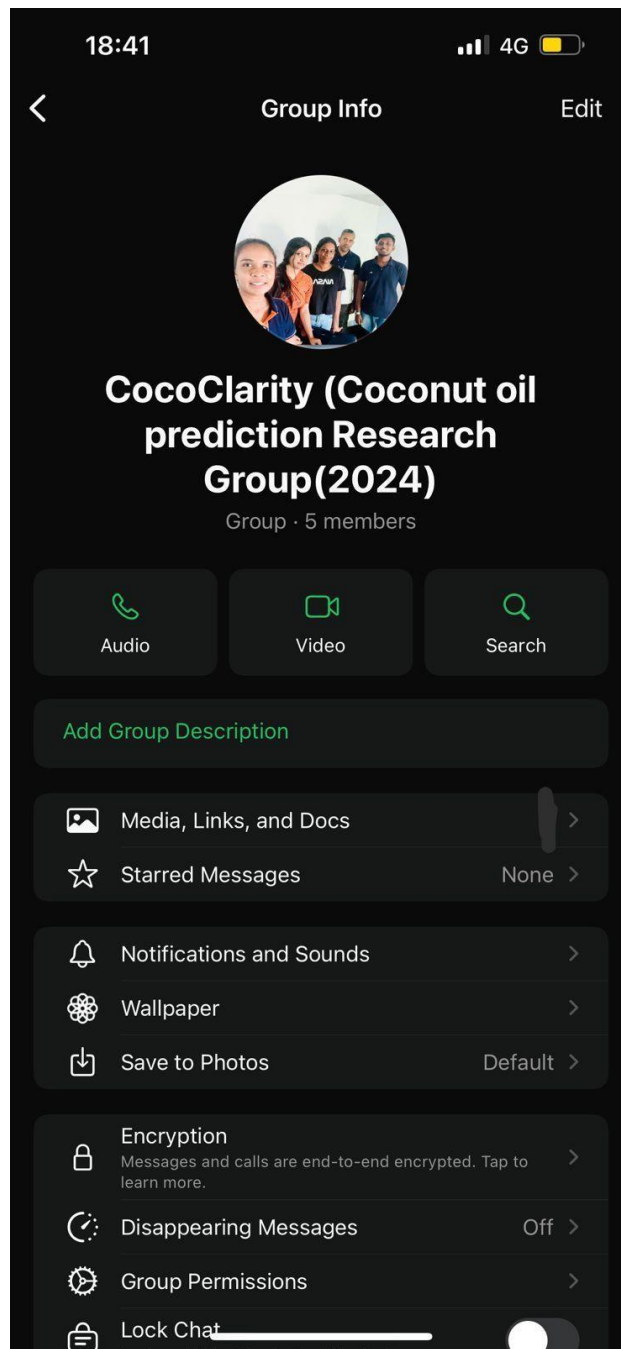


Figure 16-group creation with supervisor

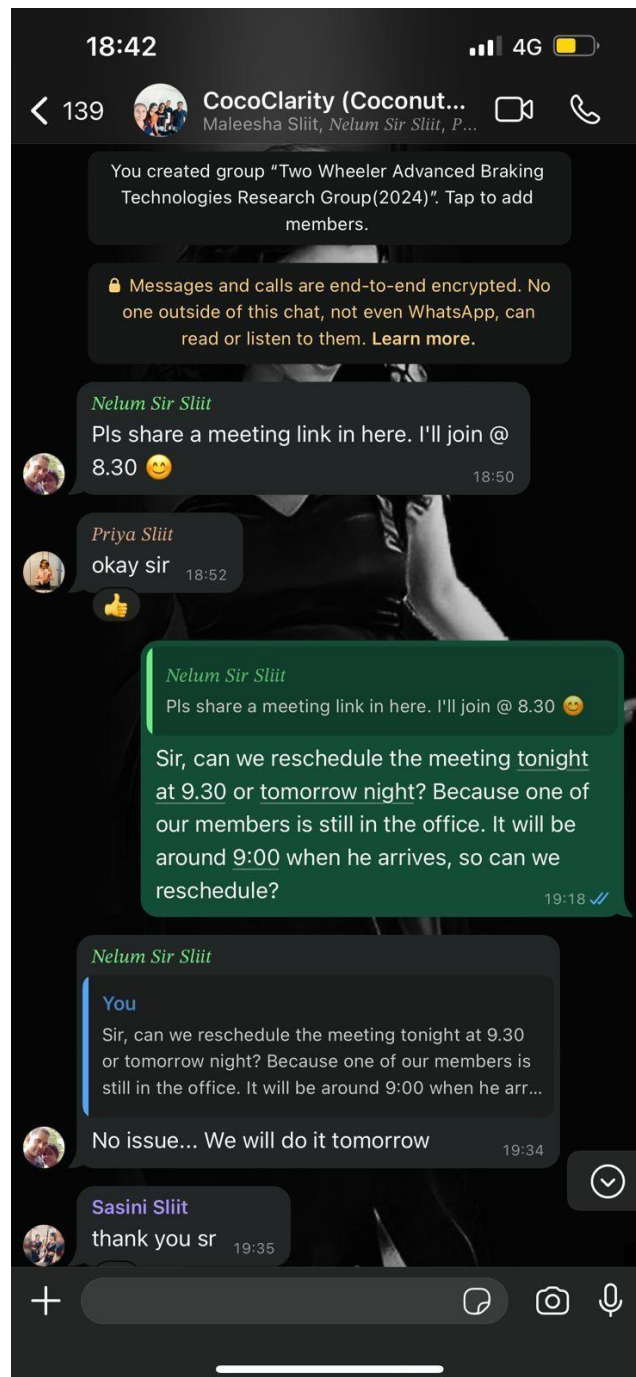


Figure 17-discussion with supervisor

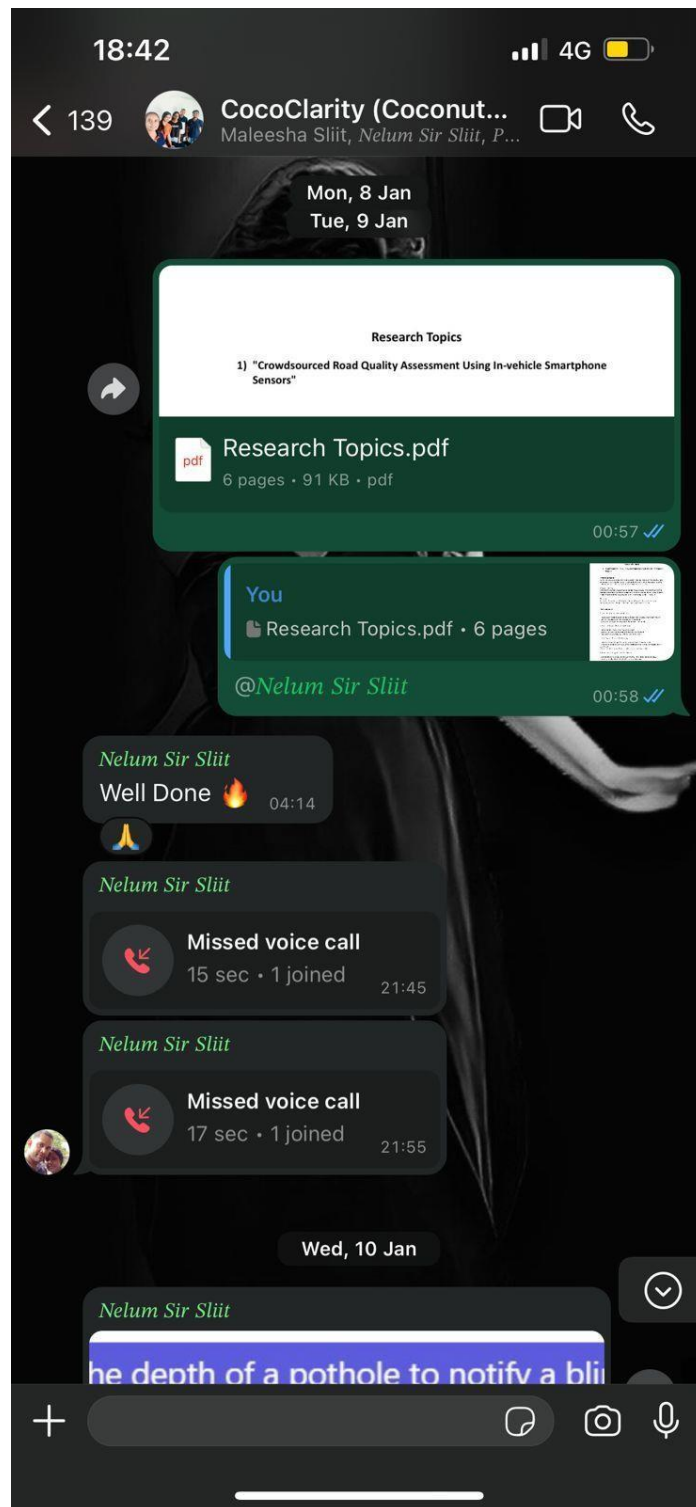


Figure 18-discussion 2

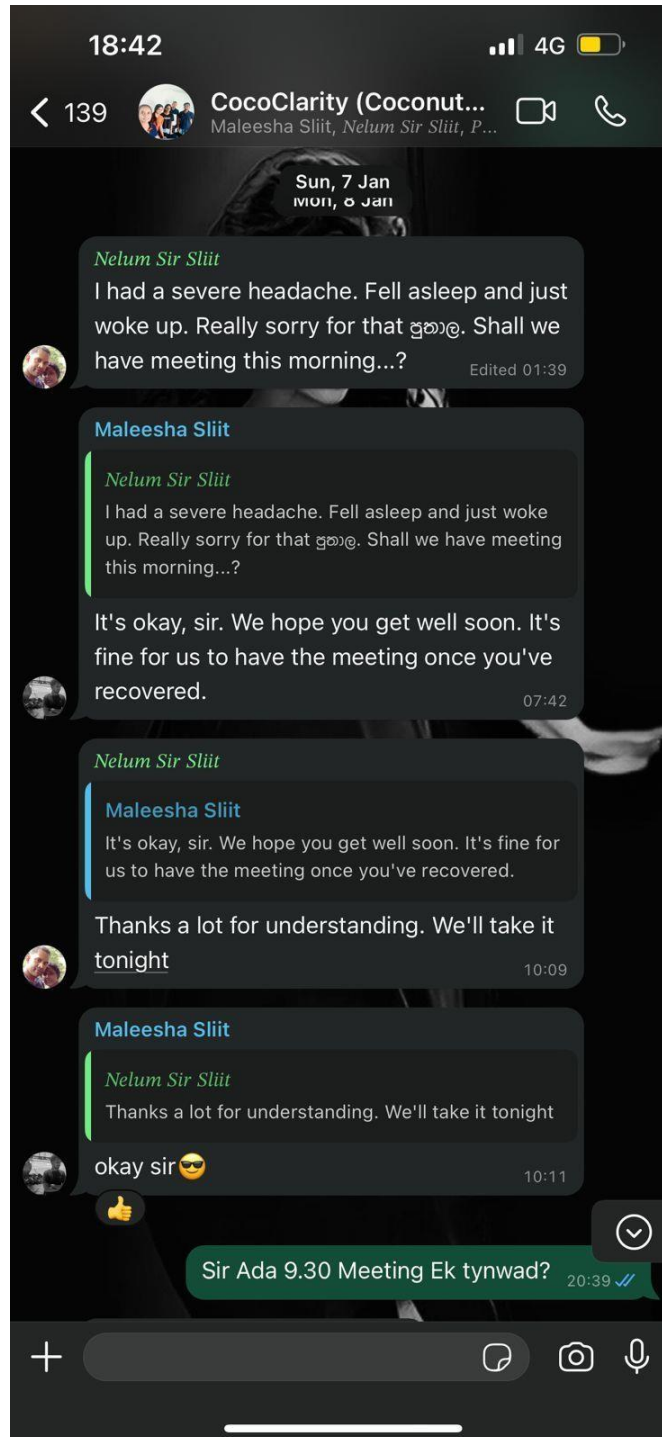


Figure 19-discusson3.

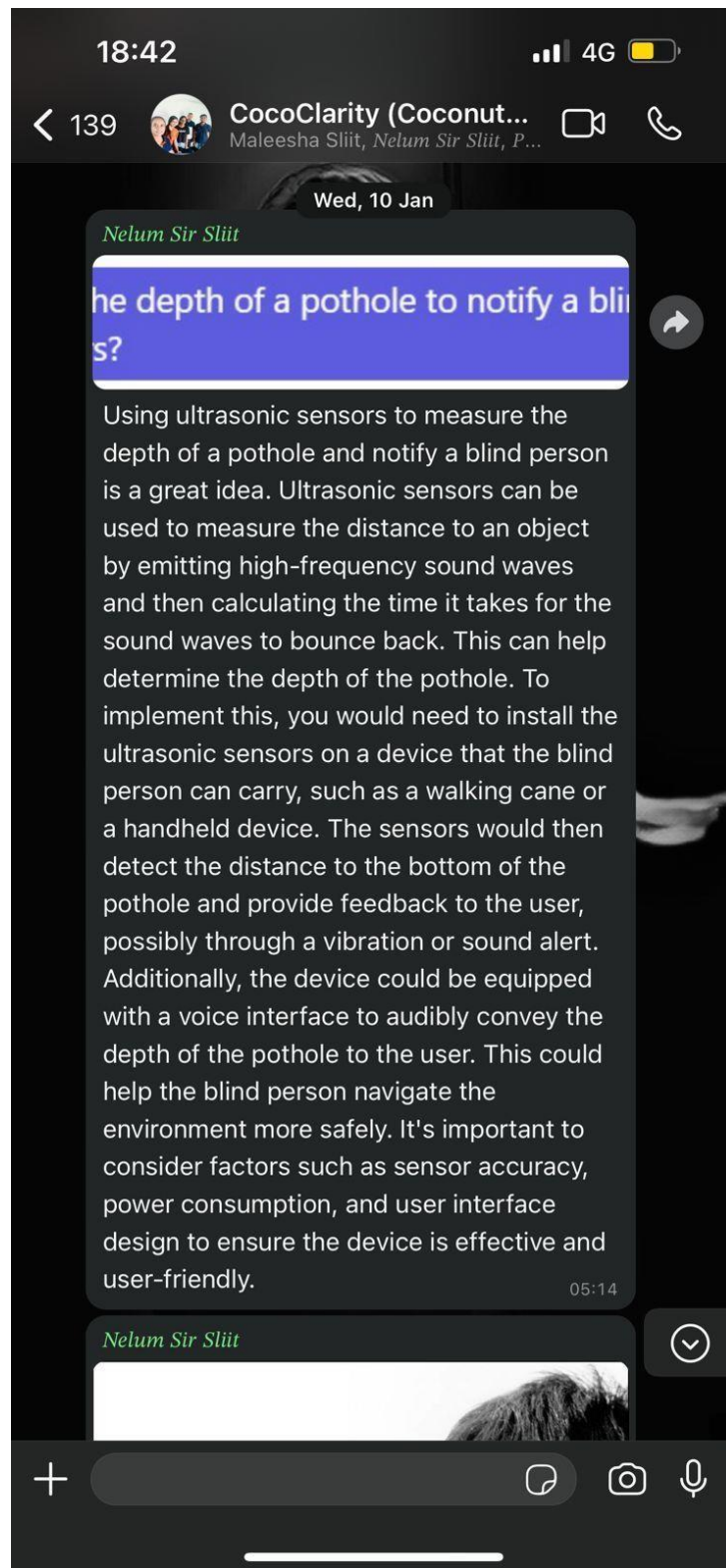


Figure 20-supervisor advising

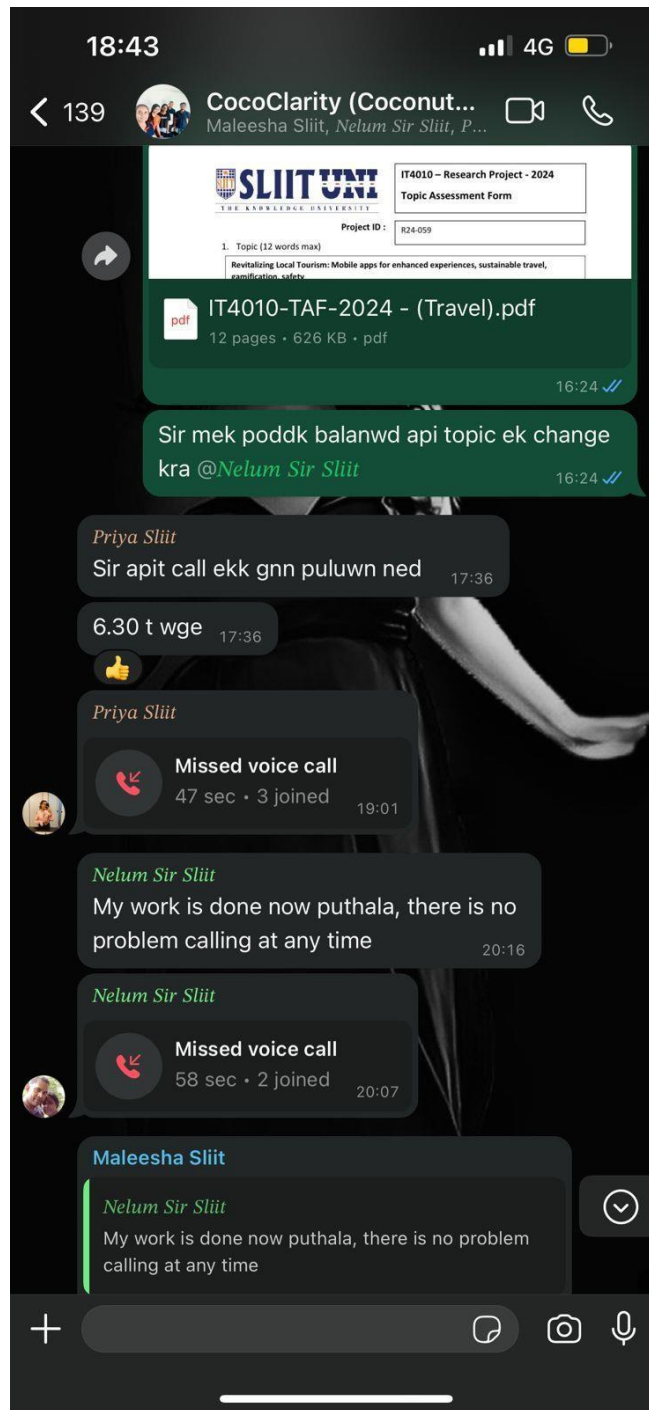


Figure 21-discusson 5



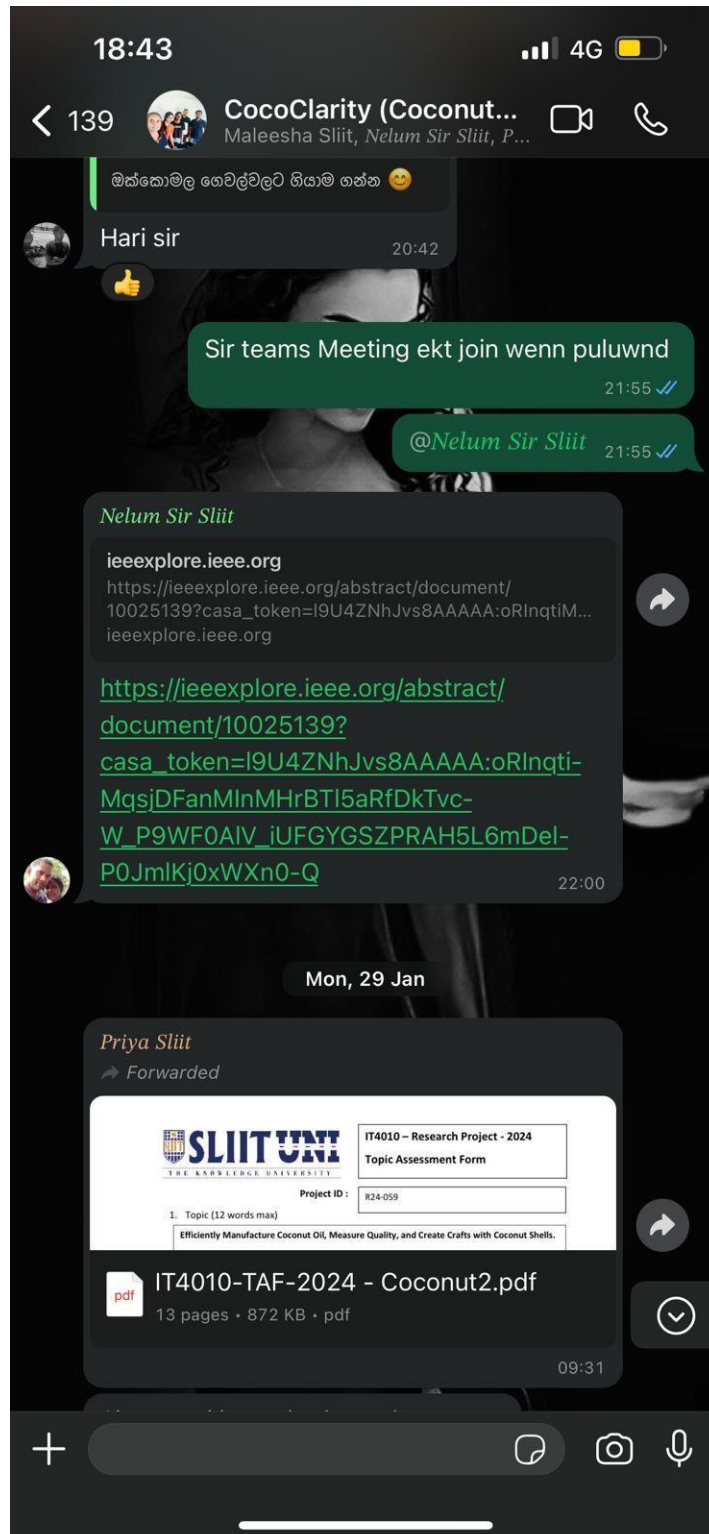


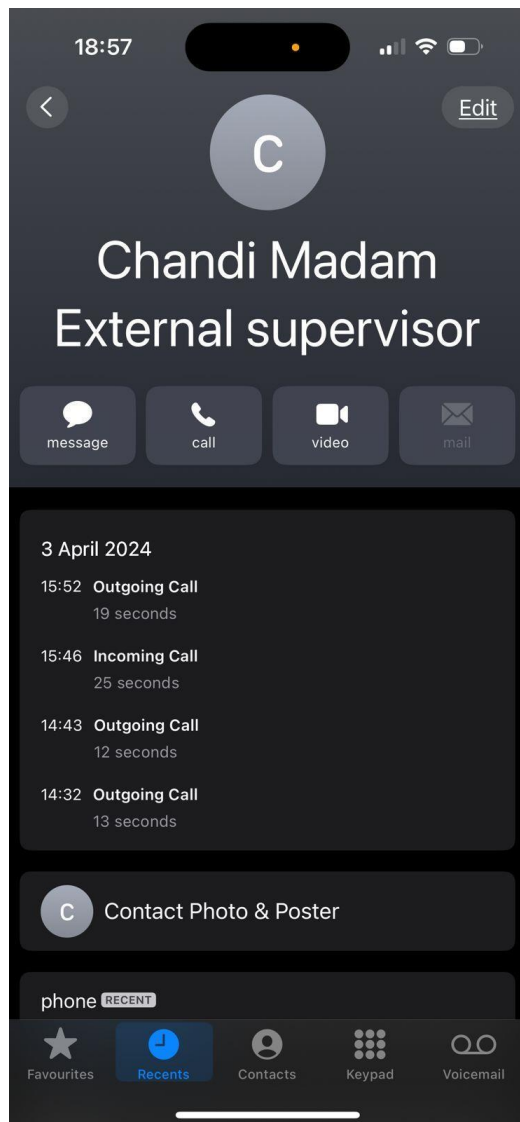
Figure 22-discussion with supervisor





*Figure 23-call with supervisor*

## **External supervisor meetings**



*Figure 24-call with external supervisor*

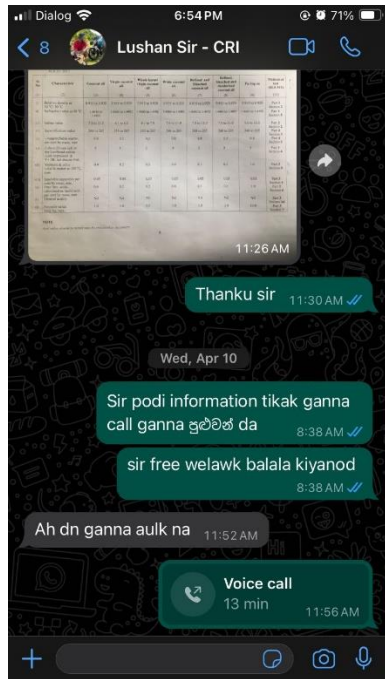
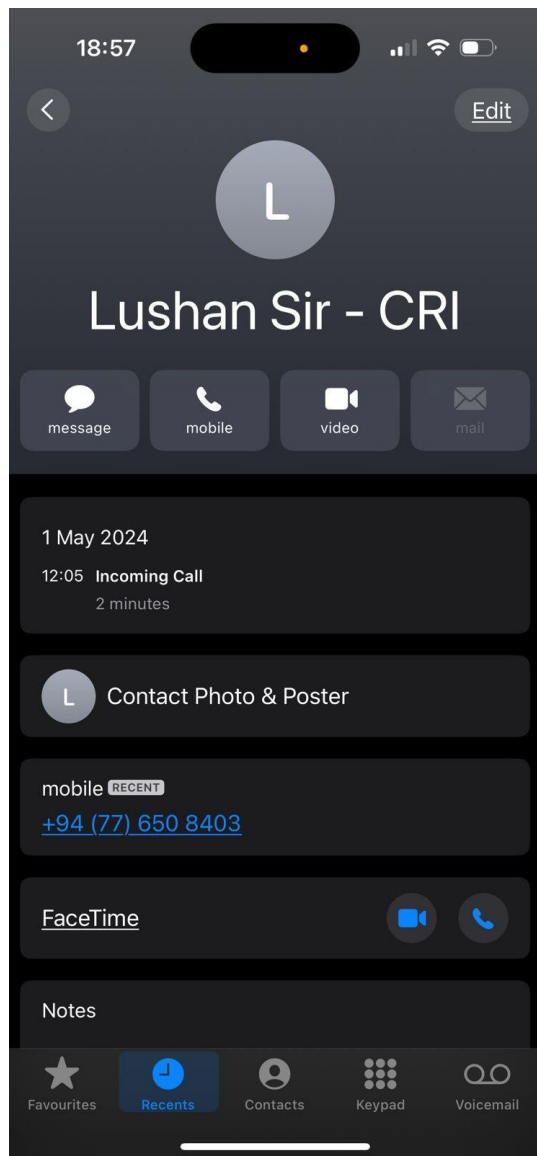


Figure 25-discuss information with CRI officer



*Figure 26-call with CRI officer*



*Figure 27-meet with CRI officer*



*Figure 28-meeting with group members*



*Figure 29-CRI*



Figure 30-CRI lab





Figure 31-physical meet up with external supervisor

## Teams' meetings with supervisor

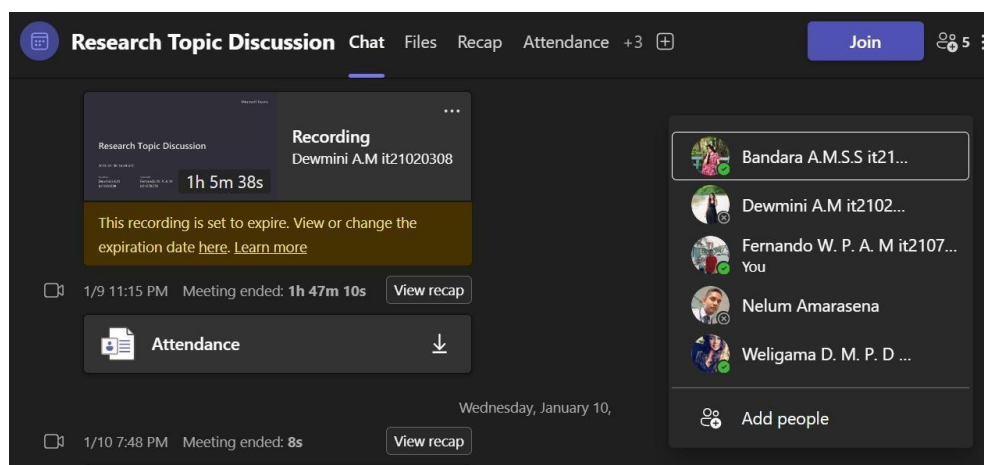


Figure 32-teams meeting with supervisor1



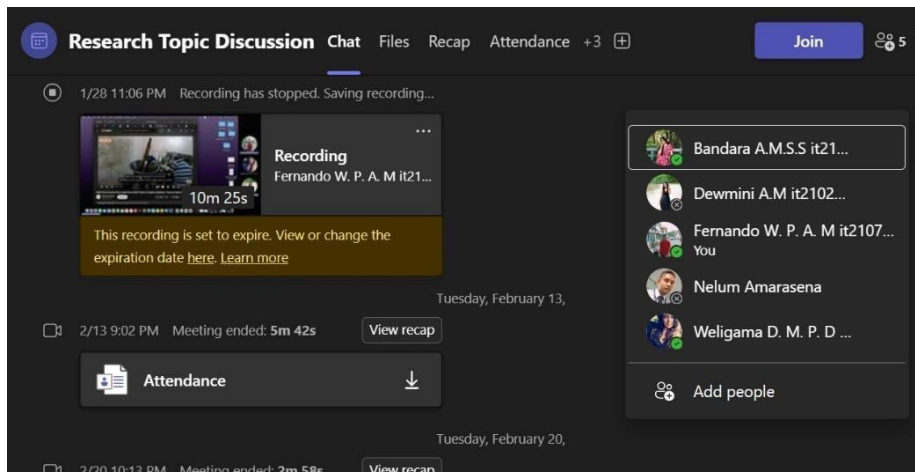


Figure 33-teams meeting with supervisor2

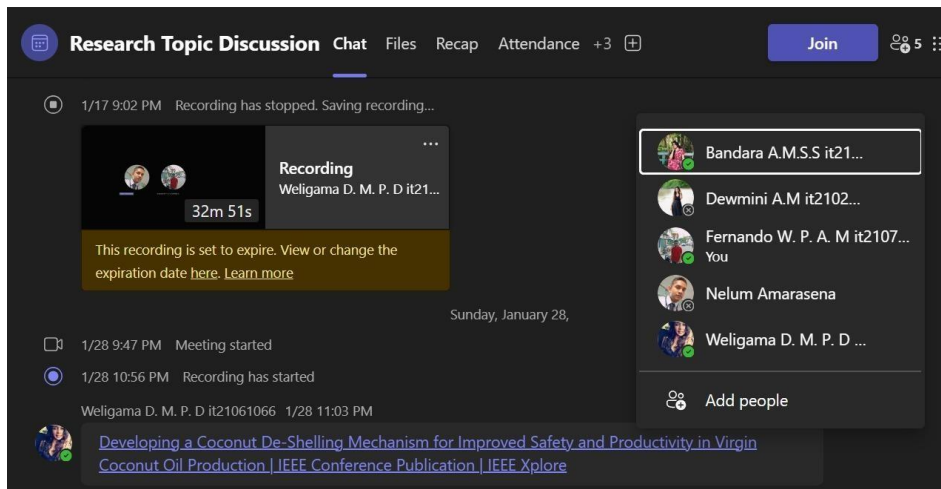


Figure 34-teams meeting with supervisor3

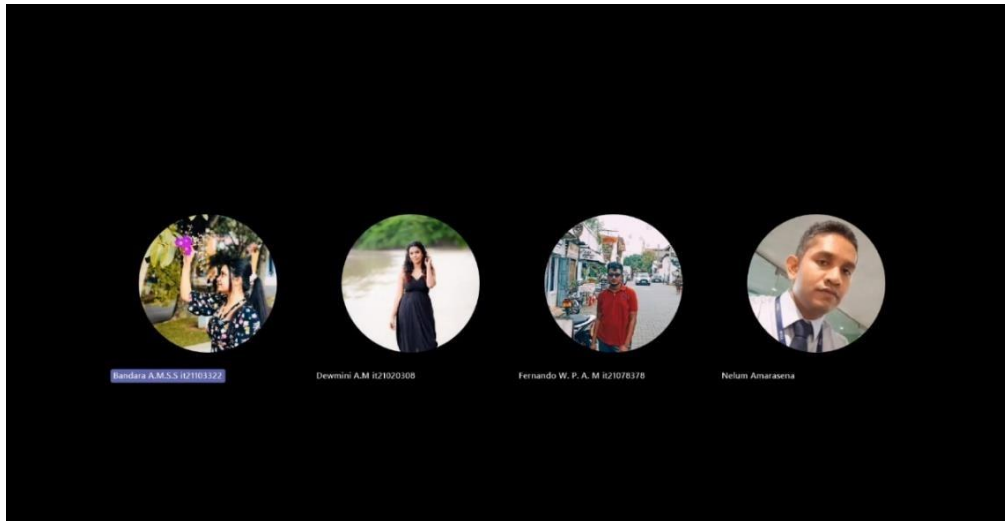


Figure 35--teams meeting with supervisor4

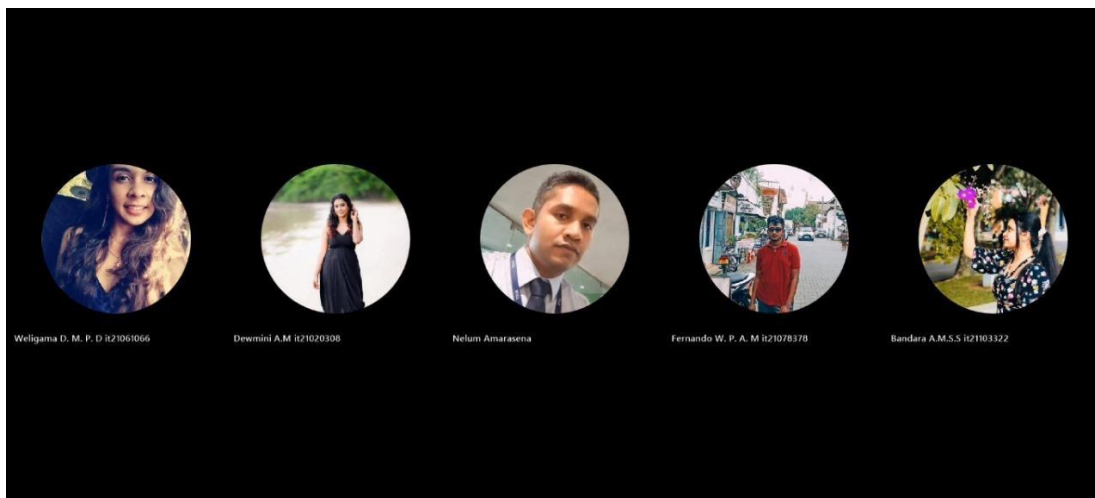
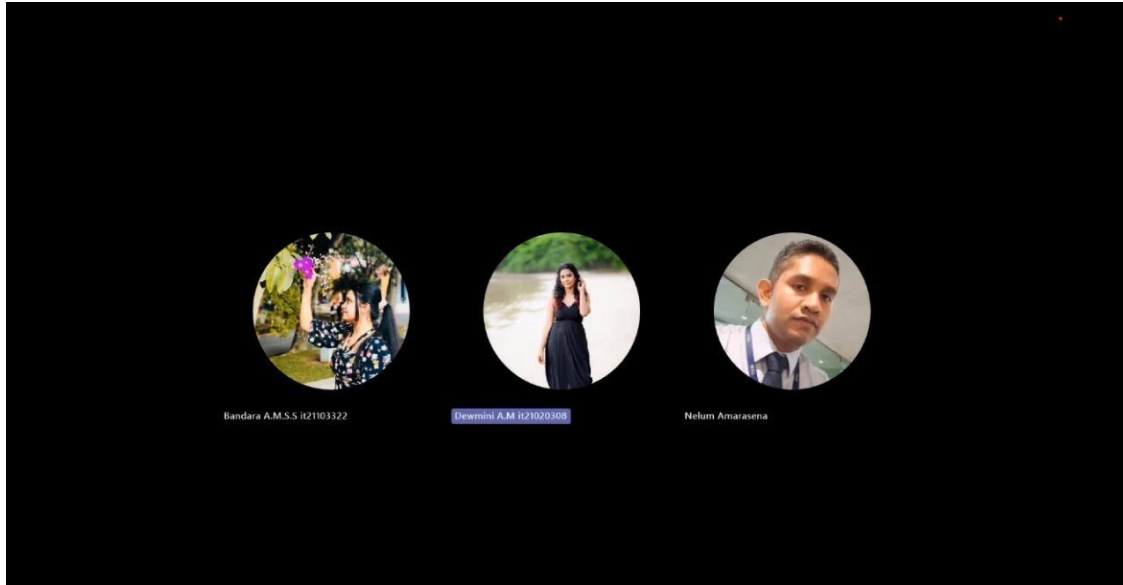


Figure 36--teams meeting with supervisor5



*Figure 37-teams meeting with supervisor6*

## **Project Timeline**

A Gantt chart is a visual aid for project management that is used to display a project's chronology. It shows the beginning and ending dates of all project components, including tasks, milestones, and stages, along with the dependencies between them.

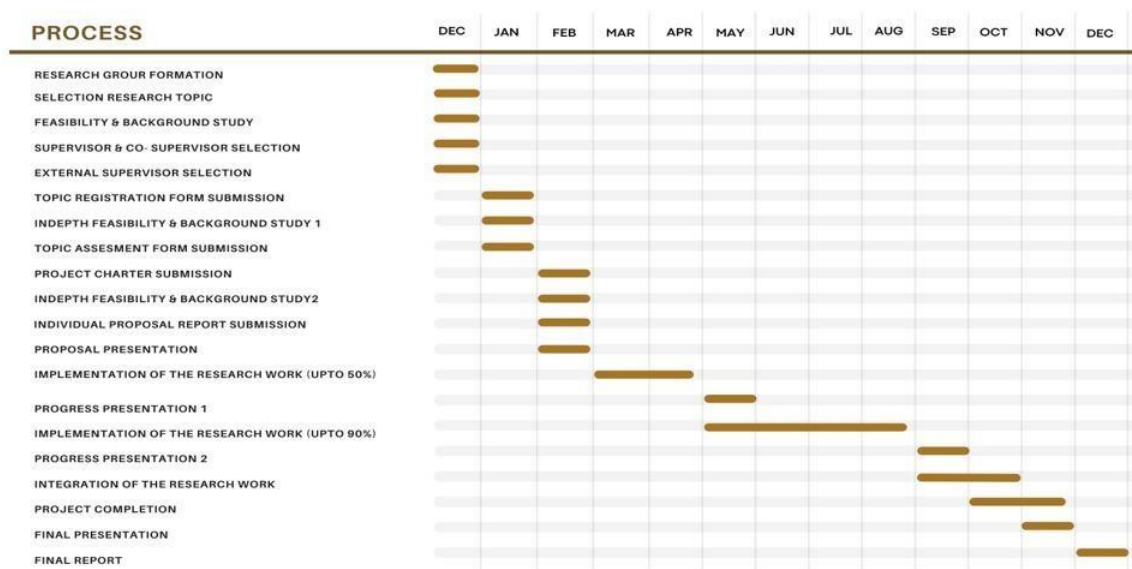


Figure 38-gantt chart

## Work Break-Down

A project is broken down into smaller, easier-to-manage components using a hierarchical process called a work breakdown structure, or WBS. It facilitates project planning, execution, and control by breaking the project up into distinct deliverables and work packages.

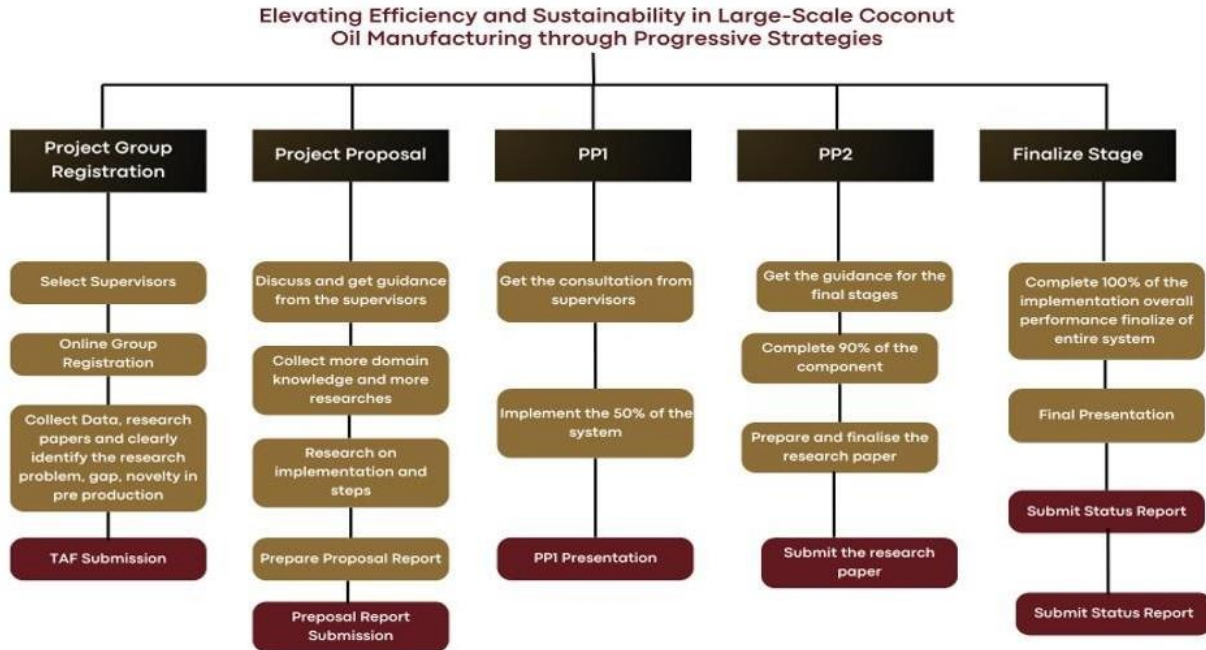


Figure 39-Work Break-Down Structure