PUSH to TALK APPLICATION OVER WI-FI DIRECT FOR DRIVERS

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AIM & MOTIVATION

Problem:

1. In case of unavailability of the cellular network connectivity (due to the location of the mobile user and the coverage of the cellular network, the electricity shortage, etc.), the communication between the mobile users will not be provided.

2. On the other hand, the mobile users are charged according to their service plan. However, the service plans do not cover cross border services (roaming between service providers in different countries). For the mobile users who would like to exchange voice and data with nearby users are required to get a service plan at the visited service provider's network.

3. There is always a demand for charge-free communication between the users, especially who are located closer to each other (at commuication distance) and/or who share interest in common.

Aim and Motivation:

Provide wireless connectivity between neighboring mobile users, and provide communication services including voice, data and text messaging.

SOLUTION APPROACH

The use of other wireless interfaces e.g. WiFi Direct, Bluetooth etc. for local wireless connectivity,

Development of a *Push-to-Talk* mobile application including

- neighborhood search
- interest sharing & searching
- connection establishment between peers
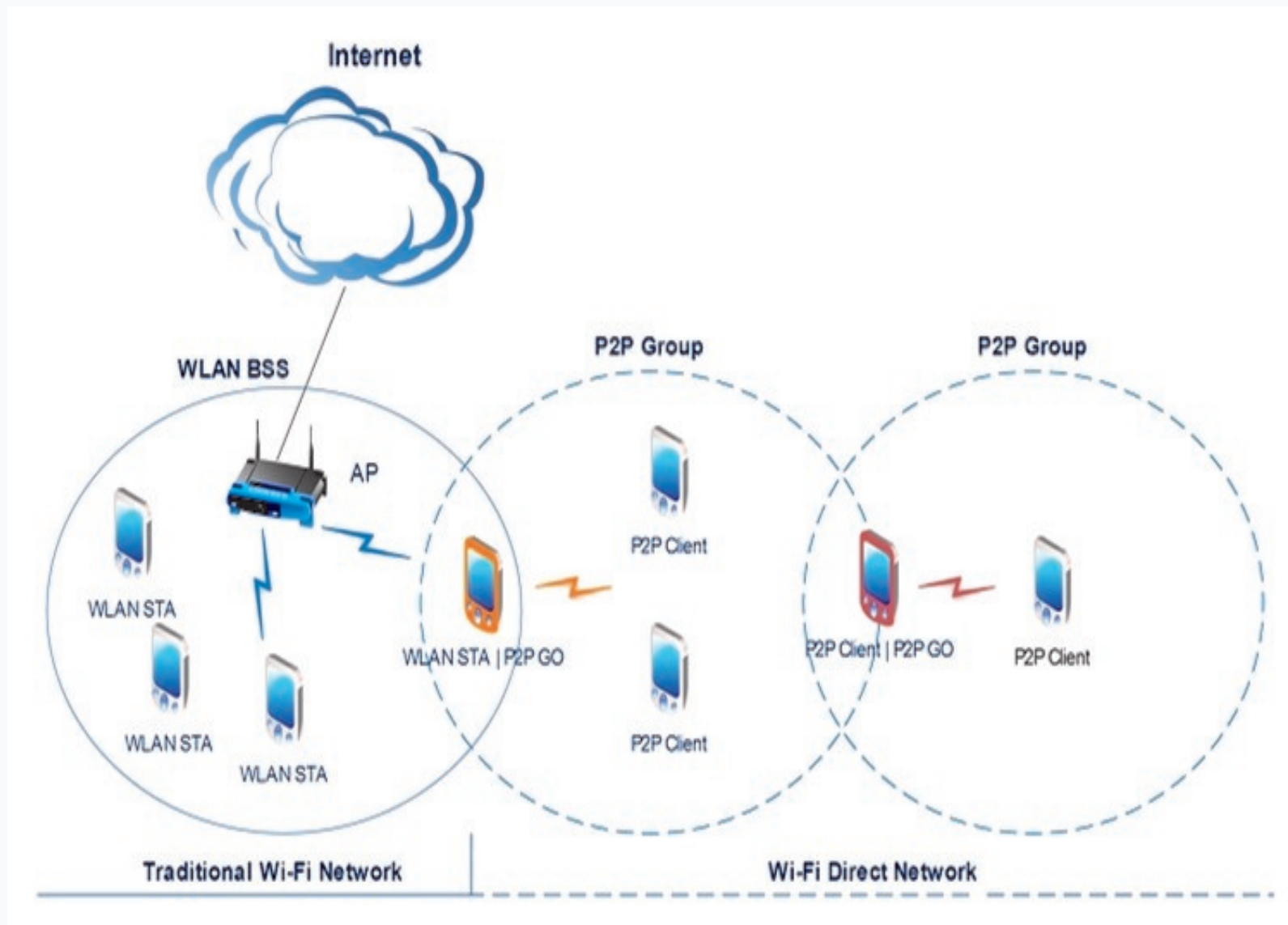- voice & data transfer

METHODS

Figure 1 . Various Wi-Fi network configurations: AP-based versus Wi-Fi P2P Network [1]
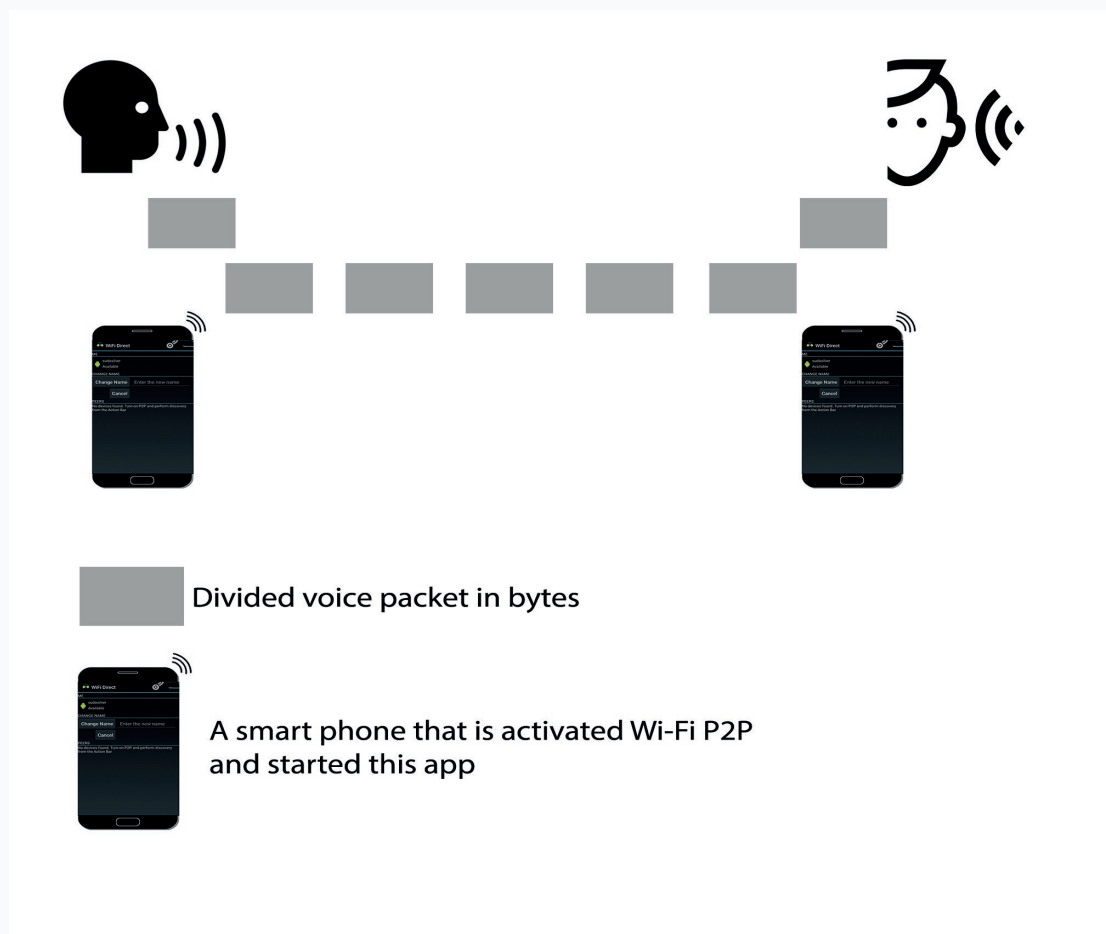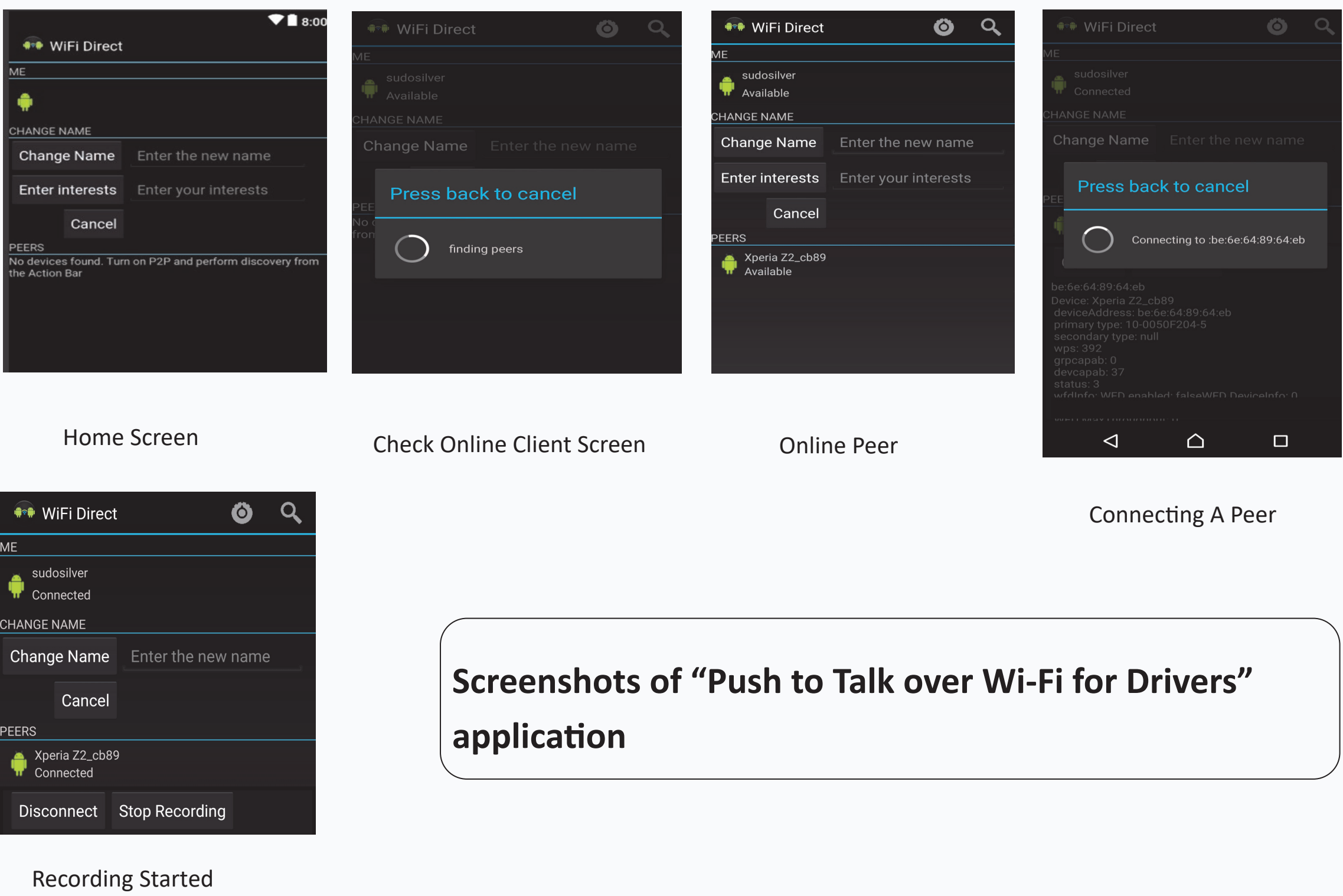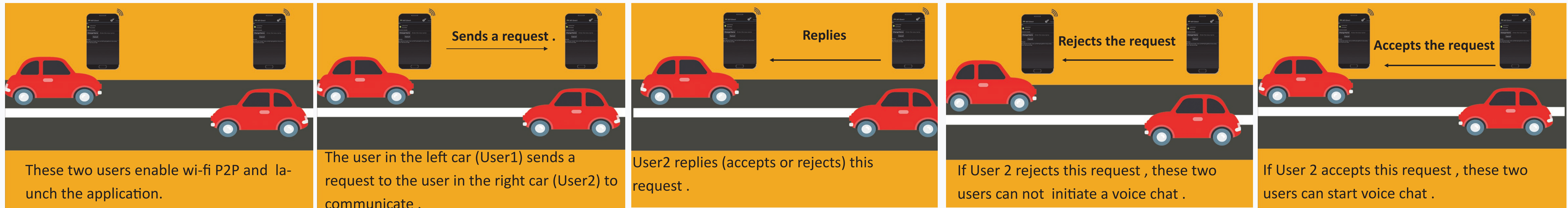

Divided voice packet in bytes

A smart phone that is activated Wi-Fi P2P and started this app

Diagram 2 . VoIP implementation on Wi-Fi Direct

These two users enable wi-fi P2P and launch the application.

Sends a request .

The user in the left car (User1) sends a request to the user in the right car (User2) to communicate .

Replies

User2 replies (accepts or rejects) this request .

Rejects the request

If User 2 rejects this request , these two users can not initiate a voice chat .

Accepts the request

If User 2 accepts this request , these two users can start voice chat .

Home Screen

Check Online Client Screen

Online Peer

Connecting A Peer

Recording Started

Screenshots of "Push to Talk over Wi-Fi for Drivers" application

Alternative Applications	Disadvantages
Free Wi-Fi Call Phone	You need to create a contact to communicate with a user.
P2P Voice Chat	You need to know the user name to communicate with a client.
WiFi Direct Communication	This app can not find avaliable clients .
Ubi Messenger	This app can not find avaliable clients .

Table 1: Disadvantages of alternative applications on Play Store.

Scope	isDone
Register with user name and interest	Yes
Edit user's profile	Yes
Send a request to communicate	Yes
Receive a request to communicate	Yes
Accept / Reject the request	Yes
List Online Clients	Yes
Choose a client from avaliable users list	Yes
Voice Chat in real time	Yes
Group voice chat in real time	No

Table 2: Completed and incompleted parts of this project.

Future Work

. Secure communication ,

. Group voice chat

. User informations (user name and interest) can be used for academic researches

TECHNOLOGIES

CONCLUSION

Wi-Fi P2P (Direct) is the one of the solutions to communicate when there is no avaliable networks in a place .

REFERENCES

[1] Muhammad Asif Khan ,Wael Chérif , Hamila Ridha , Fethi Filali "Wi-Fi Direct Research - Current Status and Future Perspectives " , Research Gate , Jun 2017

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