

A Mobile Application for Information Sharing and Collaboration among Co-located People

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Abstract. We present an android mobile application named *DIO* providing collaboration features, which are specially designed for co-located people to chat, vote, and survey. In addition, to share their personal information effectively and appropriately, *DIO* supports functions for sharing and exchanging their profiles, favorite photos, musics, videos and documents according to one of the three open levels – *public, business and community level*. Since *DIO* is implemented on the top of AllJoyn platform which is an open source IoT platform developed by the AllSeen Alliance, it can be easily extended for communicating with other smart things adopting the same platform.

Keywords: Android, File Transfer Application, Smartphone, AllJoyn, co-located, IoT, Sharing Information

1 Introduction

Social activities of modern people have been significantly increased than ever before. These people want to talk with others, get answers from them and know about the tendency of their activities, which inevitably cause procedural overhead for communicating with each other[1]. A wide range of mobile applications[2,3,4,5] have been developed since the beginning of the smartphone era. But, there are not much mobile applications specially developed for effective communication and collaboration among co-located people.

In this paper, we present an android mobile application named *DIO* for the efficient communication among co-located people. For this end, enabling them to share and exchange their profiles, favorite photos, musics, videos and documents according to one of the three open levels – public, business and community level. Also, *DIO* supports useful collaboration features for the activities of co-located people such chatting with nearby participants, voting for making decisions at off-line meetings and surveying to find out the tendency of their minds or activities. *DIO* is implemented on the top of the AllJoyn[6] platform which is an open source IoT platform developed by the AllSeen Alliance. So, *DIO* developed as one of AllJoyn applications can be easily extended for communicating other smart things adopting the same platform, or incorporated with other AllJoyn applications.

2 DIO Structure and Functions

2.1 The Structure of the DIO Application

Since the DIO application is implemented on the top of the AllJoyn platform, all of the functions of DIO is based on an AllJoyn router as shown in Figure 1 depicting the structure of DIO. In the figure, the *DIO Application Context Object* module contains the state and information of all of DIO services. Using those information, the service managers such as *Chat Manger*, *Vote Manager*, and *Survey Manger* create DIO service objects such as chat rooms, vote rooms, survey rooms. Each service manager maintains a list of service objects, updating the list when a new service object is created. The *View Logic* module realizes the user interface of DIO based on the *TextPref* module which manages the configuration information of DIO. The functionalities of the managers are developed on the *Connection Service* and *FileTransfer Service* modules, which provides the network input and output functionality and the file input output which are necessary for communication with other DIO applications. The *AllJoyn Manager* performs session initialization, generation, and connection as a core function of the AllJoyn Platform.

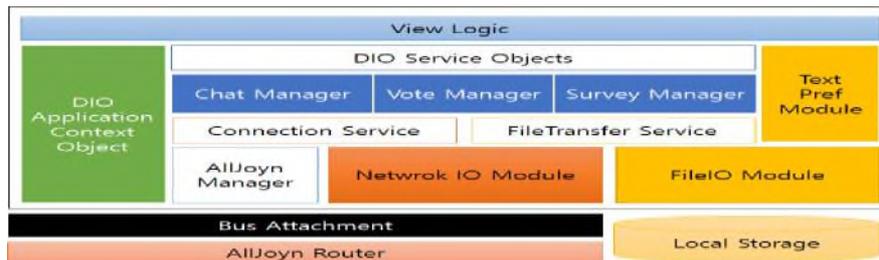


Fig. 1. Structure of DIO

2.2 Sharing Personal Profiles and Contents

The main user interface of DIO is composed of four tabs: *user list*, *chat list*, *vote list* and *survey list* as shown in Figure 2.



Fig. 2. Main Screen



Fig. 3. Edit Profile



Fig. 4. User Profile

Information sharing functionality can be divided into information sharing functions for

personal profiles and resources sharing functions for personal contents. Users can edit their detailed profile information at any through the *edit profile button* at the top of the menu. Figure 3 shows the profile editing screen, while Figure 4 shows the view screen for the profiles of other users. By pressing the copy button, a user can get the profile information of other users.

The user interface for contents sharing is shown in Figure 5. Users can designate their open level for personal contents such as photos, musics, and videos. The open level should be selected as public, business or community according to the characteristics of the meeting to attend.

Through the *Go to user resources* button at the bottom right in Figure 4, a user can access the contents of other users as shown in Figure 6. By selecting the desired content, it can be copied into the resource folder of the user.

2.3 Collaborative Features of DIO



Fig. 5. View Screen for Content Sharing Fig. 6. View Screen for Accessing Contents of Other Users

a) Chatting

A user can chat with other co-located users by creating a new chat room. When a chat room is created, the room information is broadcasted to the connected users. The list of chatting rooms and the chatting screen is shown in Figure 7 and Figure 8, respectively.

b) Voting

Using DIO, co-located users can vote for making decisions at off-line meetings by creating a vote room. A vote sheet can be dynamically created as shown in Figure 10. If a participant fills out the vote sheet as in Figure 9, the information is broadcasted to the creator of the associated vote room. Participants request the result through the *request*

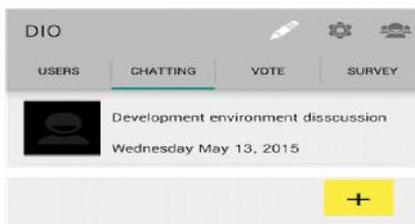


Fig. 7. Chat Room List



Fig. 8. Chatting Screen

button and save the result through the *save* button as shown in Figure 11.

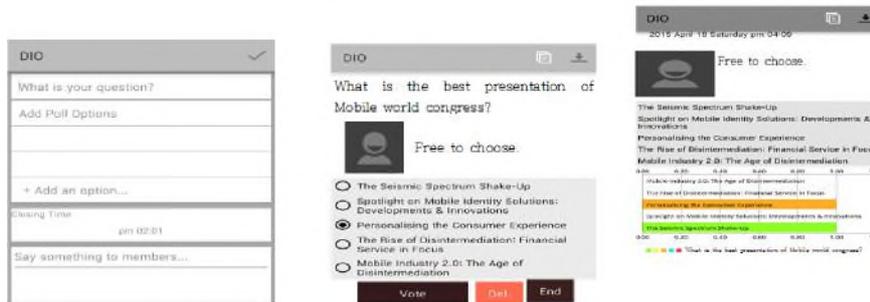


Fig. 9. Creating Vote Sheet

Fig. 10. Vote Screen

Fig. 11. Vote Result

c) Survey

With the help of DIO, users can survey to find out the tendency of their activities, feelings or plans spontaneously. As is the case with the voting functionality, a survey sheet can be dynamically created as shown in Figure 12, which can be sent as the survey sheet as in Figure 13. Also, participants can request and save the result through as shown in Figure 14.

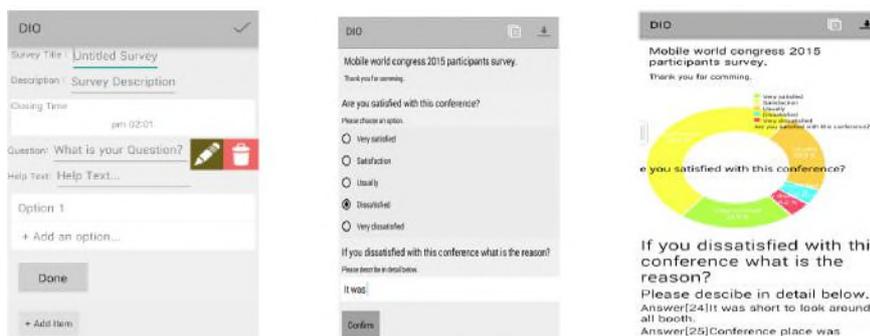


Fig. 12. Creating Survey Sheet

Fig. 13. Survey Screen

Fig. 14. Survey Result

3 Conclusion

The mobile application DIO provides spontaneous exchange of personal profiles which can be performed according to the one of three open levels: public, business and community level. This feature enables users to open themselves without overhead in conformance with the characteristics of the meetings they attend. In addition, users can share each other's favorite musics, photos, videos and others which help understanding each other more deeply. Moreover, to ease collaboration among co-located people, DIO supports useful functionality such as chat, vote and survey, which are often needed at a

variety of off-line meetings. Also, the fact that DIO is implemented as an AllJoyn application ensures the extensibility of DIO in communicating other smart devices or things for higher level of collaboration. So, we believe that DIO can be very useful for various circumstances including seminars, conferences, and consumer meetings.

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