

Implementing a Mobile Application to Share Data in a WLAN/LAN Anonymously

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Abstract: Modern data sharing mechanisms introduce new opportunities for easier and faster data sharing among mobile devices. Many data sharing mobile applications using these mechanisms have succeeded due to efficient data transfer capabilities. In this work, we explore the possibilities of bringing in an improved sharing scheme that would allow sender devices to serve files to receiver without having to know them in a conventional method like it would in a traditional data sharing scenario; making it possible for mobile devices to receive files from nearby users without their immediate consent.

Keywords: Data sharing; Ad-Hoc network; mobile devices; Server; Client.

I. Introduction

Information has been an integral part of society. People share data with peers for innovating, synergizing and making efficient decisions. Data sharing, which started with physical mediums like floppy disks, has now evolved to wireless channels. This sharing of data between two parties generally occurs when one party has something to offer that the other party doesn't possess. To discover this, both the parties must not only know each other but must also come to a conclusion as to what has to be shared. This limits the scope of data sharing. Had it been possible to share data between two unacquainted parties, the data would not remain confined to limited people. Bringing in an improved sharing scheme could revolutionize the sharing ecosystem.

II. Data Sharing

The ability to share the same data with multiple applications or users is termed data sharing in computer science. Invention of Floppy Disks followed by CD-ROMs and Pen Drives brought in a boom in the information sharing system. Within a few decades, sharing data wirelessly with the help of Bluetooth was preferred over physical mediums. And with the advent of mobile computing, Wi-Fi technology successfully made its way to substitute Bluetooth sharing.

1.1 Data Sharing Components

Sharing of data essentially involves the sharing medium, the data to be shared, the receiver, and the sender: (1) the sharing medium depends on the environment, in a mobile environment, the sharing medium can be a Bluetooth network, NFC, a WLAN network or the Internet; (2) the data could be of any form abiding to the protocols being followed; (3) the receiver is the device anticipating the data; and (4) the sender is the device that provides the data that it possesses to the receiver.

1.2 Conventional Sharing Scheme

Most data sharing applications begin with sender searching for potential receivers and sending the chosen data to the appropriate receiver. Meanwhile, the receiver makes itself visible and accepts the connection, if required. The data sharing finally between the two devices. Fig. 1 below illustrates this clearly.

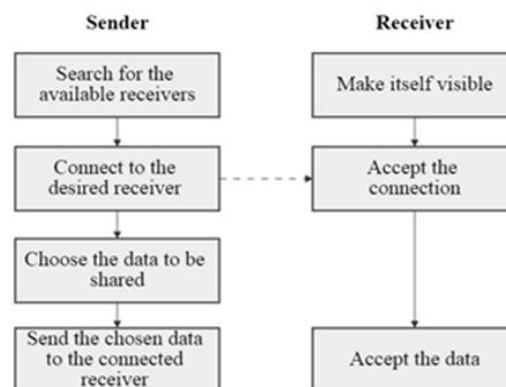


Fig. 1. Conventional Sharing Scheme

1.3 Existing Method

Bluetooth transmission is one of the conventional mediums of sharing data. While it would offer inherent security with low hardware requirements, it faces numerous speed and performance issues. With the evolution of networking, new mediums like LAN and Wi-Fi Direct have made their way in day-to-day usage. Gradually, data transmissions have been reliable and fast.

III. Method Enhancements

1.4 Existing Apps

With the flourish in mobile computing and app industry, various apps have been developed for sharing of files. These apps use the latest data transmission mediums like Wi-Fi Direct. The functions of these apps are to manage and monitor the connections while sharing the data across devices at a data rate that is times better than Bluetooth. SHAREit is one such file sharing application that works across multiple platforms. Launched in June 2012 as Anyshare, this app now has more than 35.3 million users [1]. Xender is another such application that works across multiple operating systems. Launched in 2012 as Flash Transfer, this app now has more than 80 million users [2]. While using Wi-Fi Direct, both applications allow the senders to send files using the algorithm mentioned above.

1.5 Our Proposition

While SHAREit is best at what it does, its influence is prevalent over a restricted area because there is a catch in the sharing algorithm that it follows. The sender and the receiver have to be informed personally and have to prepare their transacting devices prior to data transfer; whereas with our proposed system, the need to do the aforementioned action is eliminated. The sender and the receiver can initiate the transfer of data without having to pre-inform and acknowledge the other. This is done by making the sender broadcast its availability to all the devices in its sphere of connectivity: WLAN, LAN or PAN. The receiver thus becomes the one to request the sender for sending it, the data it desires.

1.6 Juxtaposition

The speed of operation of our proposed system will be less than that of the leading competitors due to irregular proximity but that is shadowed by the upsides such as the ability to share data anonymously with any user without his explicit consent. This widens the scope of influence of our proposed system to a great extent. Moreover, the user engagement and the will to use the application more and more is supported by the way this whole system is designed.

Table 1 Juxtaposition

Parameters	SHAREit	Xender	Superbeam	Proposition
Desktop versions	Windows, Mac	Not available	Windows, Mac, Linux	Not available
Speed	Moderate	High	Low	Moderate
OS version	2.2+	2.3+	4.0.3+	4.0+
Adware	Yes	Yes	Yes	No
Chat	Yes	No	No	No
Group sharing	No	Yes	No	Partial
Sharing type	Hotspot	Hotspot	Hotspot, NFC	Hotspot, Wifi Direct
Phone replication	Yes	Yes	No	Not available
Anonymity	No	No	No	Yes

IV. Development Preview

1.7 System Overview

The system would be built using the Wi-Fi Direct API of Android. The system app would require a user to select a few files that they would want to make available for the public and would have no concerns in sharing. Upon selecting those files, the device would then act like a server for the clients in the vicinity. A client would be any device searching for servers and is willing to receive a file. The client would start its search and would browse through the publicly available files on the servers and choose the desired files. The connection would then be created and the file transfer would begin. Fig. 2 and Fig. 3 below illustrate this idea clearly.

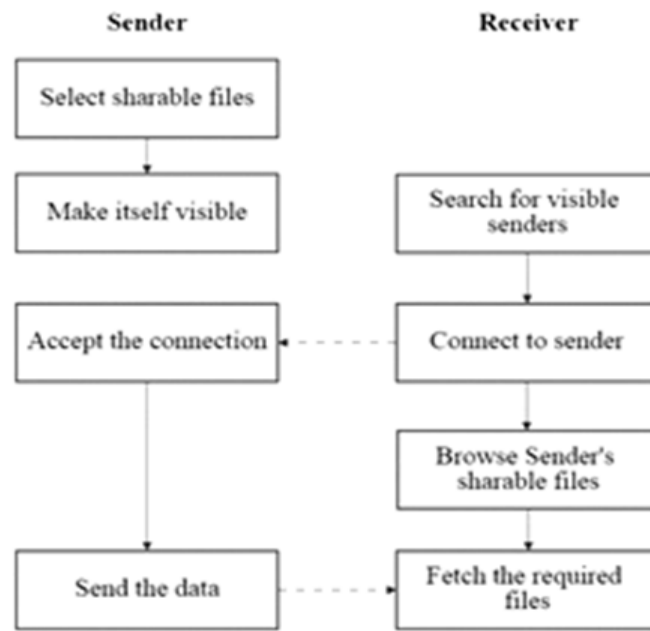


Fig. 2. Proposed Sharing Scheme

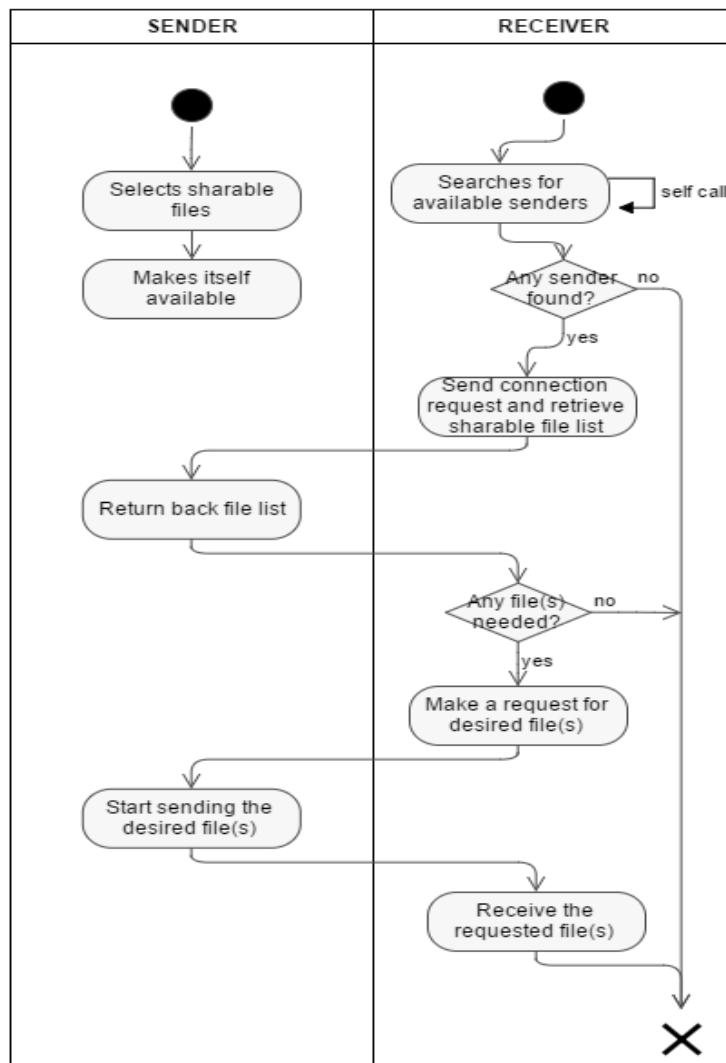


Fig. 2. Proposed Sharing Scheme Activity Model

V. Conclusion

Data need not be confined to the creator, consumption is the ultimate mark of validity of a creation. We promote consumption in a radical, ideal, natural and an easy way. With such a modification in the sharing mechanism, the sharing ecosystem can have a drastic influence. This could have wide scopes in many domains like Trends – Users could download trending files on the go from the people they personally don't know.

Academics – Tutors could share learning materials in a workshop or a classroom by making them publicly available for the students.

Public Places – Hotels and plazas could keep their menus publicly available for the visitors. Waiting rooms could publicize files to keep user engaged.

Community – Important files could be shared in the rural areas where there isn't an arrangement of internet.

References

- [1] SHAREit. Lenovo Apps, n.d. Web. 15 December 2016. <http://shareit.lenovo.com/>
- [2] Xender. Anmobi.Inc, n.d. Web. 15 December 2017. <http://www.xender.com/about.html>