

# Effective File Searching and Sharing on Mobile Devices in PAN Area

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## ABSTRACT

Present era is witnessing revolution in mobile technology. Numerous devices are coming in market with a larger storage capacity. Mobile devices are equipped with many new features in cameras, office etc. More uses of devices add large number of files to storage space. File system store these files with some specific format. Due to limited UI searching of a file on device becomes tedious job. This paper recommends use of annotation to retrieve special, temporal and social attributes of file in form of metadata. This metadata is used to search file on device as well devices in PAN. Use of XML for storage and kXML parser for parsing XML file make search more effective and efficient.

## Keywords

File Search, File Sharing, Mobile file annotating, PAN area file Search

## 1. INTRODUCTION

Mobile phones are playing vital role in day today's life. As technology advances, storage capacity of mobile devices is growing up. People prefer mobile phones to capture memorable moments of their life such as birthdays, vacations, family functions etc. Mobile devices can store plenty of images, audio as well as videos on their storage space. Mobile file system stores file with some basic attributes as number of files increases it become difficult to search a specific image, audio or video file on device.

To facilitate the information search, ontology can be used. Ontology gives additional knowledge about files. It retrieves basic information of files such as file size, create date, name from mobile operating system. We can add some additional attributes such as keyword and description. This attributes will help us during search. This information can be stored in XML file. Use of XML file makes data storage and data retrieval operations effortless. Use of kXML parser to parse XML document make it lightweight. XML and kXML parser makes file searching with less resource consumption.

Annotation process can be applied to a file individually, which requires manual browsing up to specific file. It needs input from user at each stage of annotation. Sometimes Providing inputs at each stage make this process time consuming. To avoid such efforts bulk annotation is preferable. In this we can annotate all files in selected folder at a time with specific keyword and description. It helps to search all the files related to specific keyword and description.

Required files from search result can be easily shared across other devices in Bluetooth range. Bluetooth module adds more value in this searching process. We can search specific file on a devices in Bluetooth range and desired file can be downloaded from a device in a range.

## 2. LITERATURE SURVEY

Due to large volume of data on mobile devices file management become complicated. To find out the specific file from storage space depends on user memory capacity. Increased volume and dimension of information making information search more critical. It is becoming heavy activity [1]. Various research methodology and studies agreed on the necessity of semantic aware file system instead of traditional hierarchical file system [2].

Researchers are promoting various techniques for file management and file retrieval. Context analysis explains about how to gather information about the state of system when user accesses the files [3]. Context information is facilitating the organization and retrieval of images. OWL-DL ontology supports annotate event collection and to be employed for time, spatial reasoning [4].

Data model was proposed to represent semantic information with main features like extensibility to cover semantic information and handling schema evolution. Addition of category and value to the semantic file system increases the scope of file system [5]. Metadata plays vital role in Ontology it provide access to resource. Metadata stores information about data or resource. It facilitates and improve information search. An ontology retrieves metadata related to resource [6]. Metadata has significant importance in past and recent projects of data integration. [7].

A generic ontology is developed in order to define widely used keywords. It supports semantic-based file search capabilities. Information Searching is facilitated by additional knowledge extraction from the ontology [8].

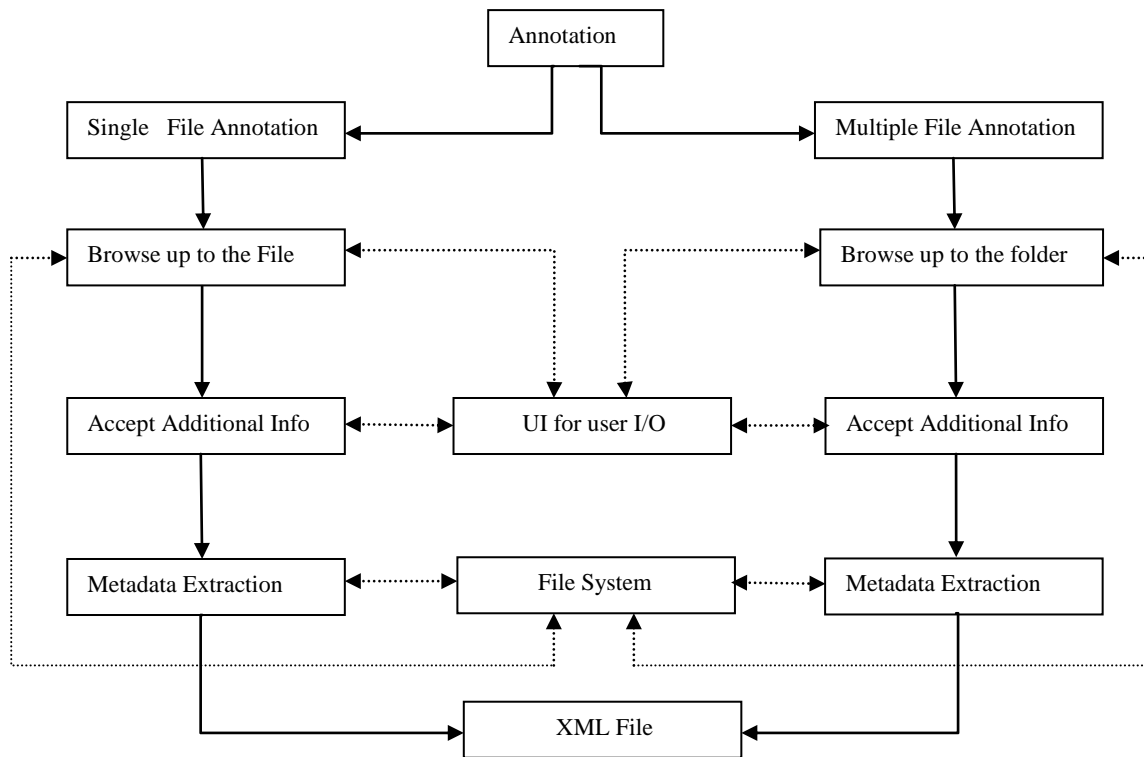
Annotation process is used to capture semantic information from device operating system. Many techniques such as OWL/RDF are used to improve ontology and its contribution in information search. There are many forms and techniques of semantic annotation are suggested to tag the semantic information of resource, irrespective of it is text or multimedia format. Semantic annotation explore information about resource such that heterogeneous application an exploit them. [9]. XML is a meta-markup language which recognized by W3C and has globally accepted specifications for data and document exchange [10].

kXML parser is used to parse XML data as it is lightweight parser. kXML makes parsing process quicker and lightweight and efficient [11]

### 3. PROPOSED SYSTEM ARCHITECTURE:

This paper aims to improve file search technique. Searching and sharing of file on mobile device should occur in minimum efforts. Architecture showed in Fig. 1& Fig.2 shows the approach which helps to improve a file search. File annotation should occur in group as well as for an individual file as shown in Fig.1. All files from specified folder should get annotated at a time. All necessary information should be collected from files system such as file name, size, and

creation date. An identifying keyword or suitable description from user should get append to each file during annotation. This keyword and description helps during file search activity. User should able to annotate any missing or newly added file after bulk annotation. Any missing or newly added file can be added by using Individual file Annotation Process. Individual File annotation is need based activity. File Search is major feature supports to search a specific file on a device itself or on the devices in PAN as shown in Fig.2. To search a file in PAN, Bluetooth module is used to connect the devices in range. We can search a file on remote device by using search functionality provided those files are already annotated on remote device. If needed, we can annotate the files on remote device. Based on user interest we can share the searched file with other devices in Bluetooth range.



**Fig. 1: File Annotation Process**

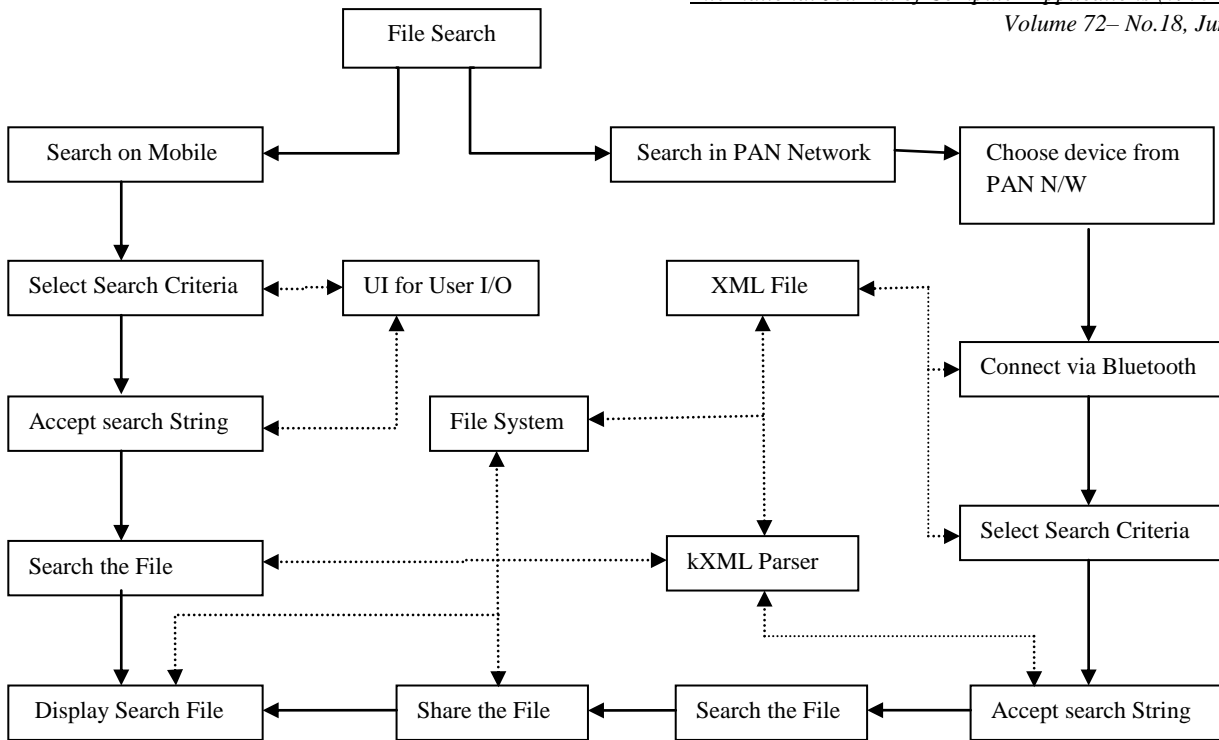


Fig. 2: File Searching Process

#### 4. RESULT AND ANALYSIS

To signify the importance of metadata based annotation in search we processed two sets of test data consisting 30 search queries with different search criteria. In First set all files were annotated without optional tags keyword and description, search of file is conducted with various criteria etc. name, size...etc. however in second set annotation is done along with keyword and description. File search is carried out based on only additional attributes i.e. keyword and description. Results shown in Table -1 indicate 77% searches are successful in set 1, while 87% search queries are successful in set 2. This result signifies 10% increase in search efficiency due to use of additional user defined metadata for search queries.

Search Query	No. of trials	Success
Annotation without additional tags	30	23
Annotation with additional tags	30	26

Table-1 : Search Result Query

Probabilistic evaluation can generalize these results in precisely. Search query may conclude in two results either success or failure. P indicates probability of success while q shows probability of failure. Efficiency of search mechanism can be generalized with Binomial distribution as shown below:

$$b(x; n, p) = \binom{n}{x} p^x q^{n-x}$$

The successes probability can be denoted by P for the first set and P1 for the second set. When the number of successes x is varied keeping the number of trails n constant i.e. n = 100, the comparison of P and P1 is shown in Fig. 3

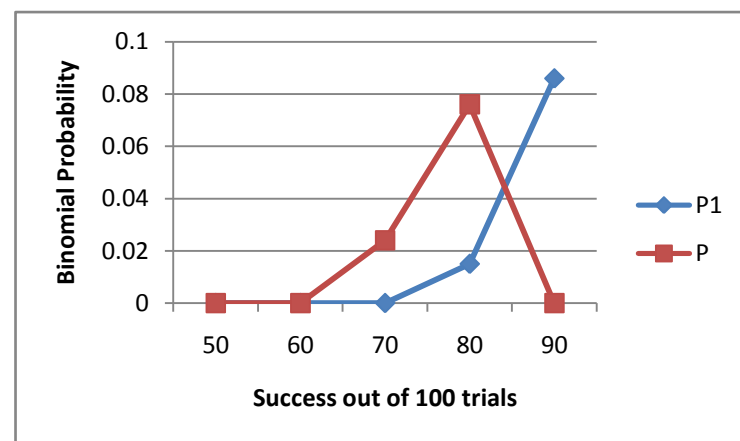


Fig. 3 : Comparison of binomial Distribution Calculated for P and P1

It can be noted that the highest probability values for P and P1 are (approximately) 79 and 90, respectively. In other words, Set 1 gets exactly 79 searches successful from 100 trials at the highest probability while Set 2 gets 90 successful searches from the same number of trials.

## 5. CONCLUSION

Here proposed architecture will improve annotation and file search. Various search criteria based on keywords add more value to user. We are enhancing the file search and sharing in PAN with the help of metadata stored in XML file. Use of additional tags i.e. keyword and description in annotation process helps to improve search result efficiency up to the 10%.

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