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Platform for Pushing Device Oriented Data via Cloud

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Abstract-In this paper we want to share device oriented information from our mobile devices to the cloud. Various device oriented information include missed calls history, messages, files, notes, media content, calendar, browsing history will be shared with device via cloud.Initially we will have to build a cloud for sharing such information. Client application program will run on PC and Android phone initially. The Android Application can set various kinds of triggers to push information into the cloud. For easy access to the stored data independent of time, location and from multiple devices we use 'software as service' (SaaS) offer through cloud computing. The information pushed onto cloud can be viewed from a application on PC independent of location and time.

Index Terms-Android, Cloud, Device oriented information,Platform, Software as service (SaaS), Windows OS

1. INTRODUCTION

In this paper, we are building a platform to share the device oriented information using private cloud. Our purpose is to create an information-sharing platform that enables easy sharing of device-oriented information. The cloud is build using SaaS platform. Whenever required, the private cloud enables access to shared resources via a network connection. Through the private cloud, information is shared among various devices. The use of mobile devices is increasing rapidly day by day and people have started to use many devices simultaneously so sharing information between these devices has become an important aspect. For example, suppose a person at work needs some file or document immediately which is present on his laptop and incase if he forgets his laptop at home then it can be retrieved if the same data is stored in the cloud. Also user can get notified of the missed call history, low battery level of a device not in immediate reach to him.

Our project also provides some important and interesting modules to make the system better. This includes providing security by the use of SHA-1 hash algorithm, platform independence (presently supporting windows OS, android OS etc. but can be extended to other platforms.)

Our application provides following functionalities:

- Device independence
- Providing security
- Remote accessibility
- Easy Expansion
- Expanded to various OS
- Virtual ability
- Setup new system
- Easy access of data anytime and anywhere
- Can me modified depending on future trend

Service providers need not worry about the resource management since they are managed by cloud itself. So user can access data and service anytime and anywhere which enables data sharing in a convenient way. Location information is also a part of application. Users are left with a choice to share location information with other people. A registered user can login from any device with this application and get access to the information in the cloud. Recovery of data is easy in case of device failure and hence providing device independence.

Our platform provides users an easy way to connect devices and cloud services. Devices with Android and Windows OS are client side components which are connected to the cloud services using the communication interface. Different triggers and conditions can be set to notify about missed calls, message alerts (if device is not available with user) and low battery level.[1]

The System architecture shown in fig.1 shows how the system actually works or interacts. The main modules are the Android and Windows OS client and Cloud Server. The application will be installed on both the OS devices and they can share information with each other.

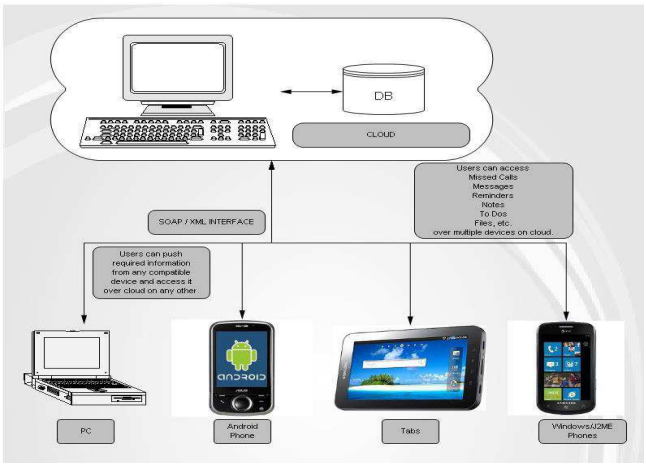

Fig. 1.System Architecture

2. RELATEDWORK

Some solutions of information sharing have been proposed.

a) Notitter

Notitter is a mobile bot that notifies you wherever you are. Even if you forget your phone at your home, office or car, this application will let you know different information. You can use this for emergency notification, life log, and so on. You can choose Twitter and Evernote for notifying address.

b) Context Watcher

Mobile phone users can share their contextual data (i.e. location, heart rate, speed) with their consent.

It is a context-aware application which enables end-user to automatically record, store, and use context information. For example, police and prisonners can stay better informed about each prisonner, without synchronous interaction by using automatically derived context data. In the context management framework, context providers, are exposed to and interact via the internet. Using this software application a mobile phone can be used for sharing context data in everyday life. Hence, context-awareness does not force people to adapt or change significantly their daily patterns in their routine life, but accompanies them throughout everyday life.

c) Sense Everything Control Everything (SECE)

SECE is a context-aware platform that connects isolated services, making it more useful and user-personalized, composite services. SECE converges, fixed and mobile services by integrating the Internet, cellular and sensor networks. SECE takes actions automatically on behalf of the users depending on the monitored information and triggered events. SECE enables end-users to create advanced services. Although users today can use several individual Internet services, there is currently no easy way to create new services which integrate diverse information, such as location, presence, IM, SMS, calls, Facebook, Twitter, sensors and actuators.[2]

d) Growl

Growl application works on local network principle which can communicate within the local area network only. When user receives sharable information on electronic communication device (smart phone/PC) the growl's application which is activated on that device sends a notification to Growl, which shows a pop-up to notify user that the electronic communicating device(smart phone/PC) received a shared information. Depending on settings, Growl will notify using one of the displays plug-in, voice commands, send an email to user. Growl application can inform users device via a pop up if that particular device is present on local local area network itself.

These applications are restricted to share data only on particular devices or services. Our aim is to build an software that uses cloud that avail users to share the information independent of location and time. Cloud services provide a cost effective, and secure environment for managing your data. They also reduce expenditure for hardware and software, providing an opportunity for cost containment.[3]

3. PROPOSED SYSTEM

A. System Outline

Our goal is to provide platform to share device-oriented information and the user is free to use any computing device they own. The following problems are to be addressed:

a) Easy adding of services

A mechanism is needed to add information sharing services along with the shared information since services in a cloud are increasing rapidly. Similarly, a convenient approach is needed to add the device oriented information. Management interface between the controller and input/output is needed to solve below problems:

- Data shared differs with each service and user
- Information may be related to data from a sensor or user context data.

b) Relation of trigger and information

Triggers and information sharing may be interrelated to each other, and so we need to collect them. For example, the platform retrieves battery level and notifies the controller.

The controller then examines the level; if it is lower than a threshold, the controller sends the level to output. Easy development of the input and triggers should be done to enable simultaneous release of services.

c) Enriching Information

We can elaborate the additional information that is strongly related to the original information (add, delete or update data). With the development of web services, there are more ways to use information. For example, location information can now be used to find addresses or landmarks nearby. We need to make it easy for users to adapt to new services.

System security depends on information sharing services that users use. Therefore, to provide security we include SHA-1 algorithm which enables storing of password in an encrypted format making it attack free from external sources. When a user wants to share information with his or her friends, they can use services with community.

B. System implementation

In this study, we implemented a platform on Android and Windows OS; we named the platform 'RIGHT ARM'. Right Arm consists of three main parts: input, output and controller. It first needs to set some parameters of the parts as shown below:

a) Sharing Information (input/output)

User is provided with the facility to choose information to push to external services. Similarly, user can choose the information to pull from the external services. Right Arm currently supports following types of information to be shared:

- Location information from GPS
- Low battery level of the device
- Missed call and unread message history

Notes, to-do's, files
- Controller

Setting is done by the user with respect to which information to share and the conditional triggers. There are currently three trigger settings: critical battery level, missed call and unread messages.

Right Arm works as described in the steps below:

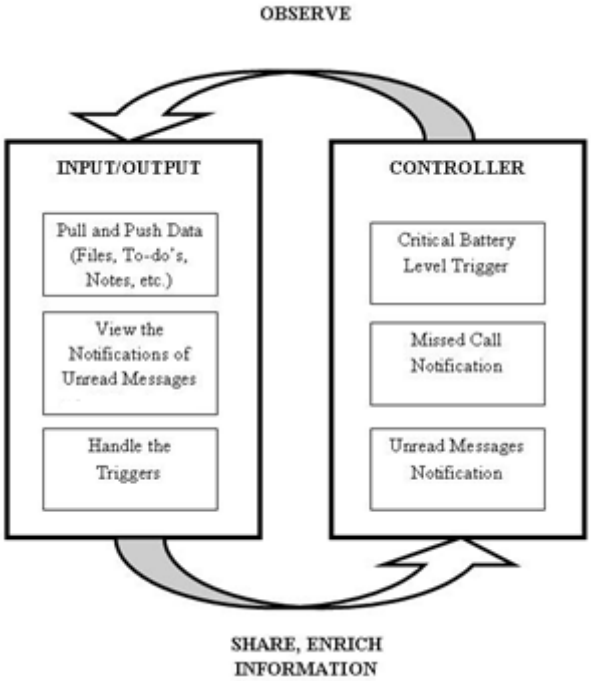

Fig. 2. System overview

1) Settings are made as per user's preference.
2) The user starts Right Arm which works in the background.
3) The input data is constantly checked at regular intervals by Right Arm.
4) Right Arm share data with information sharing services if a trigger event is detected.

In case the user wants to check related information, Right Arm will add information by using web services.

4. CONCLUSION

Thus, Platform for pulling and pushing device oriented information via cloud is an application which aims at accessing data from cloud via registered users instantly. It let the user automatically share device-oriented information so that users can observe the same information on different devices. By using cloud services, users can now access information anytime and anywhere regardless of the situation of information source device.

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