APPLICATION DEVELOPMENT FOR MOBILE AND UBIQUITOUS COMPUTING

AGRIPLANNER

SEMINAR PRESENTATION – 2

Group No. – 3
Tomasz Krol , Nikhil Ambardar
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CONTENTS

- Set of specific context features captured to control adaptation
- Two specific adaptation mechanism description for your App
- The method to map your considered context features to parameters for controlling your adaptation mechanisms
- The detailed architecture of your App
- The technologies for implementing all components of your App

CONTEXT FEATURES

- GPS
- Physical Context – GPS Location, Time/Date
- WEATHER SERVICE
- Technical Context – Weather Data from Open Weather Map API - min/ max temperature, humidity, rain, clouds
- USER INPUTS
- Contextual Info -Info by buyers – price of crops , Info by sellers – crop type , quantity sowed, date of sowing
- Personal Context – App user id
- Social Context – Nearby field users data
- Operational Context – Users as Buyers / Sellers i.e. farmers

IDEAS FOR MAJOR FUNCTIONALITY

Our app uses two ideas

- A. Based on GPS app shows vicinity crop details to user on map(i.e. a page linked to a tag/pointer). Sync is done by using cloud database which contains inputs from other users.
- B. Weather based notifications of activity for day for specific crop based on userId

IDEAS FOR MAJOR FUNCTIONALITY

- ***"PRESENTATION OF DATA" Downloading data (crop type , date of sowing , quantity)of nearby fields and presenting them in a page linked to a pointer on a map .***

  All users input their crop details (mentioned above)which Is sent to common cloud DB along with that users app id and others download whole data from cloud DB .App uses its own GPS info to find nearby coordinates and fetch data of UIDS of nearby coordinates to display.

  This help farmer make a choice / change his crop type in interest to fetching best price / prevent overloading of any one crop type in a locality .

- ***NOTIFICATION We use weather info, date/time of year and crop type info from User Inputs as context information to do DB analysis and give Notifications of daily crop*** maintenance ***recommendation like sowing, watering, manuring or harvest for specific user ID, conditions of which described in DB for each crop type.***

ADAPTATIONS

A. Form Factor and Usability Challenge

Form Factor- Different screen sizes and visualizations , detection of screen size and device type ,

Usability –Detect User location GPS , Notifications

B. Connectivity Challenge

Provide offline functionality using precatched information.

-Catching when possible -One week notification load in advance

-Loading Imp data first –Store in local DB

Network

Context:

- Detect if app is offline, using **Android.net.ConnectivityManager** and **android.net.NetworkInfo**

```
if(isOnline) {
        ➢ Get fields data from cloud store
        ➢ Save this data to locally SQLite database
}
else {
        ➢ Inform user that he is in offline mode and data can be out of date
        ➢ Use pre-fetched data from locally SQLite database, not from Firebase
          caching
}
```

Battery

Context:

- Determine the current battery level,using **BatteryManager.EXTRA_LEVEL** and **BatteryManager.EXTRA_SCALE**

```
if(batteryLevel <= 25%) {
        - reduce the rate of background updates to reduce battery
          consumption through asking user if he wants to load data from locally
          database instead of loading data from cloud
}
else {
        - Load data from Firestore
}
```

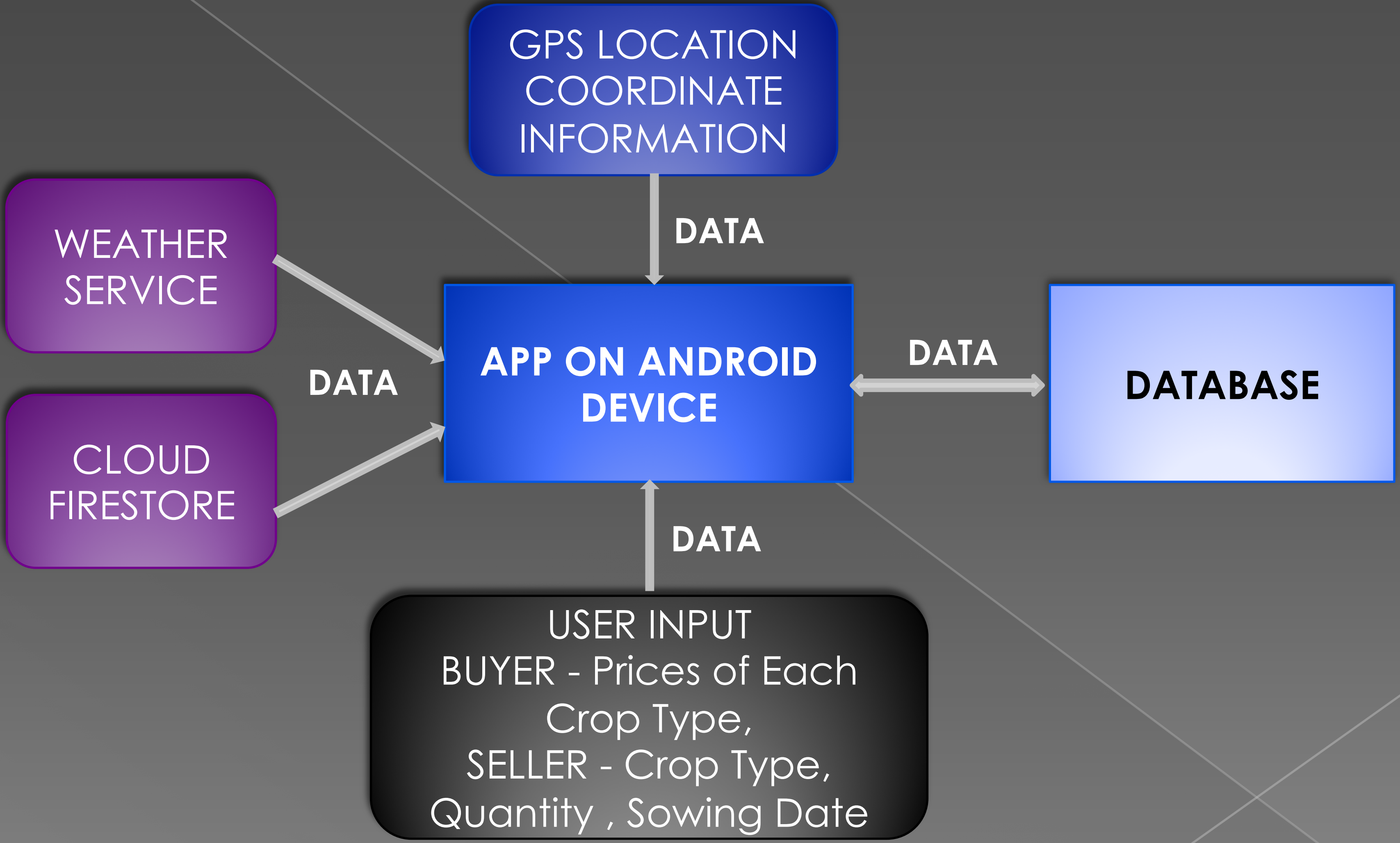
Location

Context:

- Obtain the current location using `android.gms.location.FusedLocationProviderClient`

```
if(canRequestLocation && hasLocationPermission) {
        ➢ Show nearby fields on the map arround the user in given radius
        ➢ Save user`s location to cache
}
else {
        ➢ Load location from cache or use default location set by user
}
```

DETAILED ARCHITECTURE



GPS LOCATION COORDINATE INFORMATION

DATA

WEATHER SERVICE

CLOUD FIRESTORE

DATA

APP ON ANDROID DEVICE

DATA

DATABASE

DATA

USER INPUT
BUYER - Prices of Each Crop Type,
SELLER - Crop Type, Quantity , Sowing Date

TECHNLOGY FOR IMPLEMENTING COMPONENTS

QUESTIONS ?

OR ELSE

THANK YOU FOR ATTENTION