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MOBILE DONGFENG NEWS

Android News Reading Application

Technology and Communication

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ABSTRACT

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The objective of the thesis was to develop Mobile DongFeng News, an Android application which allows users get the latest news from a car company. It was designed for Dongfeng Motor Corporation which is a Chinese automobile manufacturer headquartered in Wuhan, China.

Mobile DongFeng News was developed as Android application and the backend uses Drupal which is Open Source CMS to control the functions. This application contains two roles. One is the mobile user and the other is the administrator. The mobile user, can view advertisements, choose news channels, refresh news list and load more news, share news to social network website, set news mode as no image, clear cache and check update of version. The administrator, controls all the advertisements, manages news, push notice to mobile users.

As local English version, Wamp server was used to provide Apache server and Mysql database.

All the functions of the final thesis have been achieved in Mobile DongFeng News. The application has been showed to Dongfeng Motor Corporation, and it has been upload to App Store online which allow users to download.

Keywords Android, Drupal, Wamp server, Mobile DongFeng News

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LIST OF ABBREVIATION

CMS	Content Management System
App	Application Program
FAW	First Automobile Works
API	Application Programming Interface
XMLRPC	XML Remote Procedure Call
JSON	JavaScript Object Notation
SOAP	Simple Object Access Protocol
REST	Representational State Transfer
OS	Operating System
JVM	Java Virtual Machine’
PHP	Personal home page Hypertext Preprocessor
NCSA	National Center for Supercomputing Applications
SQL	Structured Query Language
ANSI	American National Standards Institute
ISO	International Organization for Standardization
GPL	GNU General Public License
SD card	Secure Digital Memory Card
QR code	Quick Response Code

CAPTCHA	Completely Automated Public Turing test to tell Computers and Humans Apart
IP	Internet Protocol
URL	Uniform Resource Locator
CSNA	Chinese Social Networks Authentication settings
RSS	Really Simple Syndication
GUI	Graphical User Interface
XML	Extensible Markup Language
SNS	Social Networking Services
IOS	iPhone OS

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APPENDIX 1. JDK Setup for Windows 7 Platform

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1. INTRODUCTION

Nowadays, Android applications are so popular that the customer can use them to view news via a mobile phone. An Android application was developed in this thesis for Dongfeng Motor Corporation. It can provide both the development news from Dongfeng Motor Corporation and some information about cars such as how to protect or clean cars. There are a lot of workers in this company so they have the demand to read the latest new from the company via a mobile phone. The company, can add advertisements to the application so customers will see them and the company has the possibility to increase the sales.

Dongfeng Motor Corporation is one of China Automotive Group Four, such as China Changan Automobile Group, China FAW Group Corporation, and Shanghai Automotive Industry Corporation (Group). In addition to commer-cial and consumer vehicles, it also manufactures parts and cooperates with foreign companies. They had a requirement to have an Android application to share the news from its company. The application provides instant news for both its workers and people who are interested in it. It also can broadcast advertisements to people for commercial use.

The objective of this thesis was to build an Android news reading app with Drupal. Android is a useful open source mobile platform. It contains a lot of functions that users can interact with. Drupal is a powerful, extensible, open-sourced and scalable framework. In addition, the Durpal service module is the added module and it allow developers to use standard API, such as XMLRPC, JSON, SOAP and REST. In our application, we used JSON to get the information of the news. The communication between the different frameworks is very reliable. Furthermore, it is easy for developers to add their own service to the Drupal modules. So it was designed to connect the web portal and mobile side, it will be cost-saving because there are a lot of open source communities that will support the functions.

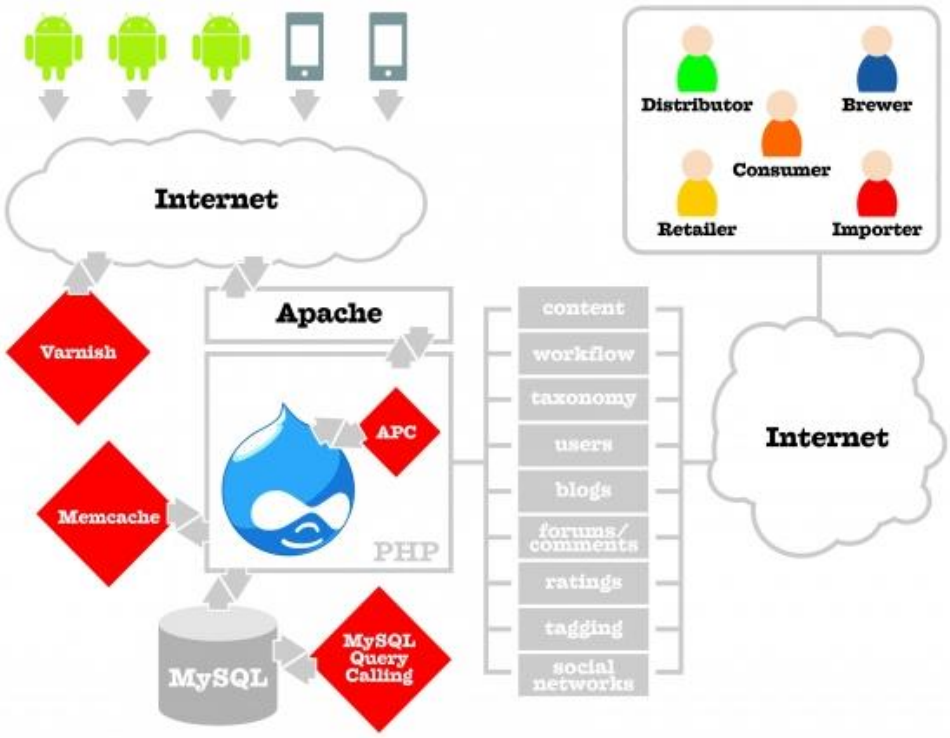

Figure 1. Android and Drupal /1/

Figure 1 shows an Android news reading application, according to the requirement of Dongfeng Motor Corporation. It allows mobile users to view news from different channels and the administrator can manage the advertisement and news list.

The ddetailed set of functions for Mobile user are:

- Font size setting
- No image setting
- Push setting
- Clear cache
-View Disclaimer
- Check update

2. TECHNOLOGY OVERVIEW

This chapter will explain more about the technology has been involved in this application. First of all, the programming language is JAVA, the platform is Windows OS or Linux OS. Android is a platform and it is open source so applications can be applied to smart phones, tablets. The Wamp server was used for the English version which provides Apache server and local Mysql Database. Besides, Drupal was used to provide the backend functions.

2.1 Java

Java is a powerful programming language, and it is convenient for Android development. Java is class-based and object-oriented, once it has been coded, it can also be recompiled on another platform.

Sun Microsystems released the first public implementation as Java 1.0 in 1995. In the early 90s, extending the power of network computing to the activities of everyday life was a radical vision. In 1991, a small group of Sun engineers called the "Green Team" believed that the next wave in computing was the union of digital consumer devices and computers. Led by James Gosling, the team worked around the clock and created the programming language that would revolutionize our world – Java. /2/

Today, Java not only permeates the Internet, but also is the invisible force behind many of the applications and devices that power our day-to-day lives. From mobile phones to handheld devices, games and navigation systems to e-business solutions, Java is everywhere. /2/

The term *Java* actual refers to more than just a particular language like C or Pascal. Java encompasses several parts, including: /3/

- **A high level language.** The Java language is a high level one that at a glance looks very similar to C and C++ but offers many unique features of its own. /3/

- **Java bytecode** - a compiler, such as Sun's javac, transforms the Java language source code to bytecode that runs in the JVM. /3/

- **Java Virtual Machine (JVM)** - a program, such as Sun's java, that runs on a given platform and takes the bytecode programs as input and interprets them just as if it were a physical processor executing machine code. Sun provides a set of programming tools such as javac, java and others in a bundle that it calls a Java *Software Development Kit* for each version of the language and for different platforms such as Windows, Linux, etc... Sun also provides a runtime bundle with just the JVM when the programming tools are not needed. /3/

2.2 Android

Google acquired Android Inc. on August 17, 2005; key employees of Android Inc., including Rubin, Miner, and White, stayed at the company after the acquisition. Not much was known about Android Inc. at the time, but many assumed that Google was planning to enter the mobile phone market with this move. /4/

Android's user interface is based on direct manipulation, using touch inputs that loosely correspond to real-world actions, like swiping, tapping, pinching, and reverse pinching to manipulate on-screen objects./5/

These are the basics of Android applications: /6/

• Android applications are composed of one or more application components (activities, services, content providers, and broadcast receivers) /6/

• Each component performs a different role in the overall application behavior, and each one can be activated individually (even by other applications) /6/

- The manifest file must declare all components in the application and should also declare all application requirements, such as the minimum version of Android required and any hardware configurations required /6/

- Non-code application resources (images, strings, layout files, etc.) should include alternatives for different device configurations (such as different strings for different languages) /6/

2.3 WampSever

WampServer is a local server package for Windows, allowing you to install and host web applications that use Apache, PHP and MySQL. Here Apache and MySQL will be explained.

The Apache web server is often referred to as simply *Apache*, a public-domain open source Web server developed by a loosely-knit group of programmers. The first version of Apache, based on the NCSA httpd Web server, was developed in 1995./7/

The core development of the Apache Web server is performed by a group of about 20 volunteer programmers, called the *Apache Group*. However, because the source code is freely available, anyone can adapt the server for specific needs, and there is a large public library of Apache add-ons. In many respects, the development of Apache is similar to the development of the Linux operating system. The original version of Apache was written for UNIX, but there are now versions that run under OS/2, Windows and other platforms./7/

The name is a tribute to the Native American Apache Indian tribe, a tribe well known for its endurance and skill in warfare. A common misunderstanding is that it was called Apache because it was developed from the existing NCSA code plus various patches, hence the name *a patchy server*, or Apache server. /7/

MySQL, the most popular Open Source SQL database management system, is developed, distributed, and supported by Oracle Corporation. /8/

MySQL is a database management system. A database is a structured collection of data. It may be anything from a simple shopping list to a picture gallery or the vast amounts of information in a corporate network. To add, access, and process data stored in a computer database, a database management system is needed such as MySQL Server. Since computers are very good at handling large amounts of data, database management systems play a central role in computing, as standalone utilities, or as parts of other applications. /8/

MySQL databases are relational. A relational database stores data in separate tables rather than putting all the data in one big storeroom. The database structures are organized into physical files optimized for speed. The logical model, with objects such as databases, tables, views, rows, and columns, offers a flexible programming environment. Rules are set up to govern the relationships between different data fields, such as one-to-one, one-to-many, unique, required or optional, and "pointers" between different tables. The database enforces these rules, so that with a well-designed database, the application never sees inconsistent, duplicate, orphan, out-of-date, or missing data. /8/

The SQL part of "MySQL" stands for "Structured Query Language". SQL is the most common standardized language used to access databases. Depending on the programming environment, one might enter SQL directly (for example, to generate reports), embed SQL statements into code written in another language, or use a language-specific API that hides the SQL syntax. /8/

SQL is defined by the ANSI/ISO SQL Standard. The SQL standard has been evolving since 1986 and several versions exist. In this manual, "SQL-92" refers to the standard released in 1992, "SQL:1999" refers to the standard released in 1999, and "SQL:2003" refers to the current version of the standard. We use the

phrase “the SQL standard” to mean the current version of the SQL Standard at any time. /8/

MySQL software is Open Source. Open Source means that it is possible for anyone to use and modify the software. Anybody can download the MySQL software from the Internet and use it without paying anything. If needed, the source code can be studied and changed it to suit the needs. The MySQL software uses the GPL (GNU General Public License), http://www.fsf.org/licenses/, to define what may and may not be done with the software in different situations. /8/

2.4 Drupal – Open Source CMS

The Drupal mission is to develop a leading edge open-source content management system that implements the latest thinking and best practices in community publishing, knowledge management, and software design. /9/

3.1.1 Values

- Flexibility, simplicity, and utility in the product; /9/
- Teamwork, innovation, and openness in the community; /9/
- Modularity, extensibility and maintainability in the code. /9/

3.1.2 Principles

- Modular and extensible: Drupal aims to provide slim, powerful core that can be readily extended through custom modules. /9/
- Quality coding: High quality, elegant, documented code is a priority over roughed-in functionality. /9/
- Standards-based: Drupal supports established and emerging standards. /9/
- Low resource demands: To ensure excellent performance, Drupal puts a premium on low-profile coding (for example, minimizing database queries) Drupal should also have minimal, widely-available server-side software requirements. /9/

- Open source: Drupal is based on the open source philosophy of collaborative free software development and is licensed under the GPL. Drupal is itself open source and builds on and supports other open source projects. /9/
- Ease of use: Drupal aims for a high standard of usability for developers, administrators, and users. /9/
- Collaboration: Drupal development supports open, collaborative information sharing systems and approaches. /9/

3. DONGFENG NEWS READING

Below a functional description, class structure and detail description of this project is given. This project has three important roles. One is the mobile side, mobile users can view news via this application. The second is the system manager, who can control the news editor in the backend side. The third is the news editor, who can manage all the news and advertisements which will be shown to the customers.

3.2 Functions Description for Mobile User

For the mobile users, this application has 4 navigation choices at the bottom: navigation, news, share, setting. Each navigation choice will lead to a new page. Each page will have its detail functions.

3.2.1 Launch Page

At the Launch page, there are two main functions as shown in Figure 2. It can slide to the navigation page and view the advertisement when the application is opened.

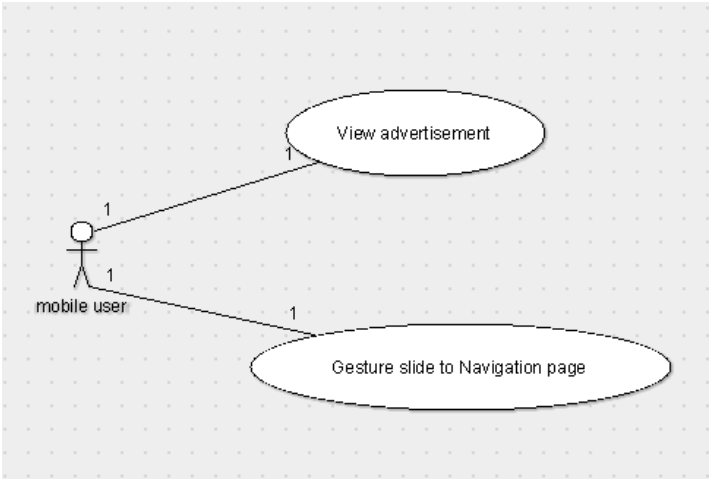

Figure 2. Use case diagram on launch page

When the application starts, it will come to the launch page. This page will contain two parts, one is the advertisement picture and the bottom part will be the logo of this application.

The advertisement will have two types to show. If the user opens this application, then it will download the advertisement picture to the local SD card in his phone. At the same time, it will be shown on the launch page. If the user comes back to this page before he close this application, the advertisement will be shown from the SD card. This action is set to be save phone data usage.

In addition, if the user opens the application for the first time, after he has seen the advertisement which has been downloaded from the server side, the application will jump to the navigation page after 3 seconds. If the user uses a gesture to come back to this page, he can use left or right gesture to control these two pages.

3.2.2 Navigation Page

At this page, the user can slide back to the Launch page and view business partners' information, choose from 5 publications, or choose from 4 tab choices.

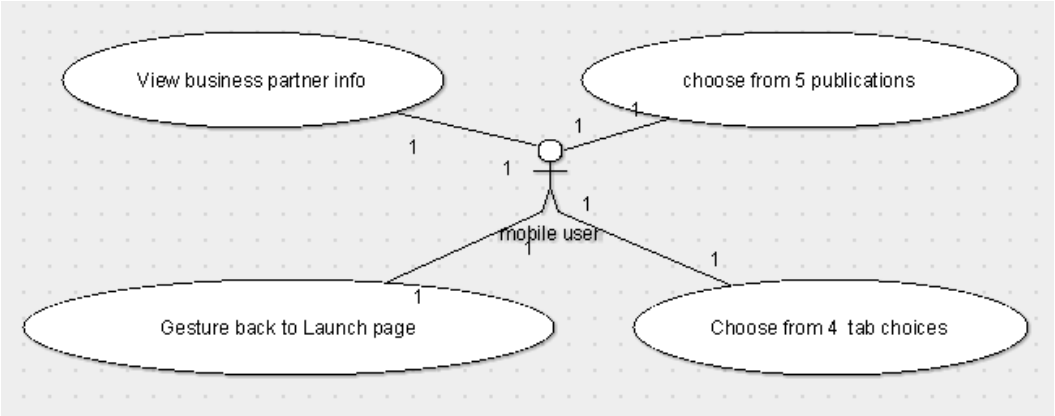

Figure 3. Use case diagram on navigation page

On this page, firstly, the top of this page will show the title of the company, and the button of the company business partners. Once the user clicks this button, it

will download the list of the business partners and show it over the layout. The list can be refreshed and loaded more according to the number of the server side.

Secondly, in the middle of this page, there are 5 publications, each one will represent one type of news. It shows as main title and sub title:

- Dongfeng Auto News

  Show Dongfeng style, Enjoy Dongfeng Culture

- Dongfeng Motor Corporation

  The culture and creativity of this company

- Travelling by car

  Enjoy a happy journey by car

- Auto Technology

  Important Chinese company in creative auto technology

- Equipment Technology

  Magazine about car Equipment

Thirdly, on the bottom of the page, it will show 4 tab choices:

- Navigation
- News
- Share
- Setting

It has two ways to come to the news page, and if one is to click one of the 5 publications. Another way is to click the tab choices of News, it will as default come to the news page and show the first type of publication. Besides, this page can be

slide back to the launch page if the right gesture is used. When it goes back to the launch page, it will show the advertisement once it has been saved on the SD card. It will be changed by the users will.

3.2.3 News Page

There are five kinds of publications and each publication has many columns. Each column has its corresponding news list.

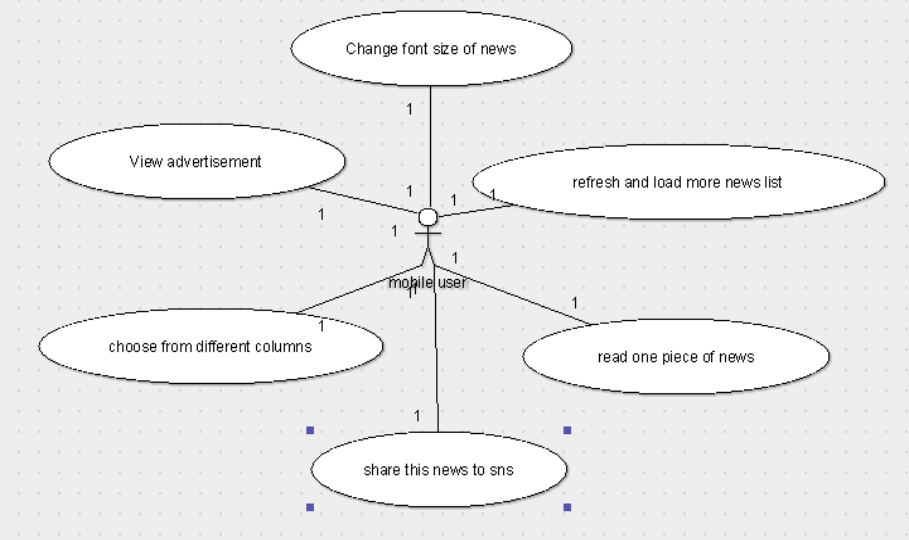

Figure 4. Use case diagram on news page

The columns will be shown on the top of the news page. The tab choices are still at the bottom and the news list is in the middle.

- Dongfeng Auto News (9 columns)

  Headlines, Focus, Production, Party, Dongfeng, People, Literature, Special, View channels

- Dongfeng Motor Corporation (4 columns)

  Highlight, Company, Sight, Talk

- Travelling by car (8 columns)

  Travelling, Car Journey, Famous Car, Dating, Video, Column, SNS

- Auto Technology (12 columns)

  Broadcast, Global Tech, New Car, Power, Creativity, Interview, Attention, Articles, Research, Test, Material, Bulletin,

- Equipment Technology (6 columns)

  Industry, Work, Repair, Reform, Energy-saving, Auto Study

For it shows the news list on the page, the news can be refreshed or load more according to its number. Every time it will load 15 pieces of news from the server side, and if there is no more news, then it will show the hint at the bottom side.

Every piece of news will show its title, thumbnail image, and summary of the news, date, and source. If the user clicks the news in the list, it will jump to the detail page of the news then it will show the detail information of it. This page can also set the font size and image setting.

3.2.4 Share Page

The Share page, was set to be quite simple, it has a QR code as an image source, and other Android mobile user can download this application according to this QR code.

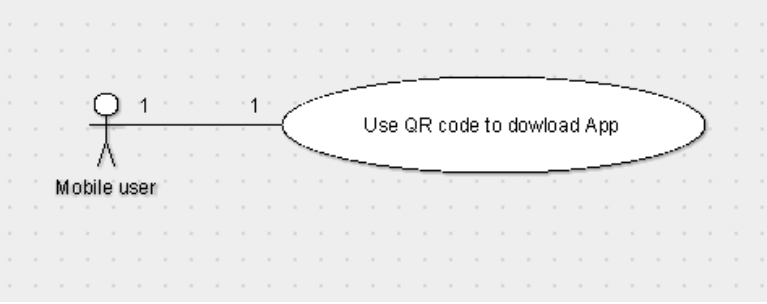

Figure 5. Use case diagram on Share page

3.2.5 Setting Page

This page was built for settings.

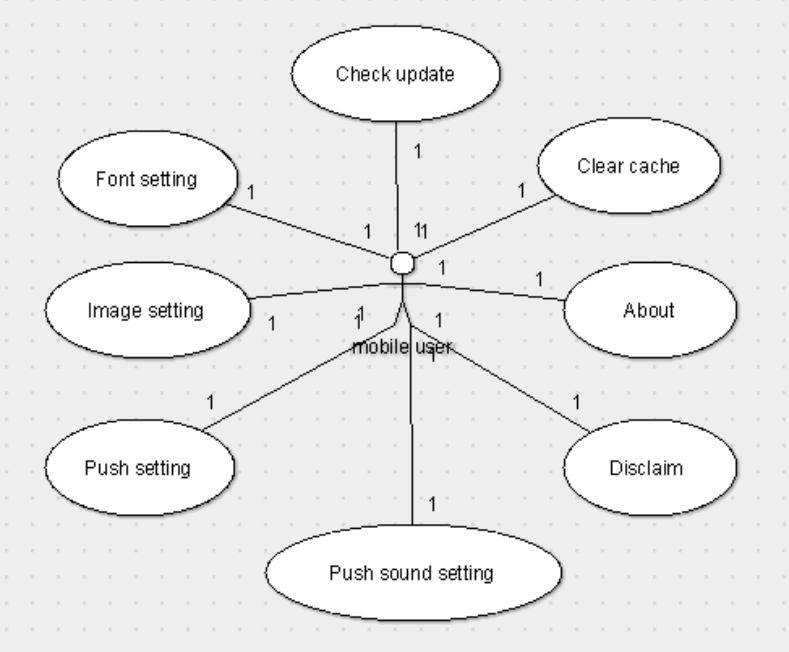

Figure 6 Use case diagram on Setting page

The requirement was as follows:

- Font setting
  Small
  Middle
  Big
- Image setting
  Image
  No image
- Push setting
  Open
  Close

- Push sound setting

  Open

  Close
- Clear cache

  It will clear the cache of the news after user click it.
- About

  It will show the summary information of this application.
- Disclaim

  It will show the disclaim information of this application.
- Check update

  It will check the new version on the server side. If the is a new version, it can download the new version and install it on the phone.

3.3 Functions Description for Manager and Administration

The manager and administrator are the roles at the Drupal side which act as the server side. For this backend side, the Manager has the highest priority and he can add, manage, search and delete users. Drupal provides many functions for the developers and here we usually use the node to set the priority of all other users. The settings are related to different application modules.

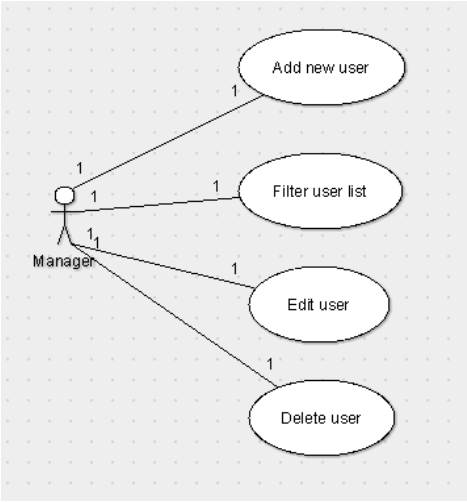

Figure 7. Use case diagram for Manager

For the news editor, the following priorities are given.

- Advertisement:

  Edit advertisement

- News

  Create news

  Edit news

  Delete news

- Business partner

  Create business partner

  Edit business partner

  Delete business partner

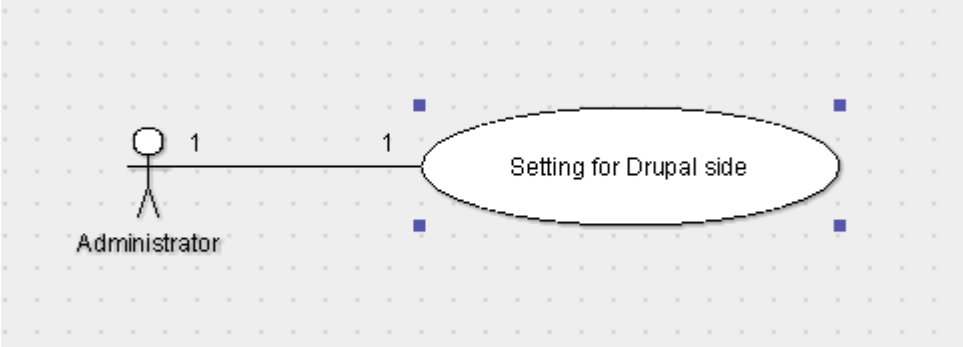

Figure 8. Use case diagram for Administration

For the administrator, some properties are set for this Drupal site. Drupal provides many kinds of settings such as the settings below. In this application, I have used the language setting. Because Dongfeng is a Chinese company, the real product has been updated to the app store. Here my thesis will present the English version.

- **PEOPLE**

  Account settings, Badges, CAPTCHA, HybridAuth, Nodeaccess, Points, User Stats settings, Flexi Access, IP address blocking
- **CONTENT AUTHORING**

  Advanced Forum, CKEditor, Fivestar, Node clone module, Text formats, Title settings, Webform settings
- **DATE API**

  Date Popup, Date Tools
- **MEDIA**

  File system, Colorbox, File types, Gallery settings, Image styles, IMCE, Media browser settings, Rebuild type information for media, Image toolkit
- **SEARCH AND METADATA**

  Search settings, Apache Solr search, URL aliases, Metatag, Page titles, SE, checklist, URL redirects, Voting API, Clean URLs
- **REGIONAL AND LANGUAGE**

  Regional settings, Date and time, Languages, Translate interface, String overrides, Multilingual settings, Translation sets
- **SYSTEM**

  Site information, Statistics, Actions, AddToAny, Backup and Migrate, Global, Redirect, Google Analytics, LoginToboggan, PHPMailer, Variable example, Variables, Cron
- **USER INTERFACE**

  Chosen, Custom breadcrumbs settings, Lightbox2, Module filter, Nice menus, Shortcuts, Superfish, Taxonomy Manager
- **DEVELOPMENT**

  Performance, Logging and errors, Maintenance mode, Checklist API example, Devel settings, Generate content, Generate menus, Generate private messages, Generate redirects, Generate relations, Generate terms, Generate users, Generate vocabularies, Generate votes, jQuery update, LESS settings, Administer LESS settings

- **WEB SERVICES**
  Chinese Social Networks Authentication settings (CSNA), OAuth, RSS publishing

3.4 Functions Description for News Editor

The news editor, has three main functions, such as news management, business partner management and advertisement management.

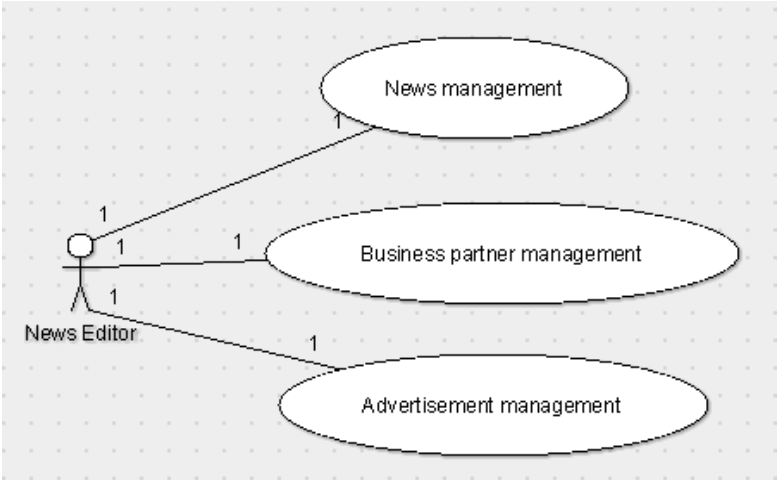

Figure 9. Use case diagram for News Editor

The news editor will control all the news shown on the mobile side. He will do all the operation on the Drupal side. It can be divided into three parts:

- News Management
- Advertisement Management
- Business partner Management

3.4.1 News Management

The news management can be divided into four main parts.

1) Add news

2) Edit news

3) Search news

4) Delete news

Each piece of news, will have the title, summary, content, picture, date and source, all the information will be shown on the Android mobile side.

3.4.2 Advertisement Management

When it comes to the Advertisement, it can only edit advertisement because the number of publication has been set to be 5. So it can only be edited to avoid empty advertisement or misunderstanding.

3.4.3 Business Partner Management

The news management can be divided into four three parts.

1) Add Business partner

2) Edit Business partner

3) Delete Business partner

Every Business partner will contain the name of the company and the logo of this company. On the mobile side, it will be shown as the list.

3.5 Class Hierarchy

For the Android application side, we have several packages for different functions. For example, the package of HandOnEastWind mainly contains the activities which have the corresponding pages. These activities show the action that mobile users can interact with. The Json package will contains the classes about the module that will be contacted to the server side by using data as Json. In addtion, the adapter package has some classes about the adapter of dialog or view pager or list view. These adapters extend the basic one but will write its own style. The local

cache package will have the classes which can save the cache information on the local mobile.

3.5.1 Activity Class Diagram

As shown, in Figure 10, in com.evebit.HandOnEastWind package, we have 9 activities. Everyone has its own functions and its page in mobile application. I will detail explain this features inside these activities.

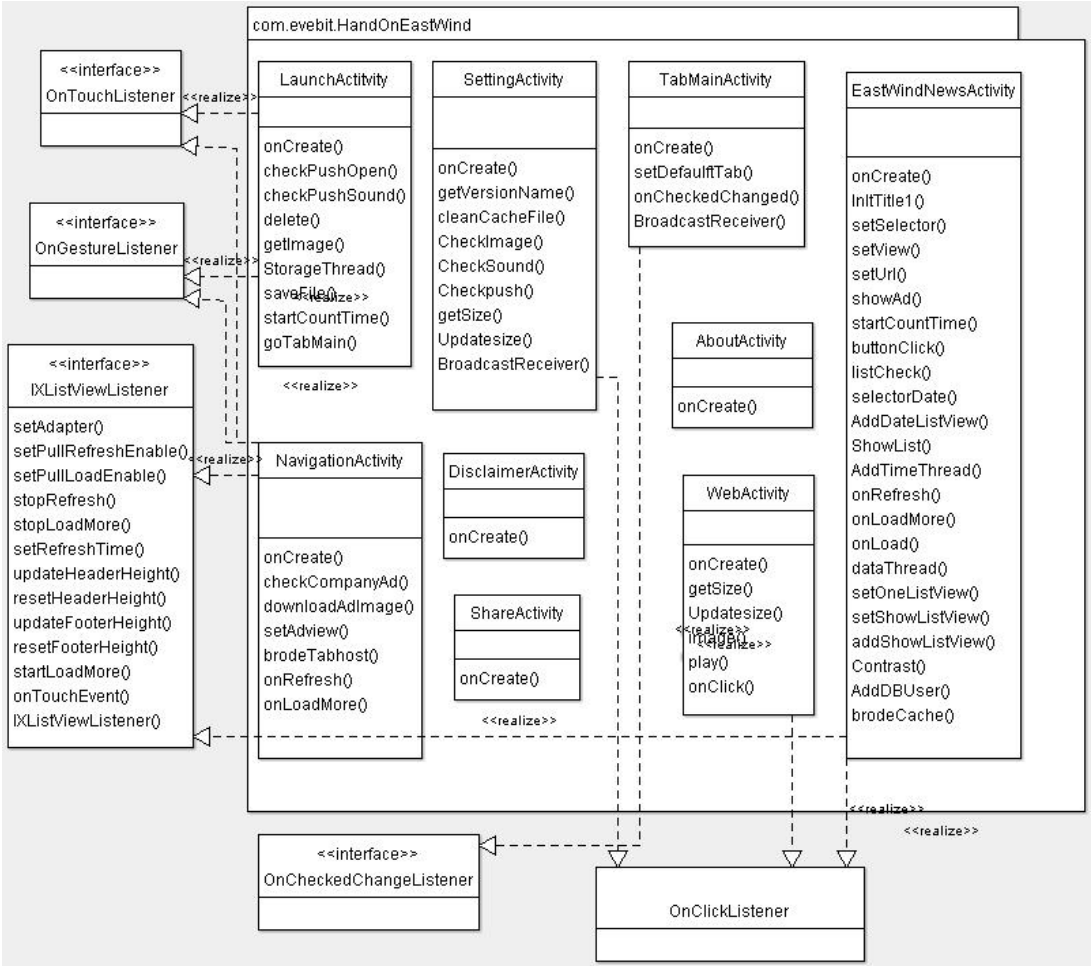

Figure 10. Class diagram for Main Activities

Launch activity:

- **OnCreate()**

  Initialize of the component and assign values.

- **checkPushOpen()**
  Judgment of if Push is open or closed.
- **checkPushSound()**
  Judgment of if the sound of Push is open or closed.
- **delete()**
  Delete local image.
- **getImage()**
  Get image from network.
- **StorageThread()**
  Open a new thread to save image.
- **saveFile()**
  Save image to local SD card.
- **startCountTime()**
  Count 2 seconds.
- **goTabMain()**
  Jump to TabMainActivity.

Setting Activity:

- **OnCreate()**
  Initialize of the component and assign values.
- **getVersionName()**
  Get version code of this application.
- **cleanCacheFile()**
  Clean cache files in mobile.
- **CheckImage()**
  Check mode of image setting.
- **CheckSound()**
  Check mode of push sound setting.
- **CheckPush()**
  Check mode of push setting.

- **getSize()**
  Get the font size now.
- **UpadateSize()**
  Update the new font size.
- **BroadcastReciever()**
  Receive Broadcast from other activity.

TabMainActivity

- **onCreate()**
  Initialize of the component and assign values.
- **setDefaultTab()**
  Set the default choice of the Tab.
- **onCheckChanged()**
  Check if the tab choice has changed.
- **BroadcastReciever()**
  Receive Broadcast from other activity.

EastWindNewsActivity

- **onCreat()**
  Initialize of the component and assign values.
- **initTitle1()**
  Initialize of the title view.
- **setSelector()**
  Choose the column of the news list.
- **setView()**
  First set the view of the news page.
- **setUrl()**
  Set url of the news list according to the choice.
- **showAd()**
  Show advertisement.

- **startCountTime()**
  Count 5 seconds for ad showing.
- **buttonClick()**
  Click button of column to choose.
- **listCheck()**
  The click activity and its bound list.
- **selectorDate()**
  Check date of the cache file.
- **AddDateListView()**
  Add cache file to array.
- **ShowList()**
  Show news list according to the choice.
- **AddTimeThread()**
  Add new date.
- **onRefreash()**
  Refresh the news list.
- **onLoadmore()**
  Load more news from server side.
- **onLoad()**
  Stop refresh and load more.
- **dataThread()**
  Save news data from server side.
- **setOneListView()**
  Show data to one list view from Json.
- **setShowListView()**
  Show list view after refresh.
- **Contrast()**
  Compare data in cache.
- **AddDBUser()**
  Add cache file.

- **brodeCache()**

  BroadCast to refresh the cache.

NavigationActivity

- **onCreate()**

  Initialize of the component and assign values.
- **checkCompanyAd()**

  Check Advertisement info.
- **downloadAdImage()**

  Download advertisement.
- **setAdview()**

  Set advertisement image to list view.
- **brodeTabhost()**

  Receive broadcast to change the tab choice and change page.
- **onRefreash()**

  Refresh the business partner list.
- **onLoadMore()**

  Load more business partner info from server side

WebActivity

- **onCreate()**

  Initialize of the component and assign values.
- **getSize()**

  Get the font size.
- **UpdateSize()**

  Update the font size.
- **Image()**

  Get image setting.
- **Play()**

  Play the video inside the web content in mobile.

- **Onclick()**

  This is used to judge users' action on the mobile side.

AboutActivity, DiscliamActivity and ShareActivity on have the methods of onCreate() which is used to initialize the component and assign values.

3.5.2 Json Class Diagram

This package, mainly contains the functions to communicate with the server side with Json data. The important class Test_Model has the same type of data from the server side and the names are the same with the server side, otherwise it cannot get the date properly. The set and get methods are used normally.

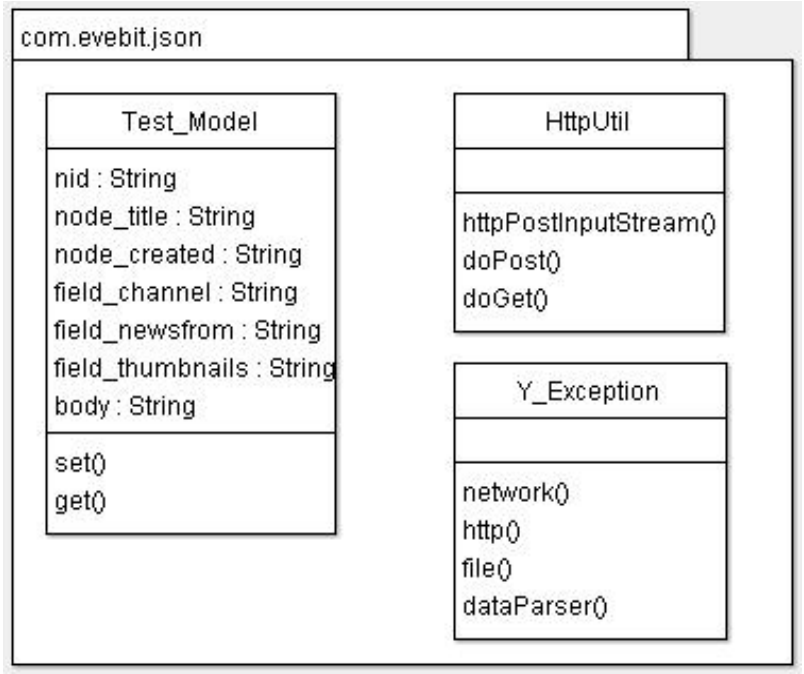

Figure 11. Class diagram for Json

Test_Model:

nid: id of the news

node_title: title of the news

node_created: created time of the news

field_channel: channel of the news

field_newsfrom: source of the news

field_thumbnails: thumbnails image of the news

field_summary: summary of the news

body: content of the news

HttpUtil:

This class mainly works for the communication of the data, which means that it will send data.

Y_Exception:

This class will deal with all the exceptions during the connection with the server side during the data exchange.

3.5.3 Adapter Class Diagram

In the Adapter package there are more than one adapter according to the requirement of the application, it has the listAdapter and ViewPagerAdapter. ListAdapter controls the functions of style of news list and the ViewPagerAdapter control the style of gesture of the page. Figure 12 below uses ListAdapter as an example.

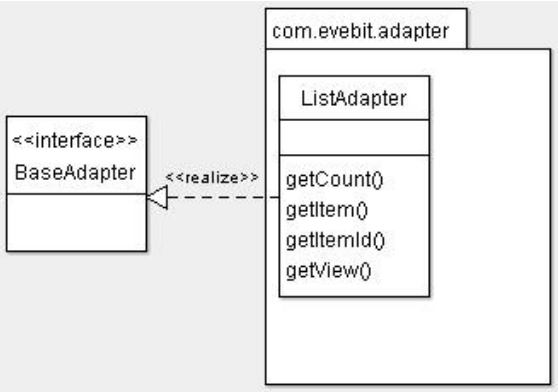

Figure 12. Class diagram for Adapter

ListAdapter:

BaseAdapter: It is generated by the Android jar files and used as an interface class.

getCount(): Get the number of the news list.

getItem(): Get the one item from the list.

getItemId(): Get the id of the item.

getView(): This uses to get the view of the list.

3.5.4 Local cache Class Diagram

The local cache package has 4 classes, and three are used as an example here. DBAd is used to save the cache of advertisement, DBSize is used to save the font size setting, DBTime is used to save the date when saving the data to local cache.

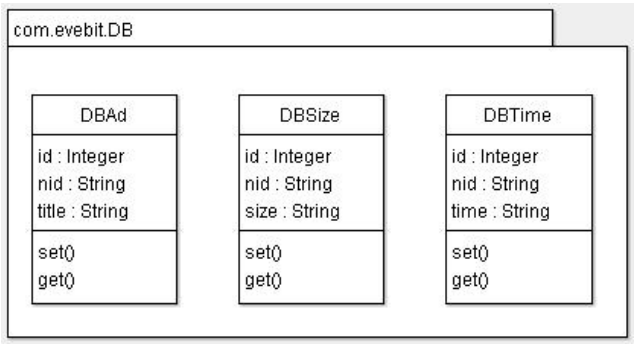

Figure 13. Class diagram for Local cache

Three classes have the id as primary key, nid as the data id, and the set(), get() as the method to set the functions. The difference is that DBAd has a value title, DBSize has a value of size, DBTime has a value of time.

3.6 Functional Description with Sequence Diagram

3.6.1 News Reading by Mobile

This application was designed for news reading for mobile users. It also allows users to do some interaction with the application, such as the settings and share information. First it will come to the navigation page and the channel of the news to read can be chosen. At the bottom are the 4 tab choices for users, so it can share the application or set some settings for this application. The request will be applied to the server side by Json file.

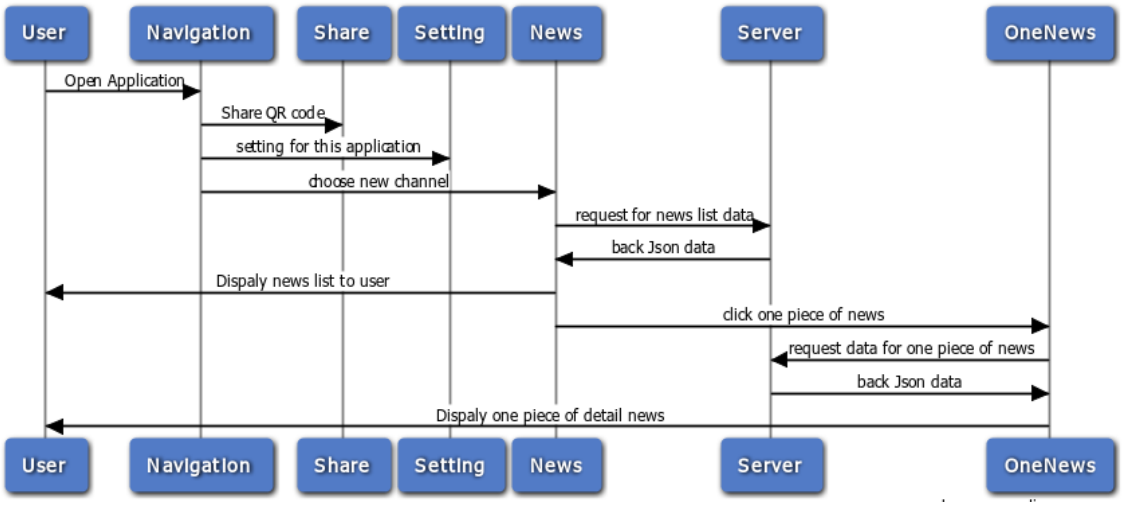

Figure 14. Sequence Diagram for mobile user

3.6.2 Manage News with Drupal

The Drupal website provides the functions for the news editors. It mainly has three functions, one is the news management, the other ones are the advertisement management and the business partner management. Every management contains add, delete, edit and search. Every request will be applied to the server side inside Drupal's functions.

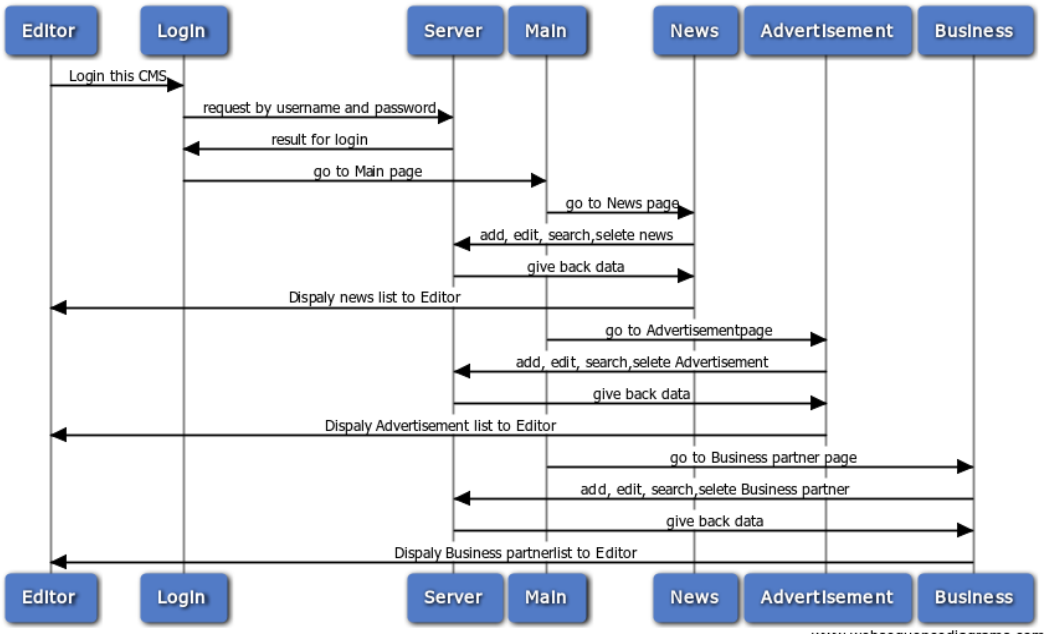

Figure 15. Sequence Diagram for news editor

4 DATABASE AND GUI DESIGN

4.1 Design of the Database

The database was generated on the Drupal side, and the open source CMS was needed the structure to provide the strong functions. Some examples about how to create the database table are given here: accesslog, acl, acl_node, acl_user, action to show the functions are given with the explanation for every value

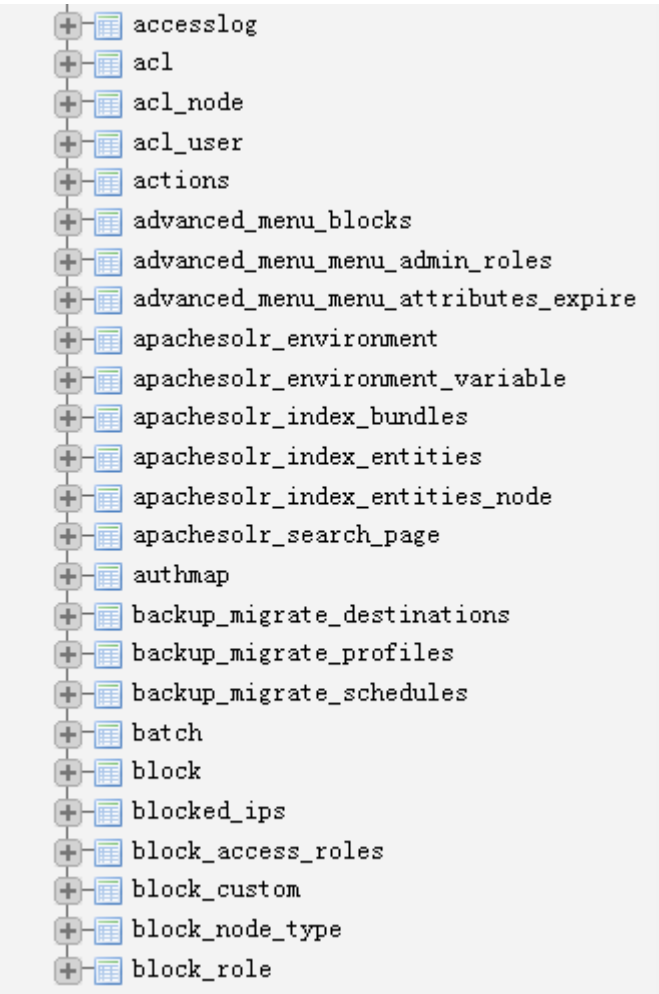

Figure 16. Database Structure

- **Table accesslog**

```
CREATE TABLE `accesslog` (

  `aid` int(11) NOT NULL AUTO_INCREMENT COMMENT 'Primary Key: Unique accesslog ID.',

  `sid` varchar(128) NOT NULL DEFAULT '' COMMENT 'Browser session ID of user that visited page.',

  `title` varchar(255) DEFAULT NULL COMMENT 'Title of page visited.',

  `path` varchar(255) DEFAULT NULL COMMENT 'Internal path to page visited (relative to Drupal root.)',

  `url` text COMMENT 'Referrer URI.',

  `hostname` varchar(128) DEFAULT NULL COMMENT 'Hostname of user that visited the page.',

  `uid` int(10) unsigned DEFAULT '0' COMMENT 'User users.uid that visited the page.',

  `timer` int(10) unsigned NOT NULL DEFAULT '0' COMMENT 'Time in milliseconds that the page took to load.',

  `timestamp` int(10) unsigned NOT NULL DEFAULT '0' COMMENT 'Timestamp of when the page was visited.',

  PRIMARY KEY (`aid`),

  KEY `accesslog_timestamp` (`timestamp`),

  KEY `uid` (`uid`))
```

- **Table acl:**

```
CREATE TABLE `acl` (

  `acl_id` int(11) NOT NULL AUTO_INCREMENT COMMENT 'Primary key: unique ACL ID.',

  `module` varchar(255) NOT NULL COMMENT 'The name of the module that created this ACL entry.',
```

`name` varchar(255) DEFAULT NULL COMMENT 'A name (or other identifying information) for this ACL entry, given by the module that created it.',

`number` int(11) DEFAULT NULL COMMENT 'A number for this ACL entry, given by the module that created it; use either ’name’ or ’number’.',

PRIMARY KEY (`acl_id`),

KEY `module_name_number` (`module`(64),`name`(64),`number`),

KEY `module_number` (`module`(64),`number`)

) Design of different parts of GUI

- **Table acl_node:**

CREATE TABLE `acl_node` (

`acl_id` int(11) NOT NULL DEFAULT '0' COMMENT 'The acl.acl_id of the entry.',

`nid` int(11) NOT NULL DEFAULT '0' COMMENT 'The node.nid to grant permissions for.',

`grant_view` tinyint(3) unsigned NOT NULL DEFAULT '0' COMMENT 'Whether to grant "view" permission.',

`grant_update` tinyint(3) unsigned NOT NULL DEFAULT '0' COMMENT 'Whether to grant "update" permission.',

`grant_delete` tinyint(3) unsigned NOT NULL DEFAULT '0' COMMENT 'Whether to grant "delete" permission.',

`priority` smallint(6) NOT NULL DEFAULT '0' COMMENT 'The priority of this grant record (for hook_node_access_records()).',

PRIMARY KEY (`acl_id`,`nid`),

KEY `nid` (`nid`))

- **Table acl_user:**

CREATE TABLE `acl_user` (

`acl_id` int(11) NOT NULL DEFAULT '0' COMMENT 'The acl.acl_id of the entry.',

`uid` int(11) NOT NULL DEFAULT '0' COMMENT 'The user.uid to which this acl entry applies.',

PRIMARY KEY (`acl_id`,`uid`),

KEY `uid` (`uid`))

- **Table action:**

CREATE TABLE `actions` (

`aid` varchar(255) NOT NULL DEFAULT '0' COMMENT 'Primary Key: Unique actions ID.',

`type` varchar(32) NOT NULL DEFAULT '' COMMENT 'The object that that action acts on (node, user, comment, system or custom types.)',

`callback` varchar(255) NOT NULL DEFAULT '' COMMENT 'The callback function that executes when the action runs.',

`parameters` longblob NOT NULL COMMENT 'Parameters to be passed to the callback function.',

`label` varchar(255) NOT NULL DEFAULT '0' COMMENT 'Label of the action.',

PRIMARY KEY (`aid`))

4.2 Design of Different Parts of GUI

4.2.1 GUI Design for Mobile Side

The following figures are showing the UI design of the application. It has the Launch page, navigation page, news page, share page and setting page.

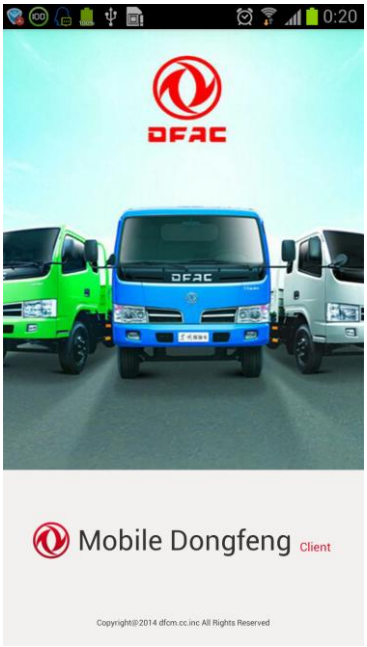

Figure 17. Launch Page

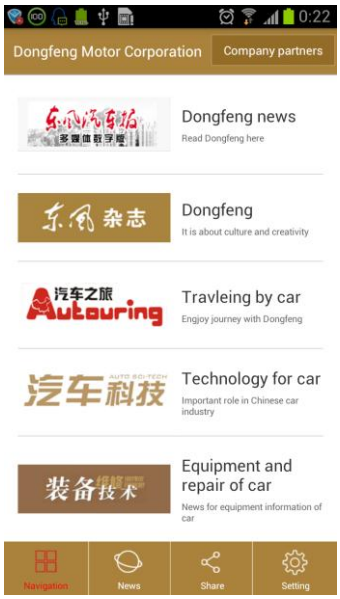

Figure 18. Navigation Page

Figure 19. Navigation Page with Company Partner

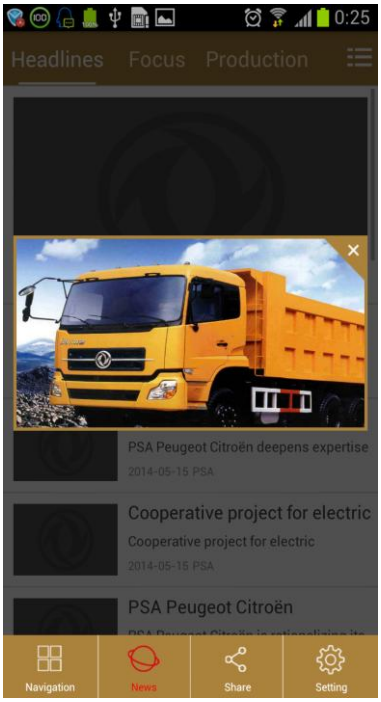

Figure 20. News Page with Advertisement

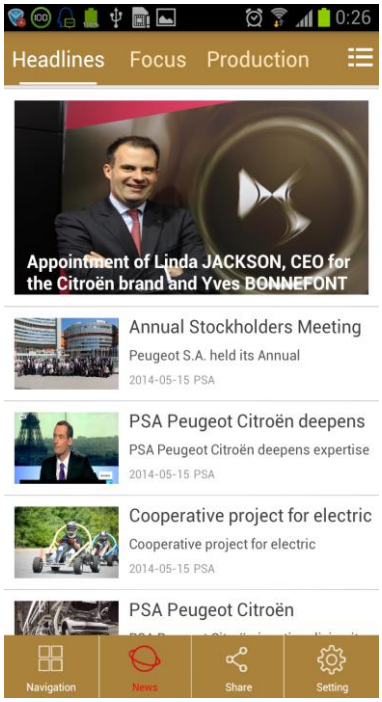

Figure 21. News Page

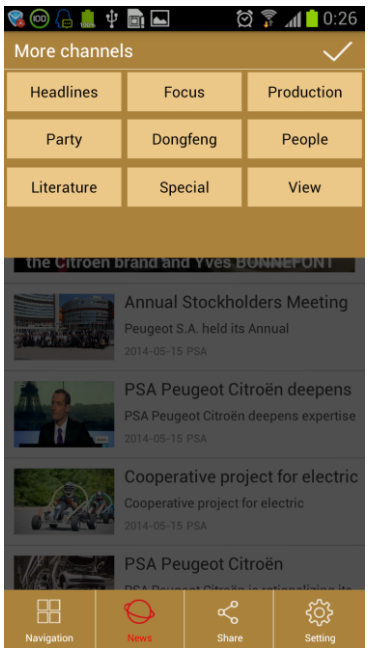

Figure 22. News Page with Channel Choice

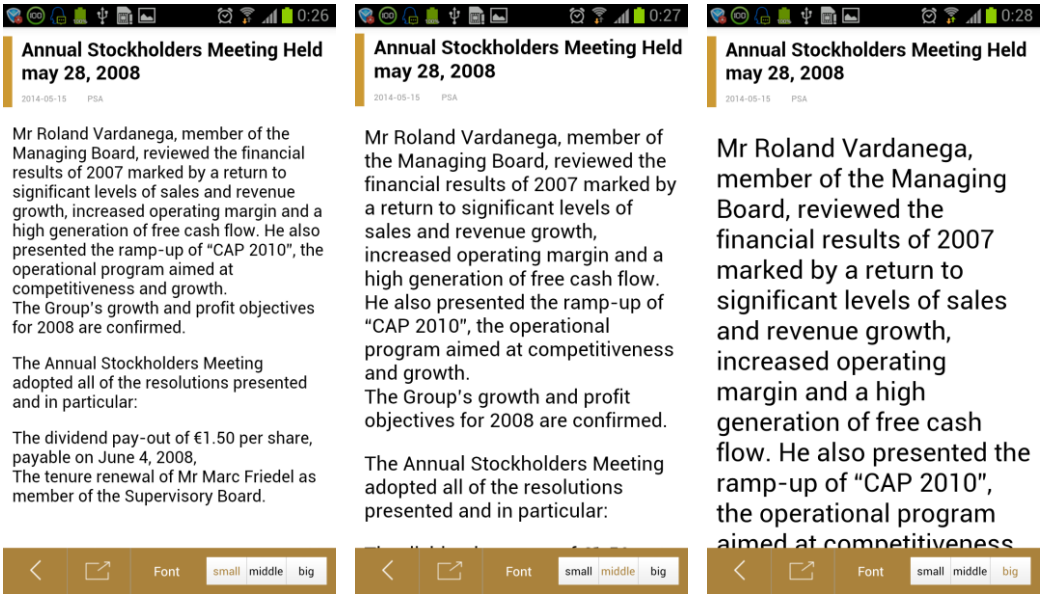

Figure 23. News Detail Page with three font settings

Figure 24. Share Page

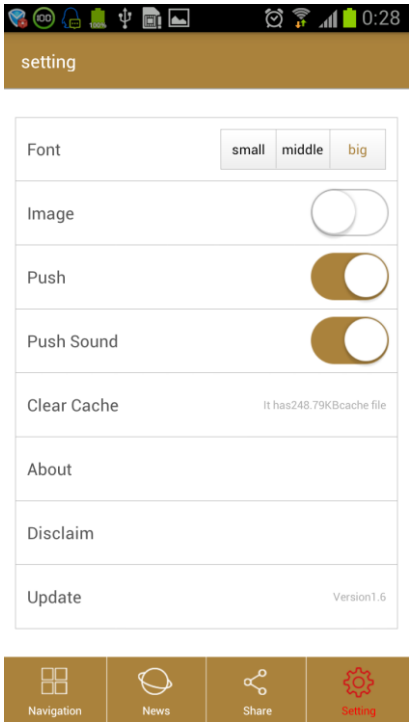

Figure 25. Setting Page

4.2.2 GUI Design for Drupal Side

The following page shows the UI design of the server side. The news editor can login, manage the news, business partners and the advertisement information.

Figure 26. Login

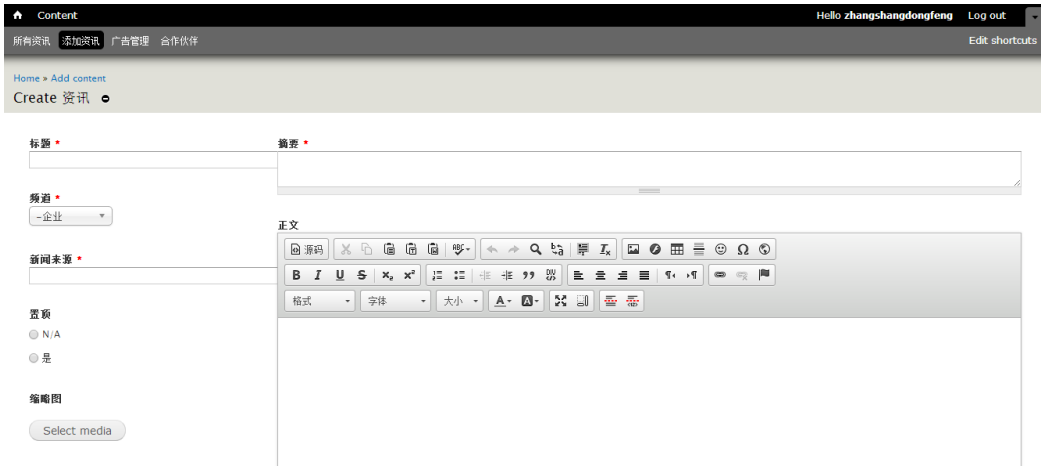

Figure 27. Create News

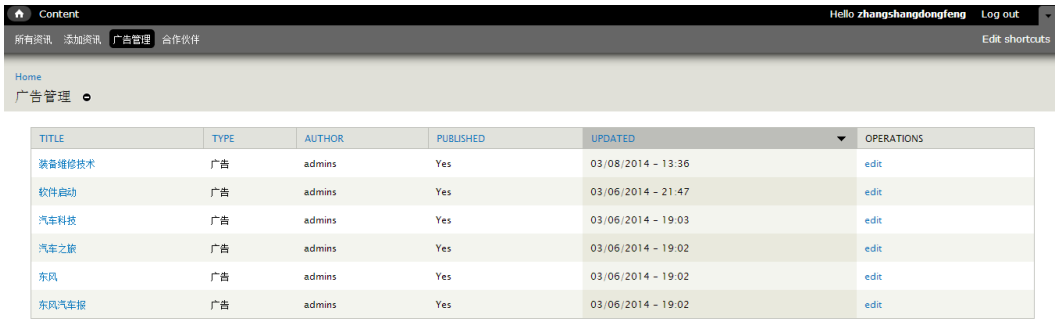

Figure 28. Advertisement Management

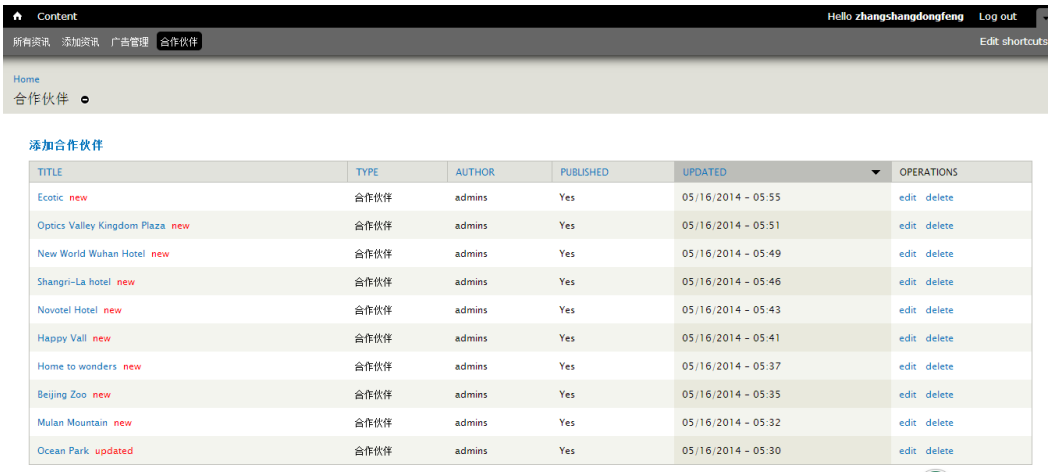

Figure 29. Company Partner Management

5 IMPLEMENTATION

5.1 General Description

Because of the complexity of the Android application, a detail introduction and explanation are given how the functions and classes were completed. Every function will be illustrated with the explanation and source code. It is divided into two parts, one is the GUI layout implementation, and the other one is the functions of the classes.

5.2 Implementation of GUI

5.2.1 Implementation of AndroidManifest File

In the Android application, AndroidManifest.xml is useful for every application. It was in the root, and it explains the Activities, ContentProviders, Services, Intent Receivers, permissions and instrumentation. Here some examples of the eight Activities examples are given. The first LauchActivity is the first activity when the application starts.

```
<activity android:name="com.evebit.HandOnEastWind.LauchActivity">
<intent-filter>
<action android:name="android.intent.action.MAIN" />
<category android:name="android.intent.category.LAUNCHER" />
</intent-filter></activity>
<activity android:name="com.evebit.HandOnEastWind.TabMainActivity" ></activity>
<activity android:name="com.evebit.HandOnEastWind.NavigationActivity" ></activity>
<activity android:name="com.evebit.HandOnEastWind.EastWindNewsActivity"></activity>
<activity android:name="com.evebit.HandOnEastWind.WebActivity"></activity>
<activity android:name="com.evebit.HandOnEastWind.SettingActivity"></activity>
<activity android:name="com.evebit.HandOnEastWind.ShareActivity"></activity>
<activity android:name="com.evebit.HandOnEastWind.DisclaimerActivity"></activity>
<activity android:name="com.evebit.HandOnEastWind.AboutActivity"></activity>
```

Snippet 1. AndroidManifest Activities

Below is the permissions in the AndroidManifest file:

```
<uses-permission an-
droid:name="com.evebit.HandOnEastWind.permission.JPUSH_MESSAGE" />
<uses-permission android:name="android.permission.RECEIVE_USER_PRESENT" />
<uses-permission android:name="android.permission.INTERNET" />
<uses-permission android:name="android.permission.WAKE_LOCK" />
<uses-permission android:name="android.permission.READ_PHONE_STATE" />
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
<uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE" />
<uses-permission android:name="android.permission.VIBRATE" />
<uses-permission android:name="android.permission.ACCESS_NETWORK_STATE" />
<uses-permission android:name="android.permission.ACCESS_WIFI_STATE" />
<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />
<uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION" />
```

Snippet 2. AndroidManifest Permissions

5.2.2 Implementation of Layout File

In the layout files, every activity has its corresponding XML file.

Here a part of the activity_launch.xml is shown here, and the important part of the GUI design code. It has been divided into two parts, the top ImageView is used to put the advertisement image on Launch page. The bottom is logo image and some text.

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:tools="http://schemas.android.com/tools"
android:id="@+id/ad"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:weightSum="4"
android:orientation="vertical"
android:background="#f2f1ef" >
<ImageView
```

```
android:id="@+id/ad_image"
android:layout_width="fill_parent"
android:layout_height="0dp"
android:layout_weight="3"
android:scaleType="fitXY"
android:background="#f2f1ef"/>
<LinearLayout
android:layout_width="fill_parent"
android:layout_height="0dp"
android:layout_weight="1"
android:orientation="horizontal"
android:paddingTop="50dp"
android:paddingLeft="30dp"
></LinearLayout>
</LinearLayout>
```

Snippet 3. Activity_launch

The activity_ eastwindnews.xml file, contains the GUI design of the news page, a part of the code is shown below. HorizontalScrollView was used to put all the channels in one publication. Android.support.v4.view.ViewPager was used to put the news list in this channel.

```
<HorizontalScrollView
android:id="@+id/horizontalScrollView"
android:layout_width="0dp"
android:layout_height="wrap_content"
android:scrollbars="none"
android:layout_weight="5">
<LinearLayout
android:id="@+id/ll_main"
android:orientation="horizontal"
android:layout_width="wrap_content"
android:layout_height="wrap_content">
</LinearLayout>
</HorizontalScrollView>
```

```
<android.support.v4.view.ViewPager
android:id="@+id/tabView1_container"
android:layout_width="fill_parent"
android:layout_height="fill_parent"
/>
```

Snippet 4. Activity_eastwindnews

The activity_ web.xml file, contains the GUI design of the news detail content page, a part of the code is shown below. WebView was used to put the content of the news.

```
<WebView
android:id="@+id/webView_WebView"
android:layout_width="fill_parent"
android:layout_height="fill_parent"
android:layout_alignParentTop="true"
android:layout_above="@+id/webView_bottom_linearLayout"
android:hardwareAccelerated="true" />
```

Snippet 5. Activity_web

The activity_ share.xml file, contains the GUI design of the share page, again a part of the code is given below. The ImagView was used to put the QR code so that other users can download the application.

```
<LinearLayout
android:layout_width="fill_parent"
android:layout_height="fill_parent"
android:orientation="vertical"
android:gravity="center_horizontal"
android:paddingTop="10dp"
android:paddingBottom="30dp"
>
<ImageView
android:layout_width="160dp"
android:layout_height="160dp"
```

```
android:src="@drawable/erwei"/>
<TextView
android:layout_width= "wrap_content"
android:layout_height= "wrap_content"
android:text="@string/share_code"
android:layout_marginTop="30dp"
/>
</LinearLayout>
```

Snippet 6. Activity_share

The activity_ setting.xml file contains the GUI design of the setting page, a part of the code given below. The setting page has many different settings, so the table layout was used to make the layout more reasonable.

```
<TableLayout
android:layout_width="wrap_content"
android:layout_height="fill_parent"
android:stretchColumns="*" >
<TableRow
android:background="#FFFFFF"
android:gravity="center_vertical"
>
<TextView
android:layout_width="1dp"
android:layout_height="wrap_content"
android:textSize="15sp"
/>
</TableRow>
</TableLayout>
```

Snippet 7. Activity_setting

The activity_ about.xml file, contains the GUI design of the about page, here a part of the code is shown below. This is the page simply to use TextView to show the words.

```
<TextView
android:layout_width="fill_parent"
android:layout_height="wrap_content"
android:text="@string/about_about"
/>
```

Snippet 8. Activity_about

The activity_ discliam.xml file, contains the GUI design of the discliam page, a part of the code is shown below. This is the page simply to use TextView to show the words.

```
<TextView
android:layout_width="fill_parent"
android:layout_height="wrap_content"
android:text="@string/disclaimer1"
/>
```

Snippet 9. Activity_discliam

5.3 Implementation of Functions

5.3.1 Main Activities

- **Launch Page**

The launch page, will first loads the advertisement image at the launch page after that it will go the Navigation page. It provides the function of Gesture so that if the user does not open this application for the first time, the user can use finger to slide to the Navigation page. If it is the first time to open the application, it will wait 2 seconds and then go to the next page. Below are some functions that were used in this activity.

```
//check the status of push in cache files, if the size is 0, then it does not have the cache file
//otherwise it has the cache of the setting in the phone
private void checkPushOpen() {
String condition ="nid='" + "push"+ "'";
```

```
  List<DBSize> list = db.findAllByWhere(DBSize.class, condition);
  if (list.size() == 0) {
  JPushInterface.resumePush(getApplicationContext());
  }else {
  if (list.get(0).getSize().toString().equals("flase")) {
  JPushInterface.stopPush(getApplicationContext());
  }else {
  JPushInterface.resumePush(getApplicationContext());
  }
  }
  }

//count 2 seconds then go the Navigation page
private void startCountTime() {
  new Handler().postDelayed(new Runnable() {
  @Override
  public void run() {
  flag = true;
  goTabMain();
  }
  }, SPLASH_DISPLAY_LENGHT);
}

//Push to Navigation page
public void goTabMain(){
  Intent intent = new Intent(LauchActivity.this, TabMainActivity.class);
  LauchActivity.this.startActivity(intent);
}
```

Snippet 10. LaunchActivity

- **Navigation Page**

This page has 5 publication categories: Dongfeng Auto News (9 columns), Dongfeng Motor Corporation (4 columns), travelling by car (8 columns), Auto Tech-

nology (12 columns), Equipment Technology (6 columns). The user can choose any to go the corresponding news page.

```
// Go to the dongfeng news publication, send broadcast
  dongfengLinearLayout.setOnClickListener(new OnClickListener() {
  @Override
  public void onClick(View v) {
  Shared("24");
  brodeNewsColumn(2);
  brodeTabhost(1);
  brodeCache();
  }
  });
  // Go to the traveling page on, send broadcast
  travelLinearLayout.setOnClickListener(new OnClickListener() {
  @Override
  public void onClick(View v) {
  Shared("28");
  brodeNewsColumn(3);
  brodeTabhost(1);
  brodeCache();
  }
  });
  // Go to the technology publication, send broadcast
  techLinearLayout.setOnClickListener(new OnClickListener() {
  public void onClick(View v) {
  Shared("35");
  brodeNewsColumn(4);
  brodeTabhost(1);
  brodeCache();
  }
  });
  // Go to the fix and equipment publication, send broadcast
  fixLinearLayout.setOnClickListener(new OnClickListener() {
  public void onClick(View v) {
```

```
Shared("47");
brodeNewsColumn(5);
brodeTabhost(1);
brodeCache();
}
});
```

Snippet 11. NavigationActivity

- **News Page**

On the news page, the biggest number of channels among 5 publications is 12, so twelve listview adapters were used to put the entire news list. Every time when the user changes the channel, the one he has read will be saved to the cache files.

```
//set data to the listview adapter, it has the channel, source, image, summary
private void setOneListView(int what) {
for (int i = 0; i < dateMap.size(); i++) {
HashMap<String, String> itemMap = new HashMap<String, String>();;
itemMap.put(LauchActivity.LAUCH_DATE_field_channel,dateMap.get(i).get(LauchActivity.
LAUCH_DATE_field_channel));
itemMap.put(LauchActivity.LAUCH_DATE_field_newsfrom,dateMap.get(i).get(LauchActivit
y.LAUCH_DATE_field_newsfrom));
itemMap.put(LauchActivity.LAUCH_DATE_field_thumbnails,(dateMap.get(i).get(LauchActi
vity.LAUCH_DATE_field_thumbnails)));
itemMap.put(LauchActivity.LAUCH_DATE_field_summary,dateMap.get(i).get(LauchActivit
y.LAUCH_DATE_field_summary));
itemMap.put(LauchActivity.LAUCH_DATE_body_1,dateMap.get(i).get(LauchActivity.LAUC
H_DATE_body_1));
itemMap.put(LauchActivity.LAUCH_DATE_body_2,dateMap.get(i).get(LauchActivity.LAUC
H_DATE_body_2));
arrayArray.get(LookPage).add(itemMap);
}
dateMap.clear();
handler.sendEmptyMessage(what);
```

```
}
```

Snippet 12. EastWindNewsActivity

- **News Detail Page**

This page is the detail news page, once the user has clicked one piece of news in the news list, it will send the id of the news to the server and then it will come to the corresponding detail news page.

```
//filter the html tag
public static String fiterHtmlTag(String str, String tag) {
String regxp = "<\\s*" + tag + "\\s+([^>]*)\\s*>";
Pattern pattern = Pattern.compile(regxp);
Matcher matcher = pattern.matcher(str);
StringBuffer sb = new StringBuffer();
boolean result1 = matcher.find();
while (result1) {
matcher.appendReplacement(sb, "");
result1 = matcher.find();
}
matcher.appendTail(sb);
return sb.toString();
}
```

Snippet 13. WebActivity

- **Share Page**

This page is simple and it shows a big QR image for users to download the application.

```
//Show the page of the xml file
protected void onCreate(Bundle savedInstanceState) {
// TODO Auto-generated method stub
```

```
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_share);
}
```

Snippet 14. ShareActivity

- **Setting Page**

This page has Font setting, Image setting, Push setting, Push sound setting, Clear cache, About, Disclaim, Check update. The 8 choices have the corresponding settings. Below the code is given how to clear the cache of the application

```
//check the cache file, if it does not exist then create new one
public static void cleanCacheFile(final String appCachePath,
final String excludedFileName) {
try {
File file = new File(appCachePath.trim());
if (null != file && file.isDirectory()) {
for (File file1 : file.listFiles()) {
if (file1.isDirectory()) {
deleteAllFile(file1.getAbsolutePath());
} else {
if (!excludedFileName.equals(file1.getName())) {
file1.delete();}
}}}
} catch (Exception e) {
}}
```

Snippet 15. SettingActivity

- **About Page**

This page is the introduction of the company. There is also a button to go back to the previous page.

```
// this shows the about information of this application, user can click back button
protected void onCreate(Bundle savedInstanceState) {
```

```
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_about);
imageView = (ImageView)findViewById(R.id.about_back);
imageView.setOnClickListener(new OnClickListener() {
@Override
public void onClick(View v) {
onBackPressed();}
});}
```

Snippet 16. AboutActivity

- **Disclaim Page**

This page is disclaiming this application. There is also a button to go back to the previous page.

```
// this shows the disclaim information of this application, user can click back button
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_disclaimer);
imageView = (ImageView)findViewById(R.id.disclaimer_back);
imageView.setOnClickListener(new OnClickListener() {
@Override
public void onClick(View v) {
onBackPressed();}
});}
```

Snippet 17. Disclaim Activity

5.3.2 Adapter Design

- **DialogAdAdapter**

This adapter was used to make the function of the business partner list in the Navigation page. Every business partner has its logo image and its name.

```
// Set the data to the list view and return back to the view
public View getView(int position, View convertView, ViewGroup parent) {
```

```
ListItemView  listItemView = null;
listItemView.ad_name.setText((String)
list.get(position).get(LauchActivity.LAUCH_DATE_node_title));
imageLoader.DisplayImage((String)
list.get(position).get(LauchActivity.LAUCH_DATE_field_thumbnails),
listItemView.ad_imageView);
return convertView;
}
```

Snippet 18. DialogAdAdapter

- **ListAdapter**

This adapter was designed for the news list shows in the News page. Every news showns in the news list, the left is the small image, and the right was made up of title, summary, source, date. The first news in the news list will be a big image.

```
// Set the news list, if the position is 0, the shows as big image, otherwise shows the sample
// style of news
public View getView(int position, View convertView, ViewGroup parent) {
ListItemView  listItemView = null;
if (position == 0) {
listItemView.big_title.setText((String)
list.get(position).get(LauchActivity.LAUCH_DATE_node_title));
imageLoader.DisplayImage((String)
list.get(position).get(LauchActivity.LAUCH_DATE_field_thumbnails),
listItemView.bigImageView);
}  else {
listItemView.title.setText((String)
list.get(position).get(LauchActivity.LAUCH_DATE_node_title));
listItemView.content.setText((String)
list.get(position).get(LauchActivity.LAUCH_DATE_field_summary));
listItemView.time.setText((String)
list.get(position).get(LauchActivity.LAUCH_DATE_node_created));
listItemView.newsfrom.setText((String)
list.get(position).get(LauchActivity.LAUCH_DATE_field_newsfrom));
```

```
imageLoader.DisplayImage((String)
list.get(position).get(LauchActivity.LAUCH_DATE_field_thumbnails),
}
return convertView;
}
```

Snippet 19. ListAdapter

- **ViewPageAdapter**

This adapter was designed for the News page. Because every publication has many channels and the channel can be changed by the Gesture the ViewPager was used for this function.

```
//Use viewpager to set the news
private ArrayList<View> pageViews;
public ViewPageAdapter(ArrayList<View>pageViews){
this.pageViews = pageViews;
}
public int getCount() {
return pageViews.size();
}
public int getItemPosition(Object object) {
return super.getItemPosition(object);
}
public Object instantiateItem(ViewGroup container, int position) {
 ((ViewPager) container).addView(pageViews.get(position));
  return pageViews.get(position);
}
```

Snippet 20. ViewPageAdapter

5.3.3 Local Cache

The package of com.evebit.DB, has 4 classes. DBTime is given as an example, the other three are DBAd, DBSize, DBUser. DBAd was used to put the adver-

tisement cache, DBSize was used to put the font size setting cache, DBUser was used to put the user info cache, DBTime was used to put the date cache. It will be saved on the mobile.

```
// Set the class of time in cache file of time
public class DBTime {
private int id;
private String nid;
private String time;
public int getId() {return id;}
public void setId(int id) {this.id = id;}
public String getNid() {return nid;}
public void setNid(String nid) {this.nid = nid;}
public String getTime() {return time;}
public void setTime(String time) {this.time = time;}}
```

Snippet 21. DBTime

5.3.4 ListView Design

This was used to put the news list in the News page. This listview is a new one that contains the functions of refresh and loads more.

```
//Set the style of the list which provide the refresh and load more
public class XListView extends ListView implements OnScrollListener {
public XListView(Context context) {
super(context);
initWithContext(context);
}
// make sure XListViewFooter is the last footer view, and only add once.
public void setAdapter(ListAdapter adapter)
if (mIsFooterReady == false) {
mIsFooterReady = true;
addFooterView(mFooterView);
}
```

```
super.setAdapter(adapter);
}
public void setPullRefreshEnable(boolean enable) {
mEnablePullRefresh = enable;
if (!mEnablePullRefresh) { // disable, hide the content
mHeaderViewContent.setVisibility(View.INVISIBLE);
} else {
mFooterViewContent.setVisibility(View.VISIBLE);
}
}
```

Snippet 22. XListView

5.3.5 Json Tool

- **JsonUtil**

This is the functional class how we deal with the Json data from the server and the mobile. Here a Gson jar was used to provide the function.

```
//This shows the Util file of Json
public class JsonUtil {
public static List DataToList(String data) {
if(data != null) {
Gson gson = new Gson();
List<Map> map = (List<Map>)gson.fromJson(data, new TypeToken <List<Map>>()
{}.getType());
return map;}
return null;}
}
```

Snippet 23. JsonUtil

- **HttpUtil example of doGet**

This is another functional class that was used to communicate between the mobile and server, it can use the doGet or doPost to request the data. Below doGet is given as an example.

```
//This is the function when the mobile get data from the server side
public static HttpEntity httpGetHttpEntity(Context context, String url) throws Y_Exception {
try {
URL urls = new URL(url);
URI uri = new URI(urls.getProtocol(), urls.getHost(), urls.getPath(), urls.getQuery(), null);
HttpGet httpget = new HttpGet(uri);
HttpClient httpclient = new DefaultHttpClient();
HttpResponse httpResponse;
httpclient.getParams().setParameter(CoreConnectionPNames.CONNECTION_TIMEOUT,
30000);
httpclient.getParams().setParameter(CoreConnectionPNames.SO_TIMEOUT, 30000);
httpResponse = httpclient.execute(httpget);
int statusCode = httpResponse.getStatusLine().getStatusCode();
if (httpResponse.getStatusLine().getStatusCode() == HttpStatus.SC_OK) {
return httpResponse.getEntity();
} else {throw Y_Exception.http(statusCode);}} catch (ClientProtocolException e) {
e.printStackTrace();return null;
} catch (IOException e) {
e.printStackTrace();
throw Y_Exception.network(e);
} catch (IllegalStateException e) {
e.printStackTrace();
throw Y_Exception.network(e);
} catch (URISyntaxException e) {
e.printStackTrace();
throw Y_Exception.network(e);
}
```

Snippet 24. HttpUtil

6 TESTING

6.1 News Management by Drupal Website

To go to the home of the website, the username and password has to be given (see Figure 30).

Figure 30. Login

6.1.1 News Management

As marked in Figure 31, it shows the All News.

1) Click this to edit the news
2) Click this to delete the news
3) Click this to clone the news
4) This part is used to filter the news
5) This part is used to patch management, it provides function of delete, publish, not publish.

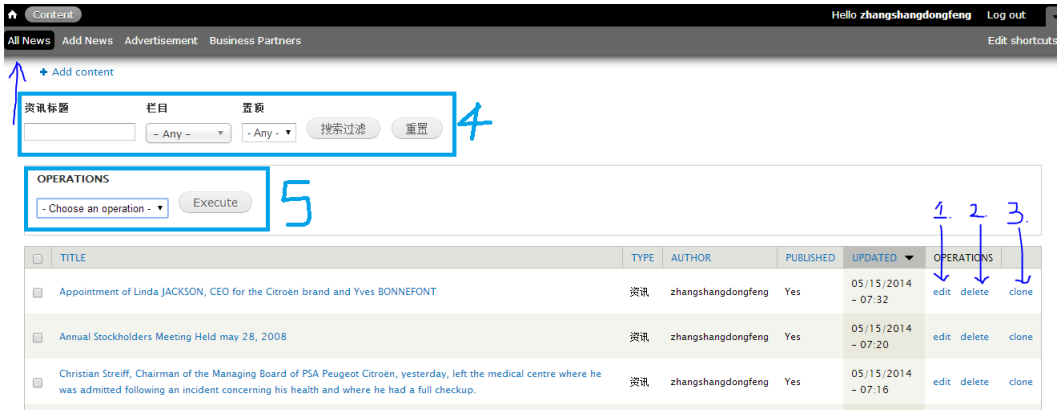

Figure 31. All News

This page comes up when Add News is clicked.

1) This is the title of the news
2) This is the channel of the news
3) This is the source of the news
4) This is the summary of the news
5) This is the content of the news
6) This is the picture of the news

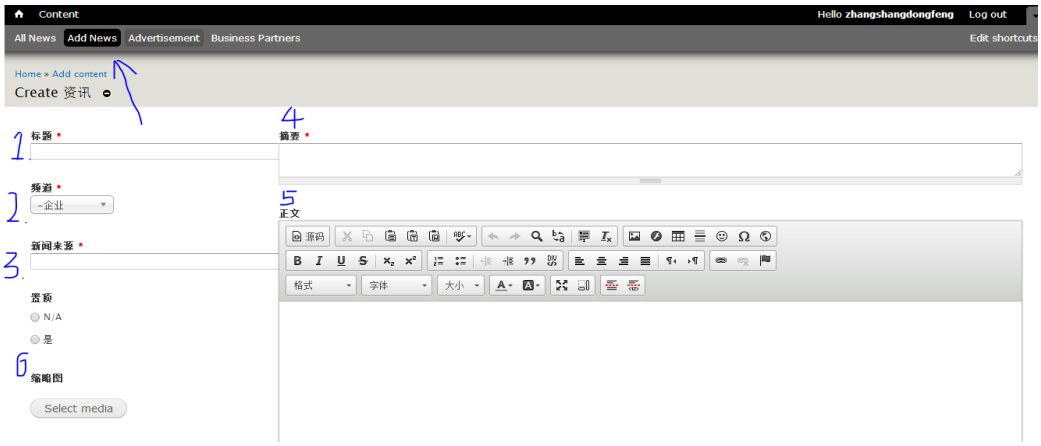

Figure 32. Add News

6.1.2 Advertisement Management

This page comes up when the Advertisement is clicked and it will show the advertisement list of the five publications. It provides the function to edit it.

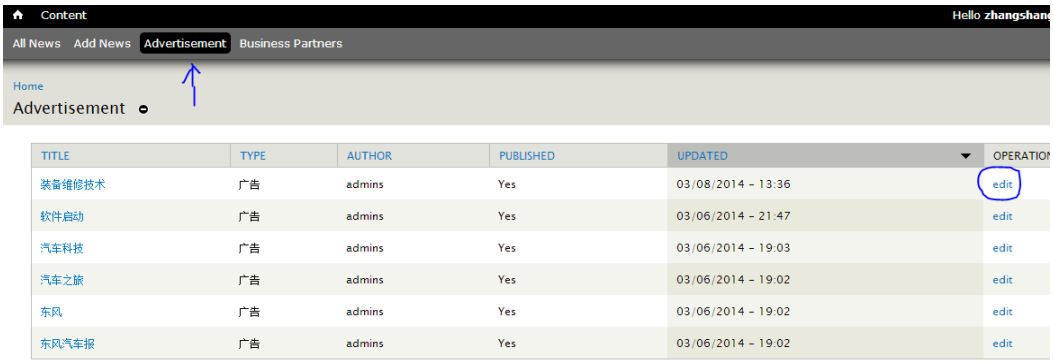

Figure 33. View Advertisement

After the user clicks Edit, it will come to the edit page: 1) this is the title of the advertisement; 2) this is the picture of the advertisement. After the information then Save is clicked to save the data.

Figure 34 Edit Advertisement

6.1.3 Business Partner Management

This is the business partner management. It provides the functions of Edit and Delete.

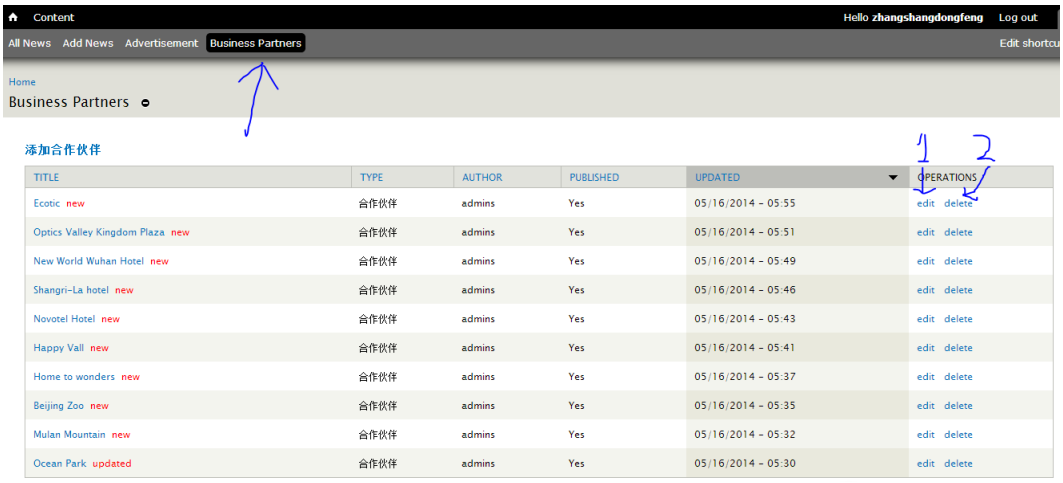

Figure 35. View Business Partner

When the user chooses to edit the Business partner infomation, he should fill in the following parts: 1) title; 2) picture of this Business partner. After that he can save the infomation.

Figure 36. Edit Business Partner

6.2 News Reading by Mobile

6.2.1 Launch Page

When the application starts, it will show the launch page. The top is the advertisement picture of this application. The user can use his figure to slide to the next page.

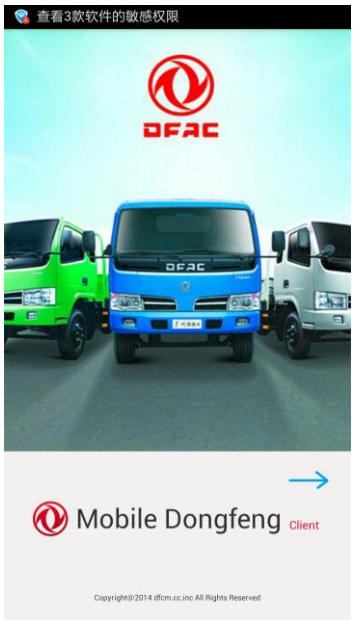

Figure 37. Launch Page

6.2.2 Navigation Page

When coming to the Navigation page, the top shows the name of the company and the business partner button. When the user clicks it, it will download the business partner list from the server side. The list also provides the function of refresh and load. In the middle are the five publications and user can click any of them to choose to come to the corresponding publication. At the bottom are the four tab choices: Navigation, News, Share, and Setting.

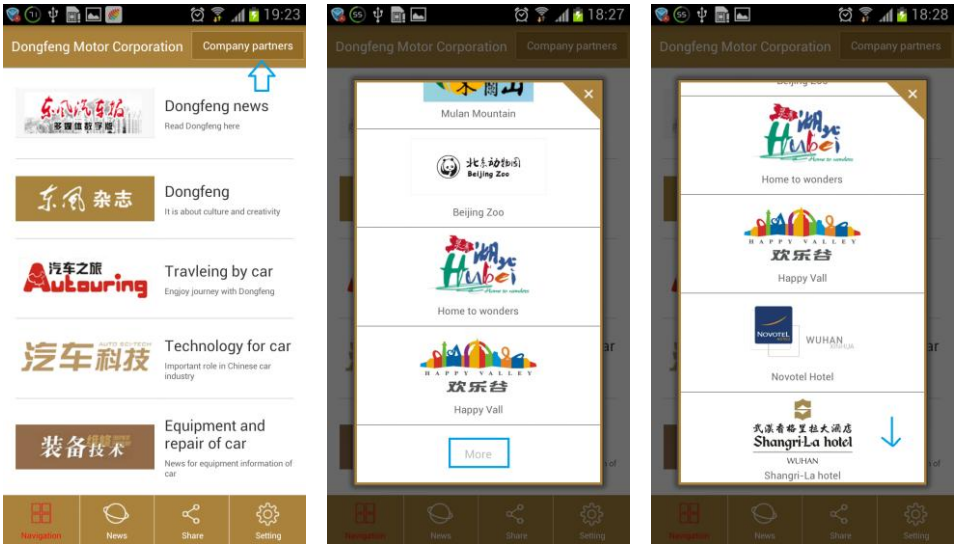

Figure 38. Navigation Page

6.2.3 News Page

This is the news page and it shows the news list. Firstly, the top is the channels choices. It can be changed by sliding and clicking and choosing from buttons. The news list also provides functions of refreshing and loading more. It can be seen in Figure 39, when you load more, it will load more news.

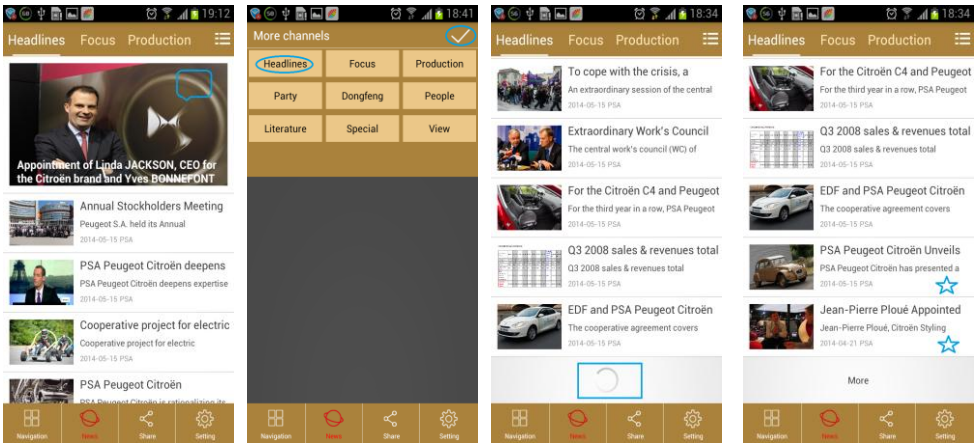

Figure 39. News List

6.2.4 Details of the News Page

This is the details of news content page. At the bottom we can change the font size by clicking the buttons of small, middle, big. Also there is a button for the user to share the article to the SNS in China.

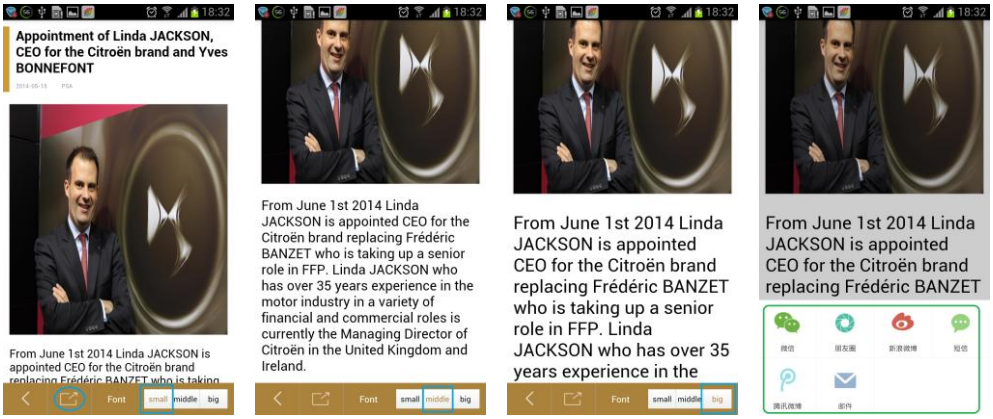

Figure 40. News Detail

6.2.5 Share Page

This page shows a big QR code image for other mobile users to download and install the application.

Figure 41. Share QR code

6.2.6 Setting Page

This page is the setting page for the news:

1) Font size: small, middle, big
2) Image setting
3) Push setting
4) Push sound setting
5) Clear cache
6) About page
7) Disclaim page
8) Check update

The picture is shown after the user clicks Clear cache. It will give a hint as a dialog to tell the user that the cache files of the news has been cleared.

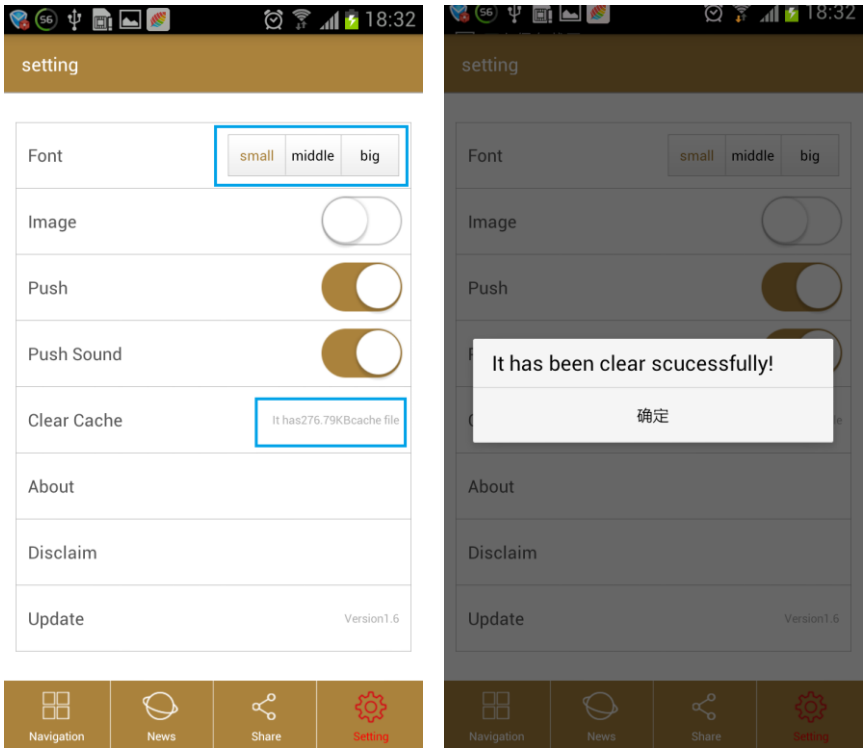

Figure 42. Clear Cache

6.3 Possible Improvements

For the news detail page, there is a button to share the application. Now it only contains the SNS which is popular in China. FaceBook and Twitter will be added in the English version.

The check update function in the settings page now is connected to the Chinese version because the application has been stored in the server in the company. Also the QR code in share page will also get the English version.

The push account was controlled by Dongfeng, so this function in the English version was not tested.

The Drupal website was generated by the Open Source CMS, in the test some of the words were still not totally English, this part has been solved.

7 SUMMARY

This application was designed for the purpose of news reading via an Android mobile. This idea was motivated by Dongfeng Motor Corporation to broadcast the company latest news to Donfeng workers and the public.

The application had several goals to achieve. The first was the advertisement in the application. It has two kinds of advertisement: one is at the Launch page and it shows the big advertisement image to the user; the other is when user chooses from five publications and it will show advertisement picture on the news page for 5 seconds. Advertisement is useful for the users and also can make profits for Dongfeng Motor Corporation.

Secondly, for the readers can get the latest news from the company. It has five publications and every publication has several channels. So users can get a large amount of information from the cars' industry especially from Dongfeng Motor Corporation.

Thirdly, it has combined the news reading with social SNS. It means that when the users reads the news about car, they can share this news to the social network. Then it will draw interest to other friends who show interest in this. So it is a good way to broadcast to other people.

8 CONCLUSIONS

This application has been done as a Chinese version and it has been updated to the App store and can be downloaded through the internet. The objectives which has been mentioned in summary has been fulfilled.

The most challenging part was the division of the news. It has five publications and the total number of channels is 48. In each publication the viewed news list will be stored to cache file. The logic dealing with such a complex division is not easy thing. At first we thought about using 48 adapters to avoid conflicts, but later on we discussed that this solution will give too much burden for the mobile. Finally we solved the problem to set twelve adapters to store the data because the maximum number of the channels is 12. Each time when the user changes the publication the adapter will be cleared and renewed.

Now the Android application has been done, the future of the project will build the same one as IOS application. Because now the most general mobile phones are Android and iPhone, so the IOS version will be also be developed. After that, Dongfeng Motor Corporation also considers to build a news reading website to provide more functions, such as chat or some other useful communication. The website will also be able to communicate with the mobile application.

There are some ideas to improve the application. It is possible for users to sign in this application and record the reading memories. Besides, it would be better to provide the function for users to make comments on the news. It is also nice if the uses can make questions about the cars information or Dongfeng Motor Corporation, then the news manager can response to users' questions.

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