

## News App Implementation Based on Cordova Cross-Platform

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**Abstract:** Cordova is an open-source mobile application development framework which is used to build the mobile applications using web technologies like HTML5, CSS3 and JavaScript. Cordova is also called as PhoneGap in past few years. Cordova is a software program which is cross platform. Cross platform enables multiple platform with one code basis. It means that we can run this code for multiple platforms without changing the program code. In this paper we implement News Application by using Cordova development framework, to create local Newspaper agency. Peoples of a small community can timely updates all the events going on around them by using this application.

The challenges is to prepare such solution that can be run in different platforms with single SDK without changing the performance and without changing the program code (Code Once and Run Everywhere).

**Keywords:** Cross-platforms, Cordova , Native applications.

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### I. Introduction

There are number of news applications available in the market, but they did not allow users to upload their news. The applications available in the market include the news which is uploaded by the Reporter or by the journalists of that news agency, but this paper implements a simple news application that allows user to upload their news. This application is based on Cordova framework using HTML, CSS and JavaScript. As there are multiple mobile operating systems available in market , application developers need to develop that application for multiple operating systems, because of that he has to write code of that application multiple times and he has to make changes in that code for each operating system. Developer needs to use different plugins; this is more time taking and difficult. To make computing easy we implement this application using Cordova framework. Cordova conducts an encapsulation for each mobile platform API, shielding the details of each of the mobile platform, and designed a public API layer, as long as we call the unified API for development [1]

### II. Mechanism Of Application In Cordova Framework

Cordova has adopted hybrid application development technology [2], Hybrid Application uses Web and programming language development at the same time. Hybrid apps have many benefits over pure native apps, specifically in terms of platform support, speed of development, and access to 3rd party code.

The operating mechanism of application of app in Cordova framework is shown in Fig 1. Mechanism consist of four sections viz. Web App, HTML rendering Engine, Cordova Plugins and Mobile OS.

Refer Figure 1: Operating of application with Cordova.

#### i. Web App

Web app is a client-server software application in which the client runs in a web browser. A web application or web app is any program that runs in a web browser. It is created in a browser-supported programming language (such as the combination of JavaScript, HTML and CSS) and relies on a web browser to render the application. Apache Cordova (PhoneGap) is best option to Port web application into different platforms such as Android, Windows, iOS, etc.

#### ii. HTML rendering (WebView)<sup>[6]</sup>

Basically, WebView, is the core part of Cordova, the WebView is actually a built-in browser, but it has no UI part, so we can't see the navigation bar, address bar, border an other UI elements. The Cordova-enabled WebView may provide the application with its entire user interface.

Applications in Cordova are commonly implemented as a browser-based web-view within the native mobile platform.

### iii. Cordova Plugins<sup>[5]</sup>

Plugins are an integral part of the Cordova ecosystem. They provide an interface for Cordova and native components to communicate with each other and bindings to standard device APIs. This enables you to invoke native code from JavaScript. Apache Cordova project maintains a set of plugins called the Core Plugins. These core plugins provide your application to access device capabilities such as camera, battery, sensors, files, all media ,etc.

Anyone can also develop his own plugins with the help of Custom plugins option in ionic,these are known as Custom plugins.

#### I. Adding Pre-Existed Plugins

- i. Open config.xml file of your project in Visual Studio.
- ii. Click on the Plugins.
- iii. Click on the 'Core' tab present in the Plugins.
- iv. Add the plugins you want to install.
- v. You can also remove that plugins by clicking on the 'Remove' button after installation.
- vi. Refer Figure 2: Adding plugins.

#### II. Custom plugins

If anyone want to develop the plugins in ionic ,you have to do the following actions-

- [1] Open config.xml file of your project in Visual Studio.
- [2] Click on the Plugins.
- [3] Click on the 'Custom' tab present in the Plugins.
- [4] Give the path of created Plugin.
- [5] Refer Figure 3: Adding custom plugins.

### iv. Mobile OS<sup>[3]</sup>

There are number of operating systems available in the market like most popular Android, iOS,Windows, Blackberry, etc.

Operating system provides necessary services, graphics for the application. Application runs on OS with the help of OS APIs.

## III. Development Of News Application And Environment Setup

### v. Cordova CLI (Cordova command line tool)<sup>[4]</sup>

Basically, Cordova command-line tool is distributed as npm package. This can be done with downloading and installing Nodes. Nodejs will give npm on commandline or (node's command line). After that to install Cordova module through npm utility of Nodejs.it can be done through following commands:

for Linux and OS X users: `$ sudo npm install -g cordova`

and For Windows users: `C:\>npm install -g cordova`

### vi. IONIC

Ionic is an HTML5 mobile app development framework targeted at building hybrid mobile apps. Hybrid apps are essentially small websites running in a browser shell in an app that have access to the native platform layer.

Ionic is the front-end UI framework. Since Ionic is an HTML5 framework, it needs a native wrapper like Cordova or PhoneGap in order to run as a native app. Command to install ionic is as follow:

```
"npm install -g ionic"
```

or ionic can be install at the time of installing Cordova:

```
"npm install -g cordova ionic"
```

Ionic app can be start with command:

```
ionic start NewApp (NewApp is app name)
```

### vii. SDK<sup>[7]</sup>

At the time of building development Environment,corresponding platform SDK must be installed. Ex. For Android app Development install Android SDK, For Windows install windows phone SDK for iOS install iOS SDK etc..

## IV. Software Architecture Of News App

The working of this application is shown in figure 4. It consists of 3 main blocks. First block is User Block which consist of users with different operating systems such as windows, android, iOS, etc. Second block is Controller Block which consist of one Admin and multiple sub-admins and the last block consist of database. These all three blocks are connected through internet.

**viii. User Block**

User block contains users; these users are of two categories viz. Normal user logged-in users. difference between these categories is that normal user can read news but they can't upload their news in application and logged in users can upload their news in application as well as they can save news on their mobile. News can be upload with images, videos and text.

Refer Figure 4: Working of Application

**ix. Controller Block**

In controller block, there is one admin and multiple sub-admins. User upload their news according to news categories such as Political, Sports, Events, General etc. For each category, there is one sub-admin. News uploaded by user will appear towards the dedicated sub-admins pending news page, if sub-admin approved that news then only news will be posted on application in that news category..Admin block contain one admin. Admin has rights to add or remove sub-admin. Admin can make any user as a sub-admin and sub-admin as a Normal user. News which neither accepted nor rejected by all sub-admins will appear on Admin's pending news page.

**x. Database Block**

This block contains all data related to the news and users of that applications like, posted news, pending news, user's data, sub-admins data etc. For database, we are using MySQL, it supports for android, iOS etc.

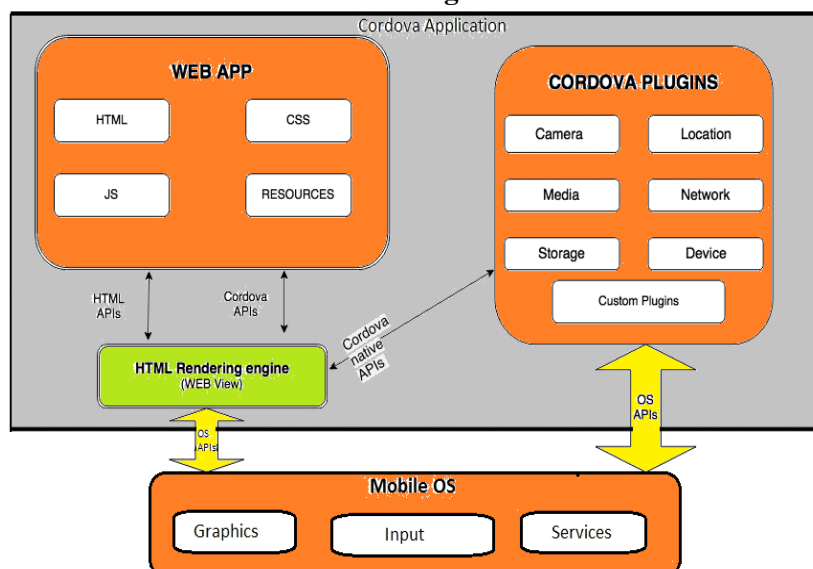
**xi. The Architecture<sup>[8]</sup>**

The architecture of Application with Cordova is shown in figure 5.

The architecture consists of two main blocks viz. Mobile phone and Server.

- 1) **Server**- Server contains Database , Network connectivity ,services etc. server receives request from phone and server gives response . All posted news , pending news , users data , admin, sub-admins data will be stored on server . Admin will have Full access to server .For database we are using MYSQL..
- 2) **Mobile Phone** - This block contains three main layers .That layers are Application layer ,Middle layer block and database layer.
  1. **Application layer** - Application is Designed with HTML CSS and JS. We use ionic for design Front end of application.JS is used in designing of backend of application. This layer is nothing but the application.
  2. **Middle Layer** - In this there are two blocks viz. Cordova and OS Cordova block consists of plugins, custom plugins ,etc.To control the hardware application, need plugins. If plugins are not available, one can make his own custom plugins. This application gives facility to user to store or save news on their mobile phone. For this we need to access their mobile phones database. Application uses MYSQL for database operations.OS block consist of network communication and graphics rendering.Graphics rendering will be used for video processing and for application view etc.OS provides network communication with which application can access internet. With OS services and plugins application get access to database and other hardware.
3. **Database Block** - To save news on mobile phone database of phone is needed . Several storage APIs are available for Cordova applications.

**V. Figures**



**Figure 1:** Operating of application with Cordova.

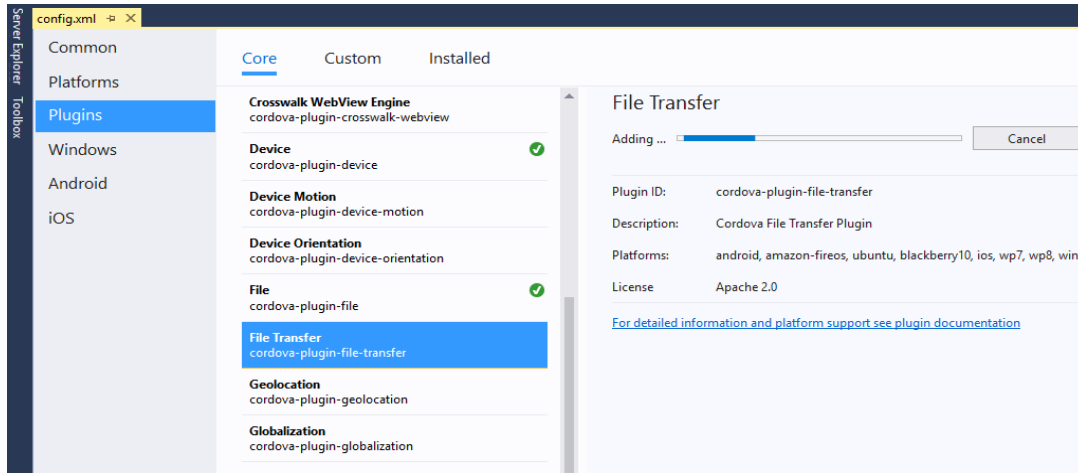


Figure 2: Adding plug-ins.

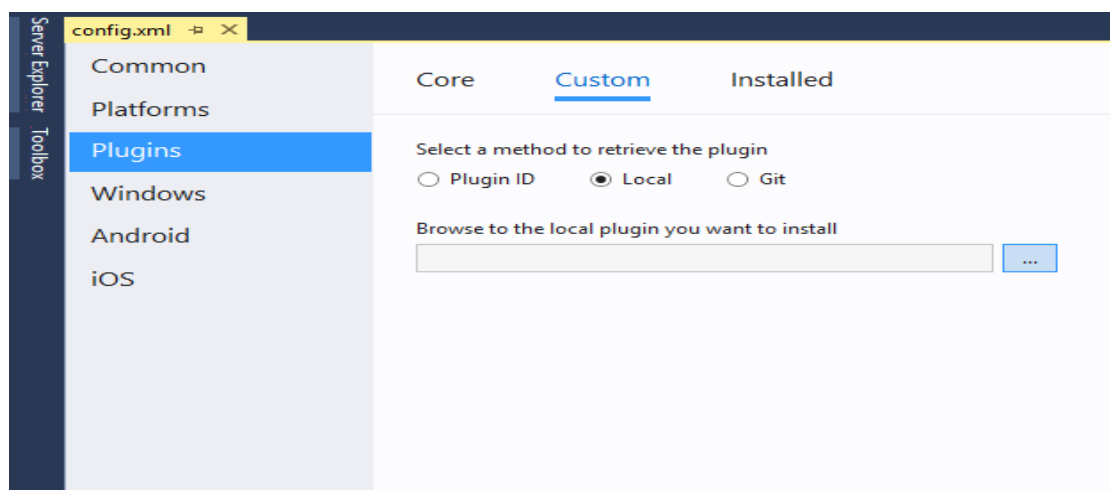


Figure 3: Adding custom plug-ins.

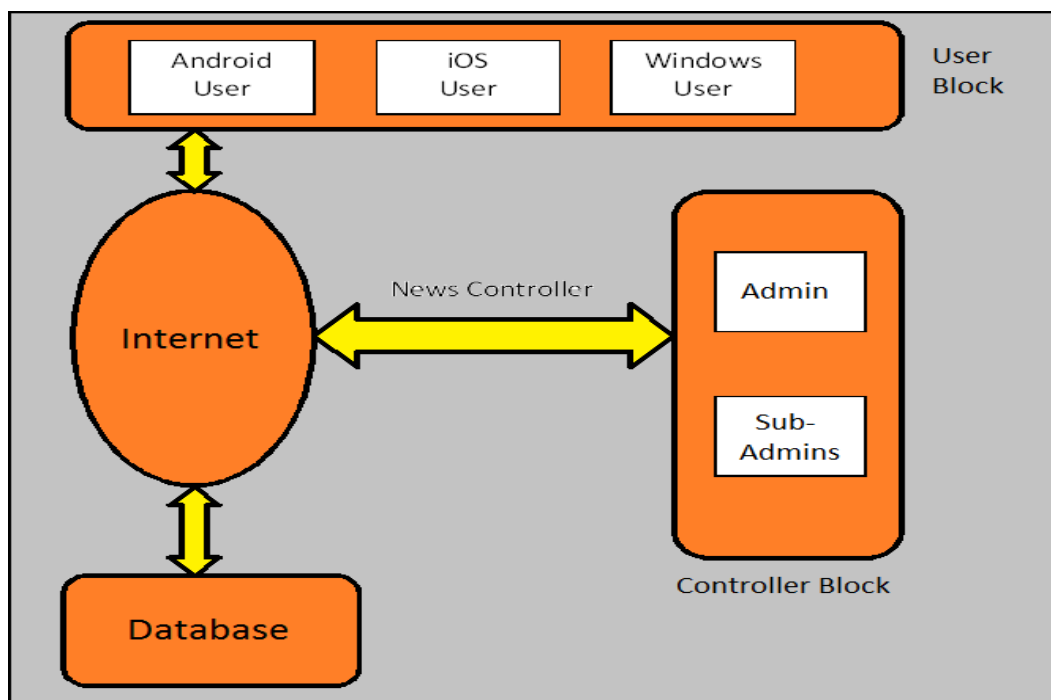


Figure 4: Working of Application

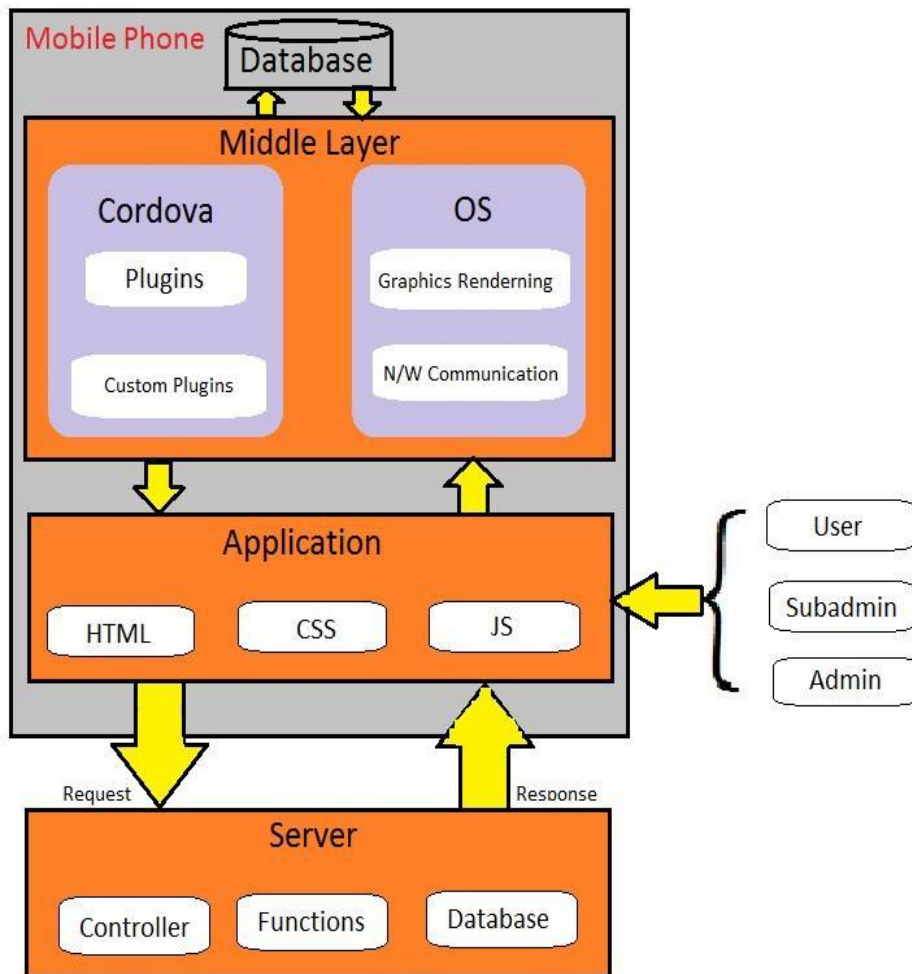


Figure 5: Architecture of application with Cordova.

## VI. Conclusion

This paper states that, the development of News Application based on Cordova Cross-platform. This is the application that implements the policy of “for the people, by the people”. It enables the users to post their news on the application in the form of Text , Picture , Audio , Video , etc instead of journalists. Other users can view this news to stay updated about the events & incidents going around them. According the above sections presented in paper , we can say that cross-platform is one of the best way to implement mobile applications. It reduces the cost and time of the developers via efficient way.

## References

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