

Sencha – the efficient cross platform development for mobile

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Abstract- Mobile has become the most **necessary** thing for the world. People are more **into** the applications available on mobiles rather than **desktops** and other devices. Regarding the matter of creating applications, the applications which are running on one platform is not **necessarily** to be run on another platform. The ability for an **application** to run on a **different platform** is referred to as **cross platform**. The **cross platform** can be defined as the ability of software or a hardware **component** to run identically on different platforms by making little modifications or without making any modification. The architecture of the software and the hardware capabilities of the devices running on the two different platforms pose challenges to cross-platform application development. The **HTML5** is the technology that contributes to the **cross platform** capability. Sencha is name of the company who develops different tools which helps to create **cross platform** applications using single codebase. Sencha uses the power of emerging technologies like **HTML5**, **javascript**, **css**.

KEYWORDS - Mobile, Platform

I. INTRODUCTION

Sencha developers provide different platform components for creating cross platform applications using single codebase. Using a single codebase for cross-platform development simplifies development timelines, and allows developers to focus their efforts. It also provides the developers with the freedom to choose a preferred method. Sencha offers a number of mobile app development tools used for the creation of cross-platform applications for Android, BlackBerry, iOS and Windows devices etc. **HTML5** is one technology that makes cross-platform application development easy while providing portability to the different platforms.

II. SENCHA

Most of the people want their applications to run on both android and ios, since the applications available in android will not work with ios and vice versa. So sencha provides different platform components to develop cross-platform applications. The diferent platform components provided my sencha are,

Sencha Ext JS

ExtJS stand for Extended JavaScript, is a JavaScript framework. It provide rich UI for building web applications with cross browser

functionality. It is basically a desktop application development platform with modern UI. Among mobile app development tools, Sencha Ext JS is a model-view-controller(MVC) that lets the developers to build apps using the JavaScript Web language and makes it very faster. Sencha Ext JS is best suited for organizations with multi-person development teams[1].

Features:

1. Customizable User Interface widgets with collection of Grids, pivot grids, forms, charts, trees etc.
2. Code compatibility of new versions with the older one, that is they are backward compatible.
3. A flexible layout manager provided by ExtJS helps to organize and manage the display of data and content across multiple browsers, devices, and screen sizes.
4. Advance data package decouples the UI widgets from the data layer. The data package allows client-side collection of data using highly functional models that enable additional features such as sorting and filtering.[2]
5. It is protocol agnostic, and can access data from any back-end source.
6. Customizable Themes Ext JS widgets are available that are consistent across platforms.

Sencha touch

Sencha Touch is an **HTML5** framework mainly for developing mobile applications. It allows to develop mobile applications that provides same look and feel as a native mobile applications . Sencha Touch supports Android, iOS, Windows Phone, Blackberry devices etc. Sencha Touch is a popular framework of Sencha which is for creating user interface for mobile application. It helps developer to create an mobile apps using simple **HTML**, **CSS**, **JS** which supports many mobile devices. It is based on **MVC** architecture. The latest version of Sencha Touch is 2.4[3].

Sencha Themer

Sencha Themer allows us to create, modify, and share themes that can then be added to Ext JS applications. All these are done through GUI without writing a single code that makes the job easier. Sencha Themer provides both modern

toolkits as well as classic toolkits for creating themes.

Sencha Architect

Sencha Architect is the ultimate visual app builder for developing cross-platform HTML5 applications on desktop and mobile devices. Architect empowers to build HTML5 applications using drag-and-drop features, so need to spend less time on manual coding and code is optimized for high performance. Automatic code generation accelerates the development of both desktop and mobile applications. By simply altering properties and configurations of any Ext JS UI component in a WYSIWYG(what you see is what you get) window eliminates the human error that often occurs with manual coding. It also allows us to create database driven applications. Sencha architect is the latest component developed by sencha team. The latest version is 4.2.1[5].

Sencha test

Sencha Test is a critical piece of the Sencha Platform that helps developers and test engineers achieve new levels of quality in their applications . Sencha Test brings together the best Open Source testing libraries like Jasmine, WebDriver by adding the missing pieces and integrating everything in one comprehensive solution.

Sencha Test consists of two applications: Sencha Studio (for the GUI) and stc or "Sencha Test Command" (for the command line). Both applications provide the ability to execute tests, however, Sencha Studio provides a graphical, interactive test runner while stc provides a scriptable test runner suitable for unattended use in Continuous Integration (CI) systems such as Jenkins or TeamCity.

Sencha CMD

Sencha Cmd is a cross platform command line tool that provides many automated tasks around the full lifecycle of the applications from generating a new project to deploying an application to production. Cmd contains utilities to make it even easier to use Cmd with your Ext JS applications.[4]

IV. MVC (Model- View-controller)

The **Model-View-Controller (MVC)** is an architectural pattern that separates an application into three main logical components: the **model**, the **view**, and the **controller**. Each of these components are built to handle specific development aspects of an application. MVC is one of the most frequently used industry-standard web development framework to create more sophisticated, scalable and extensible projects.

4.1 Model: The Model component corresponds to all the data related logic that the user works with. This can represent either the data that is being

transferred between the View and Controller components or any other business logic related data.

4.2 View: The View component is used for all the UI logic of the application. This represents the users logic view. For example, the Customer view would include all the UI components such as text boxes, dropdowns, etc that the final user interacts with.

4.3 Controller: Controllers act as an interface between Model and View components to process all the business logic and incoming requests, manipulate data using the Model component and interact with the Views to render the final output

III. SENCHA TOUCH

Sencha touch is one of the tools provided by Sencha for creating cross platform applications. It uses the MVC so the entire processing of Sencha touch becomes faster and elegant. It gives us a feeling of working with native apps.

History:

After releasing sencha's other product ExtJs which was for web application it was a need to develop a framework which works on mobile devices that provides us native application feel. First version of sencha touch was 0.9 beta version which supported Android and IOS devices. Later this the first main release of sencha touch version 1.0 was in november 2010 which was the first stable version and supported Blackberry device also. The latest release of sencha touch is version 2.4 released in June 2015. Which supports many more devices such as windows, Tizen along with Android, IOS, BlackBerry OS 10, Google Chrome for Android and mobile Safari etc.

Features:

1. It is highly customizable and more than 50 build in UI widgets with collection of rich UI such as lists, carousels, forms, menus, and toolbars, which are built specifically for mobile platforms that provides a look of native applications.
2. They are backward compatible.
3. Provides flexible layout manager that manages the data and content across multiple mobile devices with different OS.
4. The framework includes a robust data package that can consume data from any backend data source.
5. It provides adaptive Layouts, animations, and smooth scrolling for a better mobile web application experience for user.
6. Native-looking themes for every platform enable us to make web and hybrid applications that match the look and feel of our target platforms.

IV. Project structure With Sencha Touch App

Sencha Touch app folder will reside in JavaScript folder of your project.

The Sencha Touch project App structure contains **controller, view, model, store, utility files with app.js.**

app.js: the main file from where the flow of program will start, which should be included in main HTML file using <script> tag. App calls the controller of application for rest of the functionality.

Controller.js: It is the controller file of Sencha Touch MVC architecture. This contains all the control of application, the events listeners the most functionality of code. It does following tasks: performs routing, intermediate between view and model, execute events.

View.js: It contains the interface part of the application which shows up to user. Sencha Touch uses various UI rich views which can be extended and customized here according to the requirement.

Store.js: It contains the data locally cached which is to be rendered on view with the help of model objects. Store fetches the data using proxies which has the path defined for services to fetch the backend data.

Model.js: It contains the objects which binds the store data to view. It is representation of the real world object which basically deals with database.

Utils.js: It is not included in MVC architecture but a best practice to use to make the code clean, less complex more readable. We can write methods in this file and call them in controller or view renderer where ever required. It is helpful for code re-usability purpose as well.

VI. Image capturing application

The following is a sample application developed using Sencha.

```
Ext.define('photoApp.view.MyContainer', {
    extend: 'Ext.Container',
    requires: [
        'Ext.Toolbar',
        'Ext.Button'
    ],
    config: {
        layout: 'fit',
        items: [
            {
                xtype: 'toolbar',
                docked: 'top',
```

```
        title: 'Photo',
        items: [
            {
                xtype: 'button',
                itemId: 'mybutton',
                text: 'Capture'
            }
        ]
    },
    listeners: [
        {
            fn: 'onMybuttonTap',
            event: 'tap',
            delegate: '#mybutton'
        }
    ]
},
onMybuttonTap: function(button, e, eOpts) {
    Ext.device.Camera.capture({
        source: 'camera',
        destination: 'data',
        success: function(imagedata) {
            var img = Ext.getCmp('theimage');
            img.setSrc('data:image/jpeg;base64,' + imagedata);
        },
        failure: function() {
            Ext.Msg.alert('Error', 'There was an error when acquiring the picture.');
```

III.CONCLUSION

Sencha allows us to create amazing cross- browser application experiences with precision and performance. Sencha touch is an MVC JavaScript framework specially designed to create mobile web applications for touch screen devices. Sencha Touch allows developers to create applications for mobile platforms with latest standards, like the WebKit browser engine.

REFERENCES

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- [3] Hiren J. Dave, *Instant Sencha Touch*, ISBN 9781782165996.
- [4] Lee Boonstra, *Hands-On Sencha Touch 2: A Real-World App Approach* 1st Edition, ISBN 978-1-44936-652-0.
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