

Developing Cross Platform Mobile Applications

Chariot Solutions Mobile Application Development Series
February 24, 2011

Challenges

- Platforms



- Languages



- Tools



Options

- Mobile Web Applications
- Native Applications
- Tools/Frameworks for Cross Platform Development

What to do?

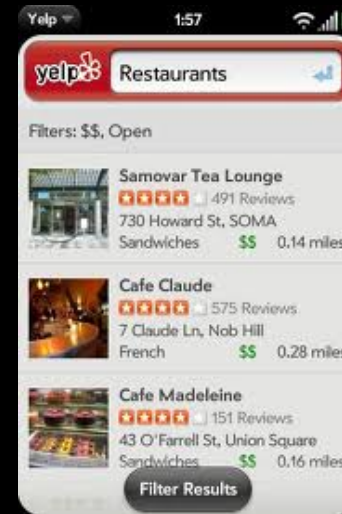
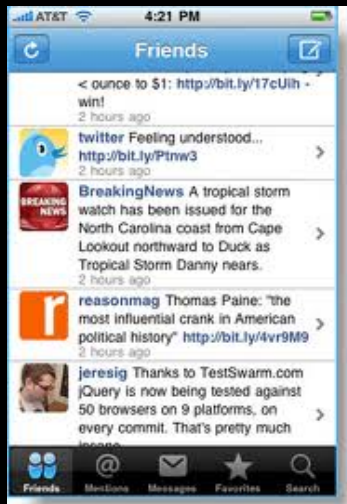
It Depends 😊

Today's Plan

- Not native versus web
- Not diving into native development
- Is about Cross Platform Dev Tools

Common Pattern

- Pull data from a server
- Display a list
- Drill into details



Frameworks

- Sencha Touch
- PhoneGap
- Appcelerator Titanium Mobile

Sencha Touch

- JavaScript framework
- Renders HTML5, CSS
- Pre-defined components
- Transitions/Animations/Scrolling
- Data Handling

Demo

Sencha Touch Application

```
<link id="demoStylesheet" rel="stylesheet"
      href="sencha/css/sencha-touch.css" type="text/css">
```

```
<script type="text/javascript" src="sencha/sencha-touch-debug.js"/>
```

```
<link rel="stylesheet" href="css/demo.css" type="text/css">
```

```
<script type="text/javascript" src="javascript/index.js"></script>
```

```
<script type="text/javascript" src="javascript/models/Speakers.js"/>
```

```
<script type="text/javascript" src="javascript/views/App.js"/>
```

...

Registering the Application

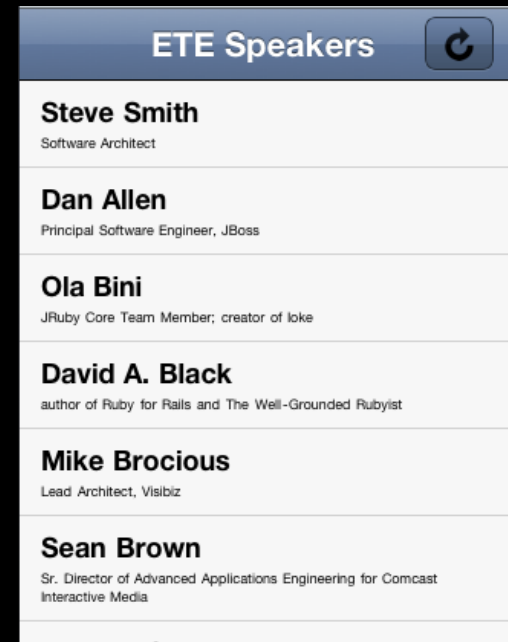
```
Ext.regApplication({
  name: 'Demo',
  phoneStartupScreen: 'images/phone_startup.png',
  icon: 'images/icon.png',

  launch: function() {
    if (Ext.is.Android){
      Ext.get('demoStylesheet').dom.href = "sencha/css/android.css";
    }else if (Ext.is.iOS){
      Ext.get('demoStylesheet').dom.href = "sencha/css/apple.css";
    }
    var app = new Demo.App();
  }
});
```

Views

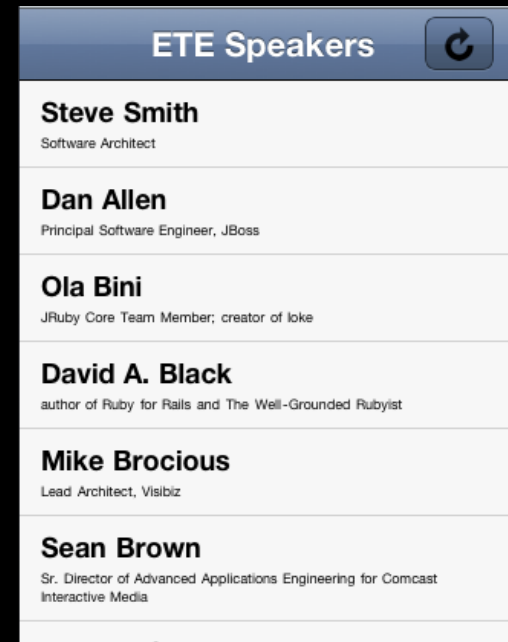
```
Demo.App = Ext.extend(Ext.Panel, {
    fullscreen: true,
    layout: 'card',
    activeItem: 0,

    initComponents: function() {
        this.list = new Demo.views.SpeakerList();
        this.detail = new Demo.views.SpeakerDetails();
        ...
        this.dockedItems = [this.toolbar];
        this.items = [this.list, this.detail];
        ...
    },
    ...
});
```



Toolbar

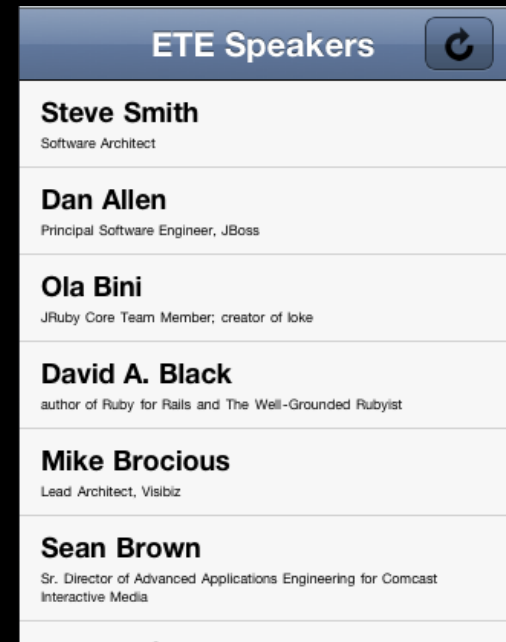
```
toolbar = new Ext.Toolbar({
  id: 'navBar',
  title: 'ETE Speakers',
  dock: 'top'
  items: [this.backButton, {flex: 1, xtype: 'spacer'},this.refreshIcon]
});
```



Views

```
Demo.App = Ext.extend(Ext.Panel, {
    fullscreen: true,
    layout: 'card',
    activeItem: 0,

    initComponents: function() {
        this.list = new Demo.views.SpeakerList();
        this.detail = new Demo.views.SpeakerDetails();
        ...
        this.dockedItems = [this.toolbar];
        this.items = [this.list, this.detail];
        ...
    },
    ...
});
```



JSON Data

```
{  
  position:"Software Architect",  
  id:1000,  
  first_name:"Steve ",  
  last_name:"Smith",  
  name:"Steve Smith",  
  bio:"I like Pina Coladas and getting caught in the rain.",  
  ...  
}
```

Models and Stores

```
Ext.regModel('Speaker', {  
  idProperty: 'id',  
  fields: ['id', 'first_name', 'last_name', 'position', 'name', 'bio']  
});
```

```
Demo.stores.Speakers = new Ext.data.Store({  
  storeId: 'SpeakerStore',  
  model : 'Speaker',  
  autoLoad: true,  
  proxy: {  
    type: 'ajax',  
    url : 'speakers.json'  
  }  
});
```


Binding Data to the List View

```
Demo.views.SpeakerList = Ext.extend(Ext.List, {
```

```
...
```

```
  initComponents: function() {
```

```
    this.store = Demo.stores.Speakers;
```

```
    this.itemTpl =
```

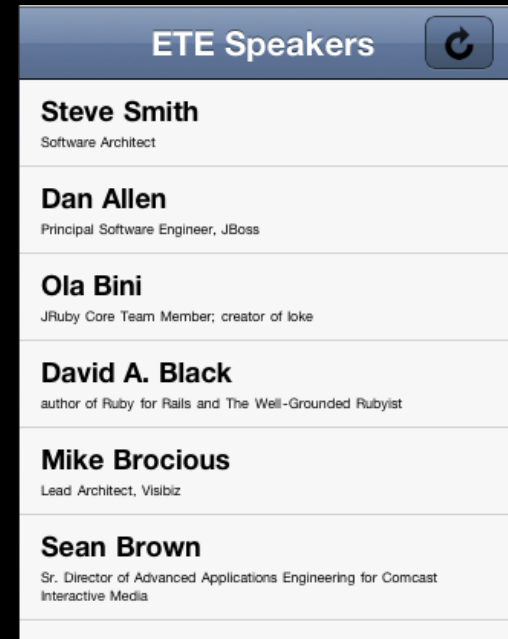
```
      '<div class="speakerName">{first_name} {last_name}</div>'  
      + '<div class="speakerPosition">{position}</div>';
```

```
...
```

```
  },
```

```
...
```

```
});
```



ETE Speakers	
Steve Smith	Software Architect
Dan Allen	Principal Software Engineer, JBoss
Ola Bini	JRuby Core Team Member; creator of Ioke
David A. Black	author of Ruby for Rails and The Well-Founded Rubyist
Mike Brocious	Lead Architect, Visibiz
Sean Brown	Sr. Director of Advanced Applications Engineering for Comcast Interactive Media

Handling the Tap

```
Demo.views.SpeakerList = Ext.extend(Ext.List, {
  initComponents: function() {
    ...
    this.on('itemtap', this.onListItemTap, this);
    ...
  },
  onListItemTap: function(dv, index, item, e) {
    var ds = dv.getStore(),
        r = ds.getAt(index);
    this.fireEvent('speakerselect', r);
  }
});
```

Handling the Tap

```
Demo.App = Ext.extend(Ext.Panel, {  
    ...  
    initComponents: function() {  
        this.list.on('speakerselect', this.onSpeakerSelect, this);  
        ...  
    },  
    ...  
    onSpeakerSelect: function(speaker) {  
        this.setActiveItem(this.detail, 'slide');  
        this.detail.updateSpeaker(speaker);  
    }  
});
```

Showing the Details

```
Demo.views.SpeakerDetails = Ext.extend(Ext.Panel, {  
    ...  
    initComponents: function() {  
        this.tpl = new Ext.XTemplate(  
            '...<span class="label">Bio:</span>{bio:ellipsis(60, true)} ...'  
        );  
    },  
    updateSpeaker: function(speaker) {  
        Ext.getCmp('navBar').setTitle('Details');  
        this.update(speaker.data);  
        ...  
    },  
    ...  
});
```

Tying it all Together

- 150 lines of code
- Ajax/Parse JSON
- Scrollable List/Stationary Toolbar
- Detail View
- Platform based styling

Adding Device Features

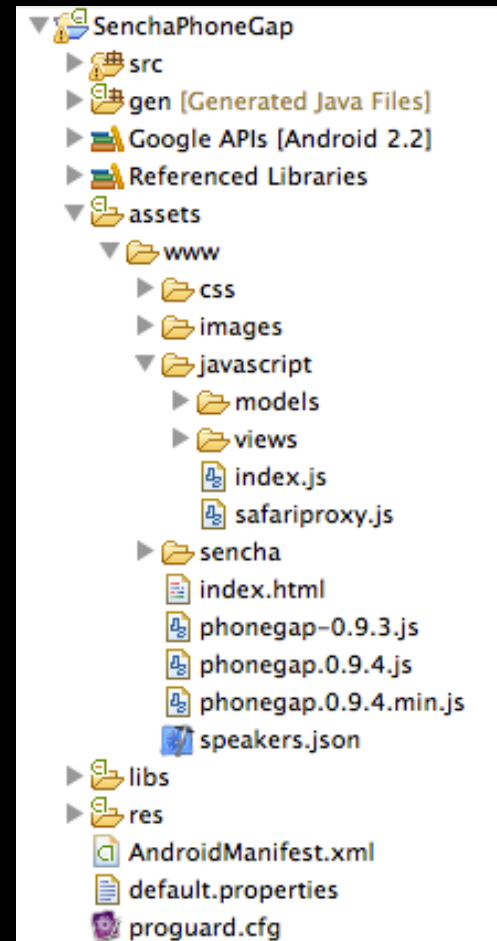
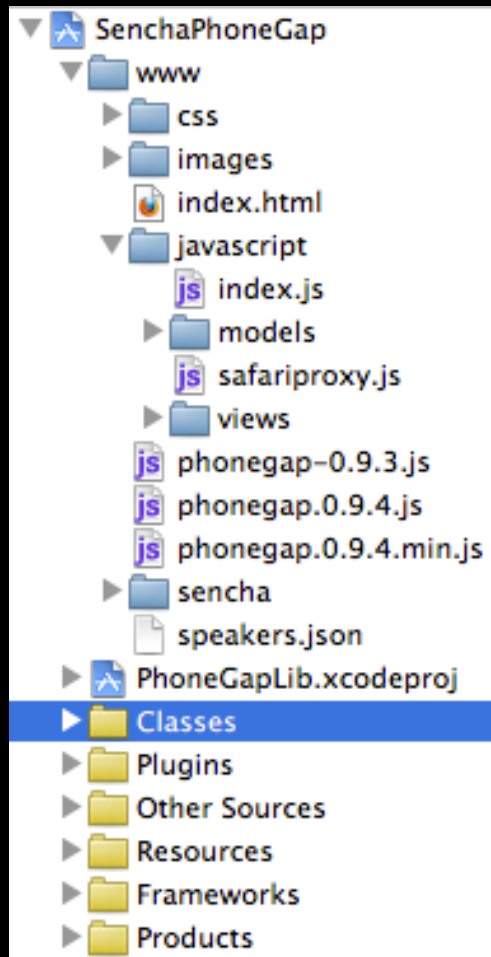
- Add to Address Book
- What do we do with our code?

PhoneGap to the Rescue

- Wraps HTML based assets
- PhoneGap Build
- Create platform specific projects



Project Structure



Include PhoneGap.js

```
<!-- PhoneGap JS -->
```

```
<script type="text/javascript">
```

```
  if (navigator.userAgent.indexOf( 'iPhone' ) != -1) {
```

```
    //include iphone js file
```

```
  }else if (navigator.userAgent.indexOf('Android') != -1) {
```

```
    //include android js file
```

```
  }
```

```
</script>
```

```
<script type="text/javascript">
```

```
  document.addEventListener("deviceready", Demo.mainLaunch, false);
```

```
</script>
```

App Launch

...

`isRunningOnDevice: false,`

```
launch: function() {
```

```
  this.launched = true;
```

```
  this.mainLaunch();
```

```
},
```

```
mainLaunch: function() {
```

```
  try{
```

```
    if (!device || !this.launched) { return; }
```

```
    this.isRunningOnDevice = true;
```

```
  } catch (e) {
```

```
    console.log('we are not on a device');
```

```
  } ...
```

Add the Button

```
this.button = new Ext.Button({
    text: 'Add to Address Book',
    width: 200,
    handler: this.addContact
});

if (Demo.isRunningOnDevice) {
    this.items[1] = this.button;
}
```

Add the Contact

```
//look up the speaker
```

```
...
```

```
var contactName = new ContactName();
```

```
contactName.givenName = speaker.get('first_name');
```

```
contactName.familyName = speaker.get('last_name');
```

```
var newContact = navigator.service.contacts.create();
```

```
newContact.name = contactName;
```

```
newContact.displayName = speaker.get('name');
```

```
newContact.note = speaker.get('position');
```

```
newContact.save(
```

```
    function(contacts) {alert('Contact Saved');},
```

```
    function(error) {alert('Error saving contact: ' + error.code);} 
```

```
);
```

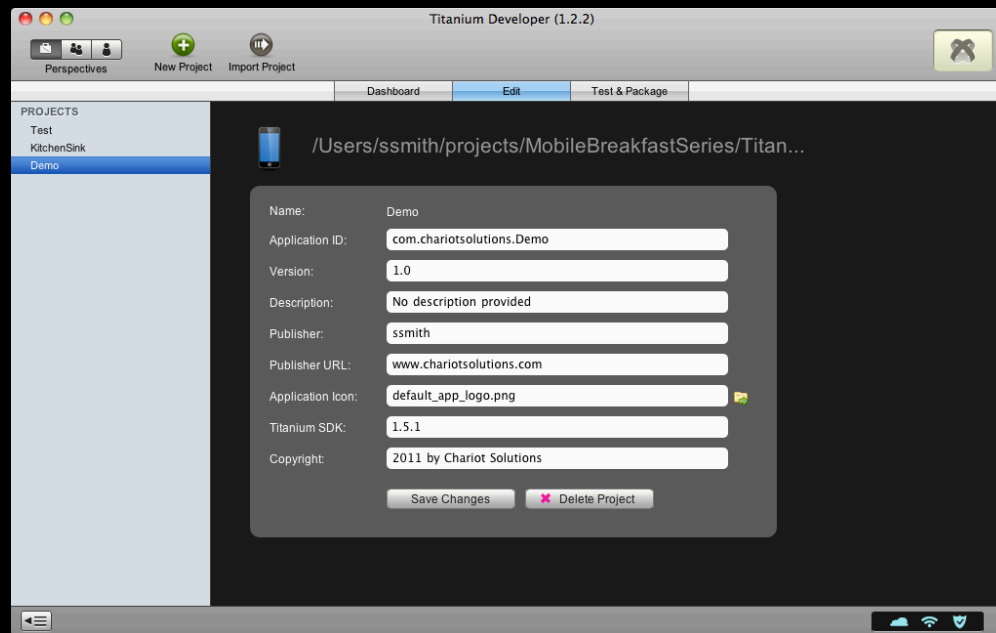
PhoneGap Safety Tips

- Adding contacts in iOS requires PhoneGap 0.9.4
- Android emulator will require contact provider
- Bug with Ajax calls for local resources
- Debugging

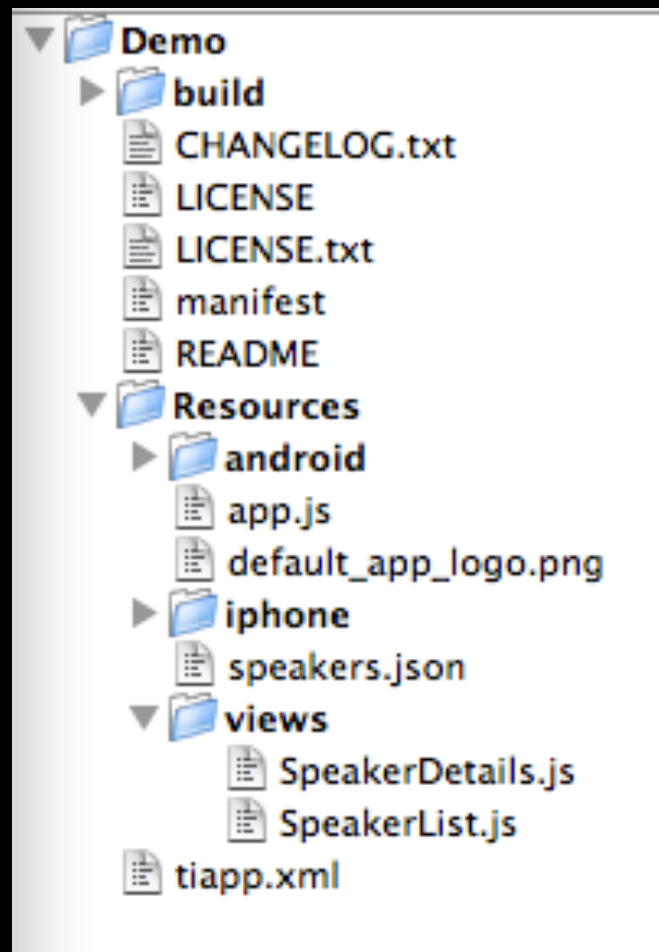
Demo

Appcelerator Titanium

- JavaScript framework that compiles into native code
- iOS and Android (Blackberry in beta)

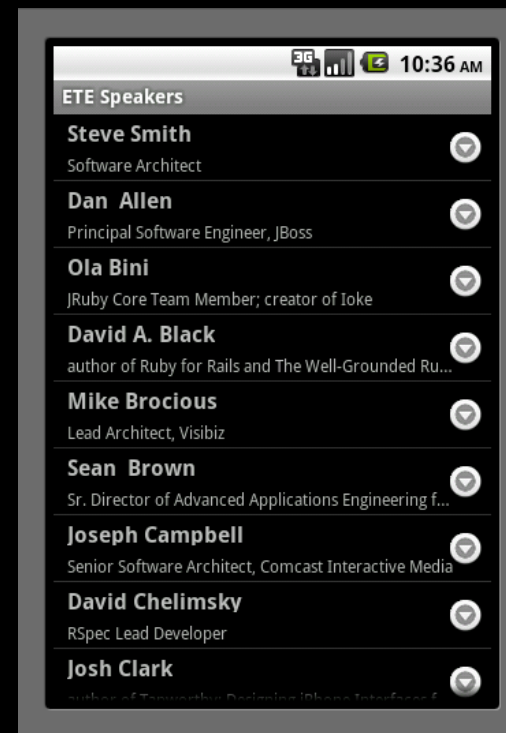
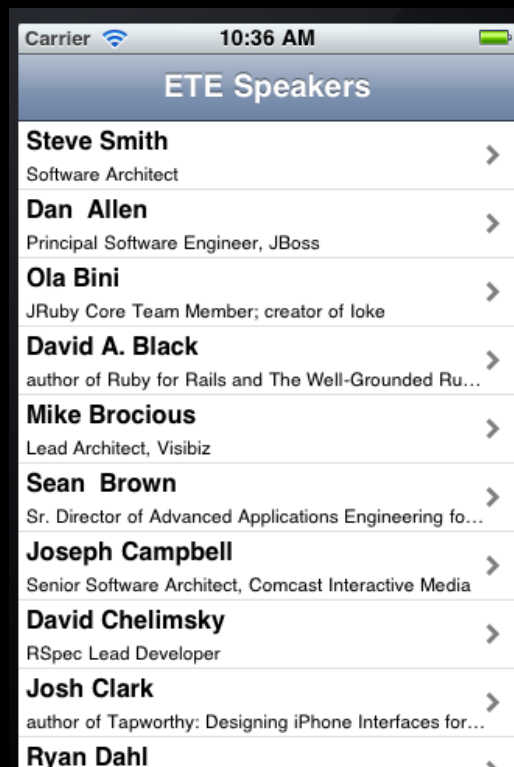


Project Structure



User Interface

- Native versus HTML
- Platform UI Paradigms



Launching the App

```
var listWin = Titanium.UI.createWindow({  
    url: 'views/SpeakerList.js',  
    title: 'ETE Speakers',  
    fullscreen:false,  
    exitOnClose: true, //this is for android  
    top: 10  
});  
  
listWin.open();
```

Adjusting for the Platform

```
var parentWin = Titanium.UI.createWindow();
```

```
var listWin = Titanium.UI.createWindow({ ... });
```

```
var nav = Titanium.UI.iPhone.createNavigationGroup({  
    window: listWin  
});
```

```
if (Titanium.Platform.osname == 'iphone'){
```

```
    parentWin.add(nav);
```

```
    parentWin.open();
```

```
} else if (Titanium.Platform.osname == 'android') {
```

```
    listWin.open();
```

```
}
```

Parsing the JSON

```
// get the data...it is local for the demo
// but normally you would pull this from a server (using xhr)

var jsonFile = Ti.Filesystem.getFile(
    Ti.Filesystem.resourcesDirectory + "/speakers.json");

var speakerArray = JSON.parse(jsonFile.read().text);

Ti.API.info('we got ' + speakerArray.length + ' speakers');
```

Building the List

```
var data = [];  
for (var i = 0; i < speakerArray.length; i++){  
    var tableRow = Titanium.UI.createTableViewRow();  
    ...  
    var speakerPosition = Titanium.UI.createLabel({  
        text: speakerArray[i].position,  
        ellipsize: true,  
        wordWrap: false,  
        bottom: 0,  
        left: 5,  
        height: 20,  
        ...  
    });  
    ...  
    tableRow.add(speakerPosition);  
    ...  
    data.push(tableRow);  
}
```

ETE Speakers	
Steve Smith Software Architect	>
Dan Allen Principal Software Engineer, JBoss	>
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Sean Brown Sr. Director of Advanced Applications Engineering fo...	>
Joseph Campbell Senior Software Architect, Comcast Interactive Media	>
David Chelimsky RSpec Lead Developer	>
Josh Clark author of Tapworthy: Designing iPhone Interfaces for...	>
Ryan Dahl	>

Displaying the List

```
var tableView = Titanium.UI.createTableView({  
    data: data  
});
```

```
Titanium.UI.currentWindow.add(tableView);
```

Viewing Details

```
tableView.addEventListener('click', function(e) {  
    var speaker = speakerArray[e.index];  
  
    var detailsWin = Titanium.UI.createWindow({ ... });  
  
    if (Titanium.Platform.osname == 'iphone') {  
        Titanium.UI.currentWindow.navGroup.open(detailsWin, {animated: true});  
    } else {  
        detailsWin.open({animated: true});  
    }  
});
```

Adding the Contact

```
var person = {  
  firstName: speaker.first_name,  
  lastName: speaker.last_name,  
  note: speaker.position  
};  
  
if (Titanium.Platform.osname == 'android'){  
  var demoContact = require('com.chariotsolutions.demo.contact');  
  demoContact.createContact(person);  
}else{  
  Titanium.Contacts.createPerson(person);  
}
```


Demo

Questions

Chariot Solutions

<http://chariotsolutions.com>

Steve Smith

ssmith@chariotsolutions.com

[Twitter: @stevenpsmith123](https://twitter.com/stevenpsmith123)

[Github: https://github.com/stevenpsmith/](https://github.com/stevenpsmith/)