

# MOBILE DEVELOPMENT OPTIONS

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# STEPS TO GETTING RICH, 2010 EDITION

- 1) DEVELOP MOBILE APP
- 2) ...
- 3) PROFIT! \*

(\* GET BOUGHT BY FACEBOOK/GOOGLE/ZYNGA/  
ETC FOR ABSURD \$)

# TOPICS

- ANDROID, IOS, HTML5/CSS3, PHONEGAP, TITANIUM, AND JQUERY MOBILE
- NATIVE, CROSS-PLATFORM-TO-NATIVE, AND MOBILE WEB
- DEEP DIVE INTO:
  - PHONEGAP
  - TITANIUM

# WE'LL FOCUS ON



# MY EXPERIENCE



# overview of the options



# NATIVE MOBILE

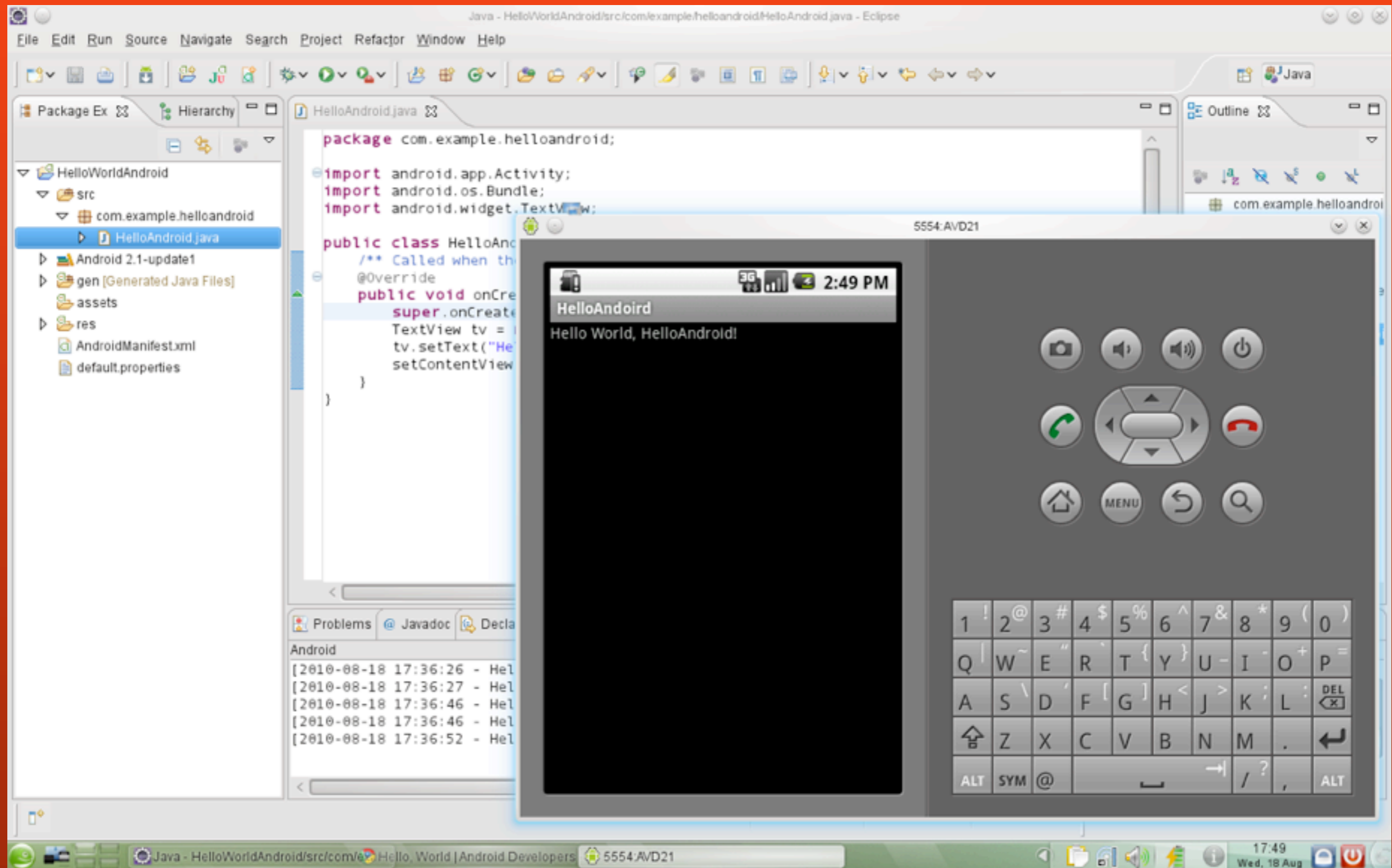
- MUST KNOW OBJECTIVE-C & JAVA VERY WELL

# NATIVE II

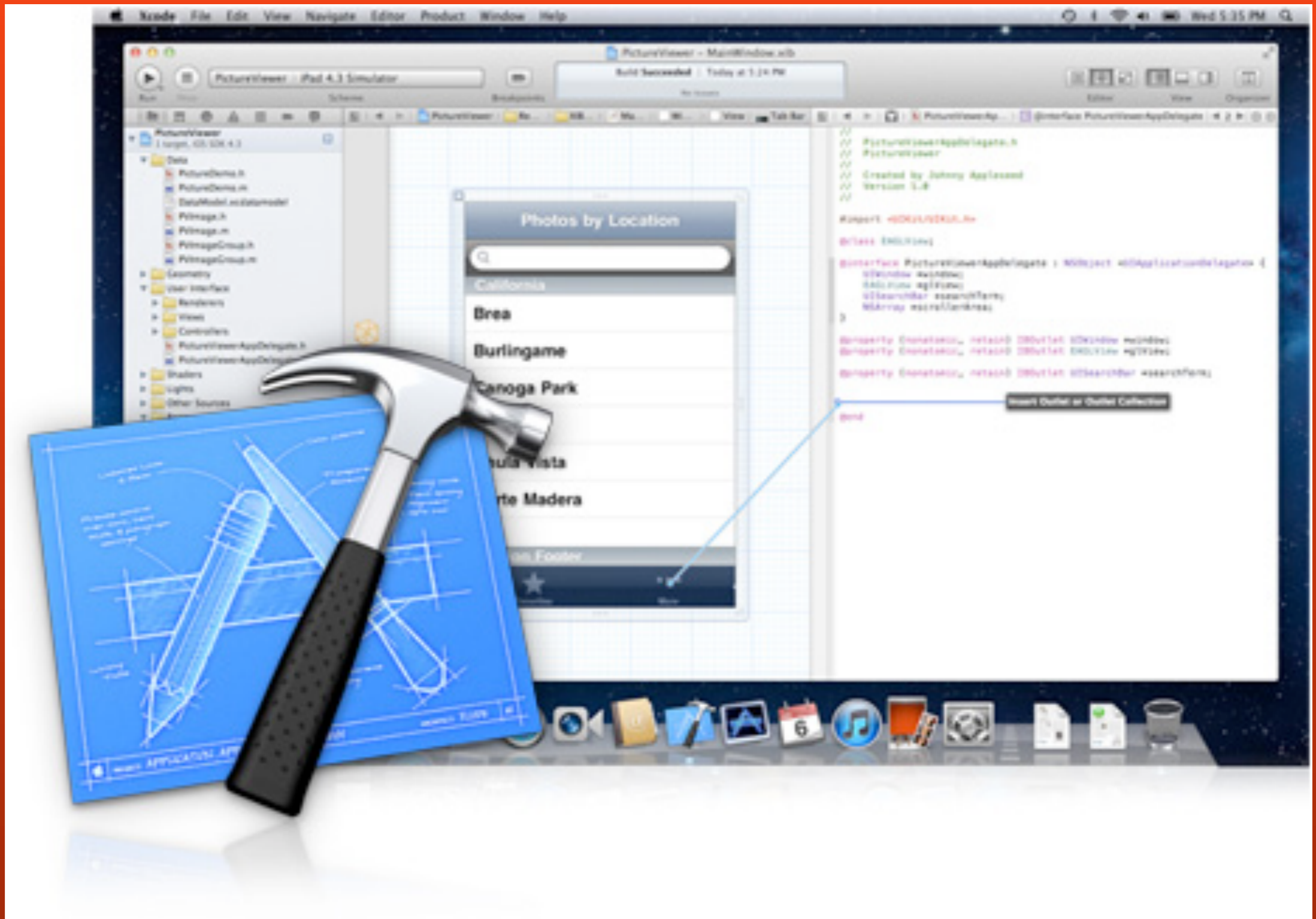
- MUST KNOW THE TOOLCHAIN FOR EACH PLATFORM



# ANDROID



# XCODE



# NATIVE III

- ABILITY TO CREATE BEST POSSIBLE APP
- TIME & EFFORT MULTIPLIED BY PLATFORM
- OBVIOUSLY NOT CROSS-PLATFORM



# Phone**Gap**

# PHONEGAP

- NATIVE WRAPPER
  - BOOTSTRAPS A WEBKIT BROWSER

# PHONEGAP

- PROVIDES HOOKS INTO NATIVE FUNCTIONS
  - CAMERA, CONTACTS, ACCELEROMETER, ETC

# iPhone OS

sandbox

## PhoneGap framework

safari

### webkit

phonegap js

application  
css/html

<http://www.melablog.it/post/11421/phonegap-riceve-il-nulla-osta-di-apple-per-app-store>

# PHONEGAP

- MUST USE NATIVE TOOLCHAIN TO BUILD PHONEGAP WRAPPER



# CROSS PLATFORM



<http://mashable.com/2011/02/22/html-mobile-development/>

# CODING PHONEGAP

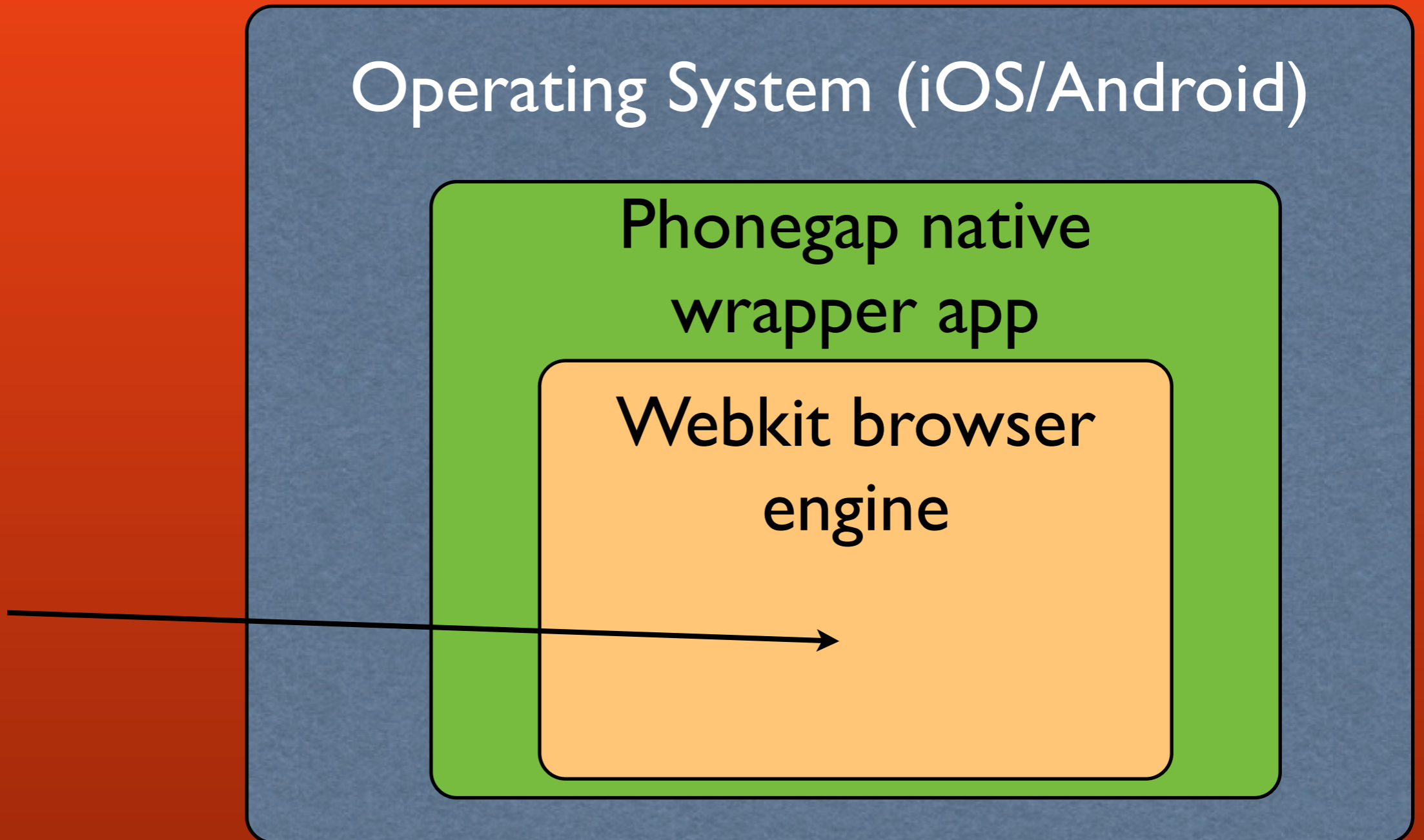
- YOU CAN DEVELOP RIGHT IN A DESKTOP BROWSER FOR MOST OF YOUR APP!

# MOBILE WEB LIBS

- JQUERY MOBILE
- SENCHA TOUCH
- JO (JOAPP.COM)
- KENDOU

# PHONEGAP DIAGRAM

Your  
code  
runs  
here



# PHONEGAP ON IOS



# APP DEV PLATFORMS



# APP DEV PLATFORMS

- XAMARIN (FORMERLY MONOTOUCH) (C#)
- ANSCA CORONA (LUA)
- APPCELERATOR TITANIUM (JAVASCRIPT)

# APP DEV PLATFORMS

- DO `_NOT_` GENERATE CODE
- BRIDGE FROM LANG `<X>` TO NATIVE
- USES NATIVE TOOLCHAIN



# BRIDGE

- VENDOR WRITES HOOKS TO NATIVE API
- VENDOR MARSHALLS / UNMARSHALLS CALLS & DATA IN BOTH DIRECTIONS

# HOW THEY WORK

you code here

platform provides API

platform bridges to native

```
var win1 = Titanium.UI.createWindow({
  url: 'main.js',
  title: 'Spice Guide',
  // backgroundImage: './images/bg.png',
  navBarHidden: false,
  tabBarHidden: true
});
```

app platform

ios sdk

android sdk

# TITANIUM

# TITANIUM

- OPEN SOURCE, 100% FREE
- IDE - TITANIUM STUDIO - BASED ON ECLIPSE

# TITANIUM II

- CODE IN JAVASCRIPT
- AGAIN, NOT A GENERATOR

# CODE REUSE?

- 100% OF NON-UI CODE IS REUSABLE
- 80% OF UI CODE IS REUSABLE
- UI CODE CAN BECOME *MORE* REUSABLE WITH EXPERIENCE AND PATTERNS!

# TITANIUM === NATIVE

- TITANIUM API CALLS NATIVE OBJECTS/METHODS
- NO CODE GENERATION
- NATIVE WIDGETS

# TITANIUM LIVE CODING





notice something  
common?



# NATIVE TOOLCHAIN!



YOU MUST LEARN THE  
NATIVE TOOLCHAIN FOR  
ANY OF THE OPTIONS!

# NATIVE TOOLCHAIN

- YOU MUST LEARN THE NATIVE TOOLCHAIN
- SPEND A FEW DAYS BUILDING A NATIVE APP FOR EACH PLATFORM YOU'RE INTERESTED IN
- THE TIME YOU INVEST IN THIS WILL BE PAID BACK 100X

# COMPARING THE OPTIONS

# NATIVE

- NO CODE REUSE
- BEST POSSIBLE EXPERIENCE
- GAMES, LOW-LEVEL NEEDS
- COST: \$\$\$\$\$

# PHONEGAP

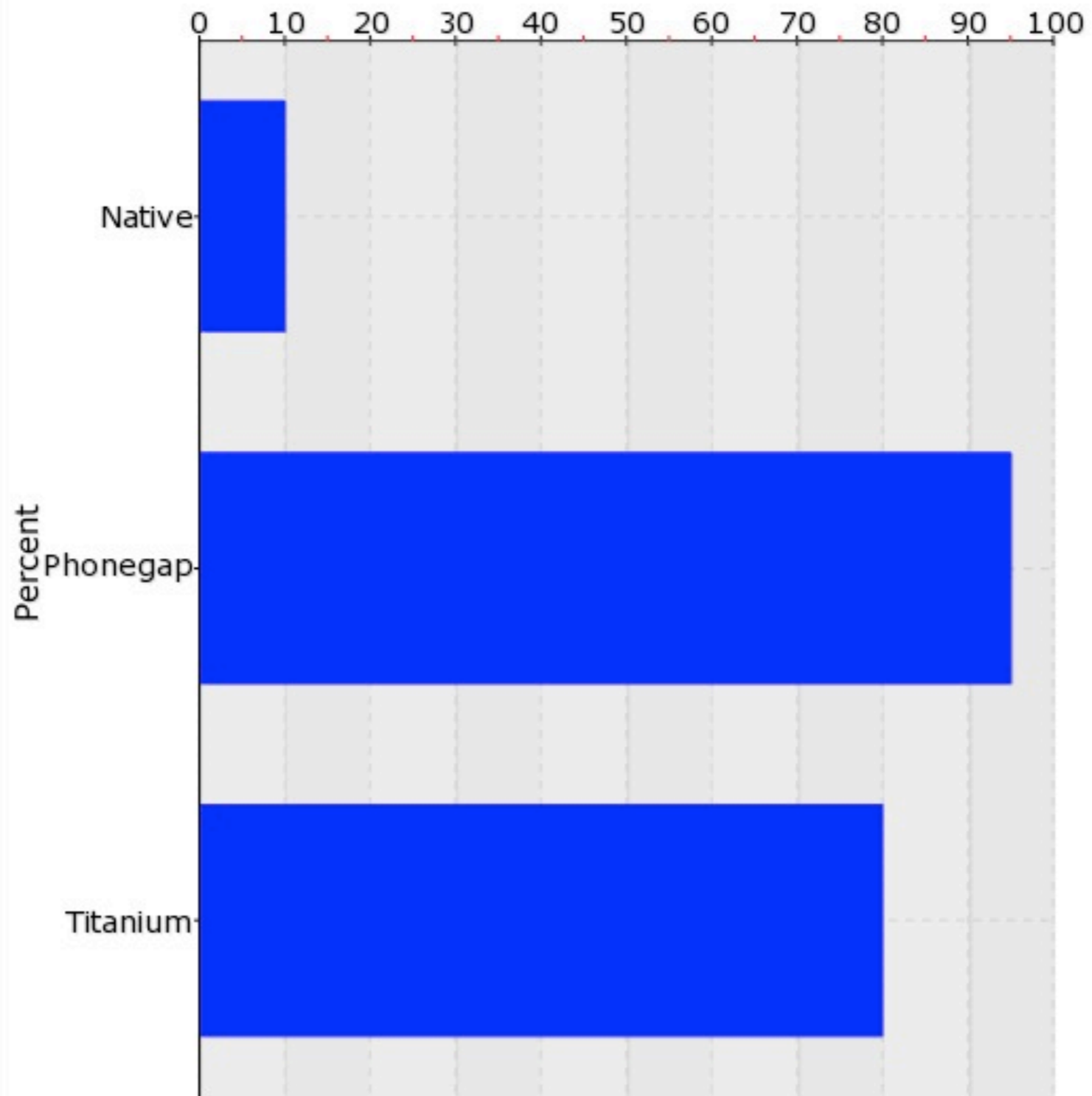
- USE TECH YOU KNOW (HTML/JS/CSS)
- RAPID DEVELOPMENT
- USER EXPERIENCE IS HARD TO PERFECT
- BAD PERFORMANCE
- NUANCES OF BROWSER TECH = BLACK HOLE OF EFFORT

# APP DEV PLATFORMS

- CAN GET GOOD CODE REUSE
- PERFORMANCE IS VERY CLOSE TO NATIVE
- MUST LEARN A NEW TOOL/PLATFORM
- ABSTRACTION DISTRACTIONS
- RAPID DEVELOPMENT

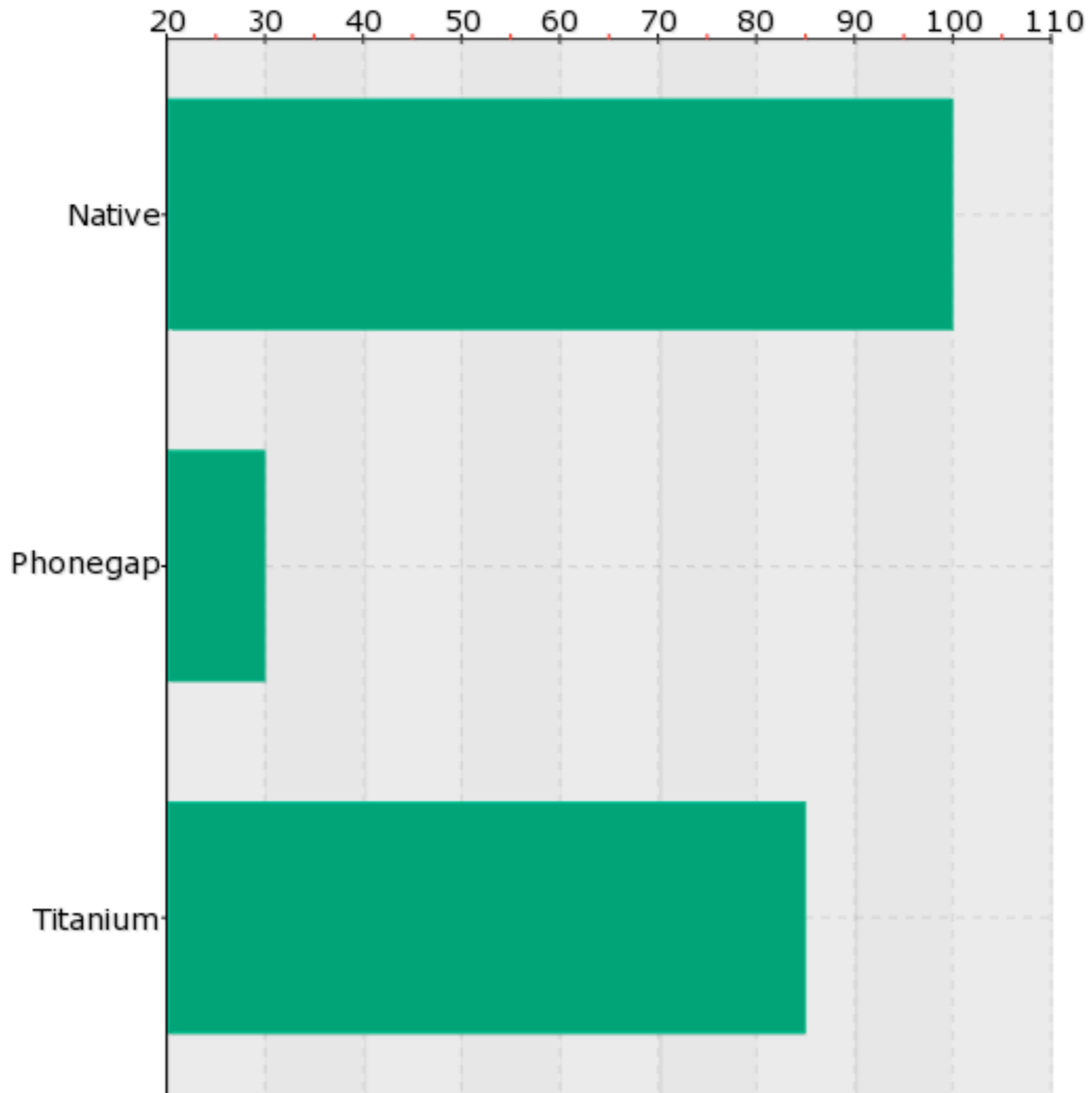


# CODE REUSE



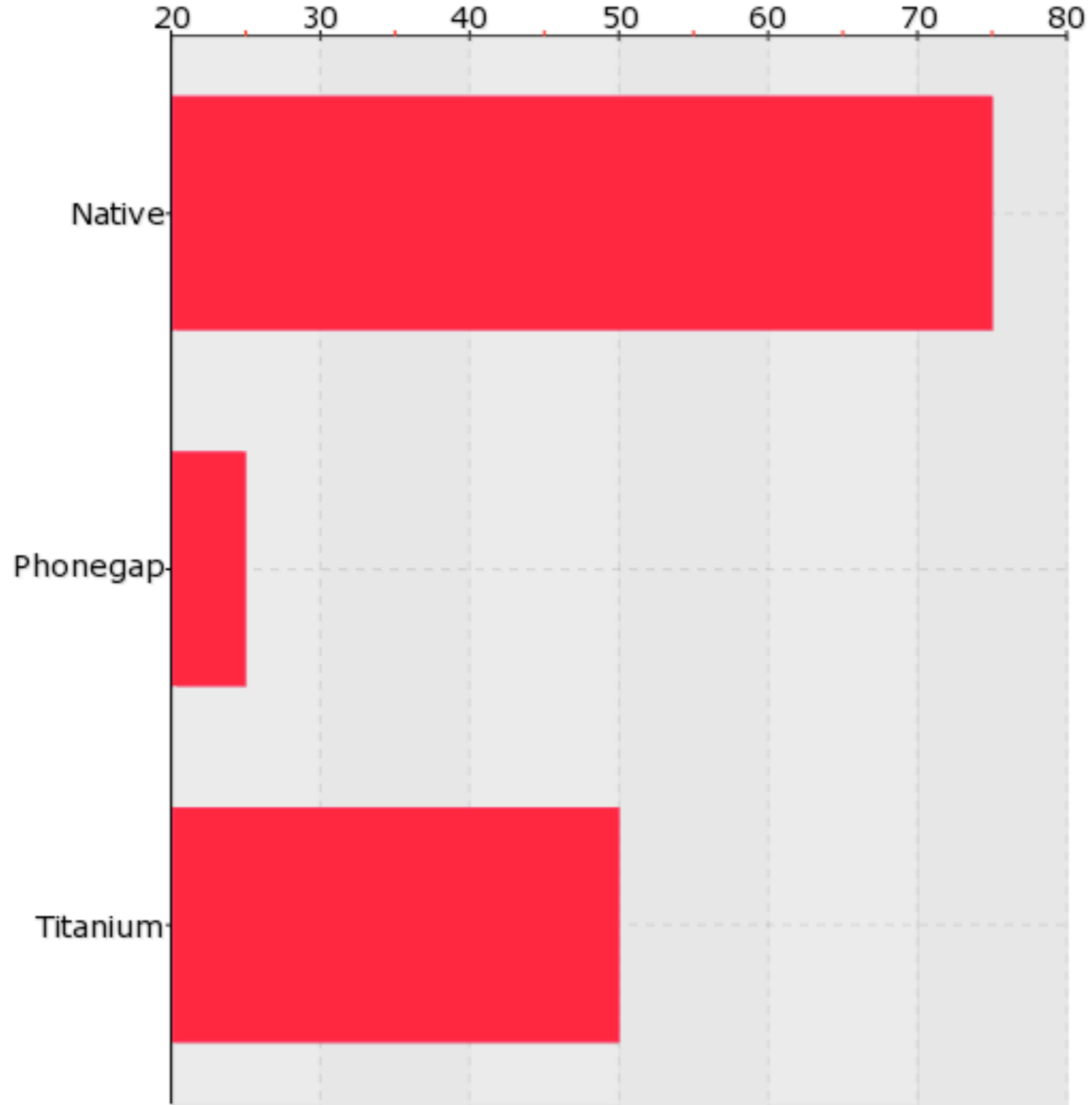
chartmaker.mathwarehouse.com

# PERFORMANCE



chartmaker.mathwarehouse.com

# Learning Curve (lower is better)



chartmaker.mathwarehouse.com



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# NATIVE

# IOS

- OBJECTIVE-C LANGUAGE
- DISPATCH MODEL IS VERY POWERFUL
- NOT LOW CEREMONY

# ANDROID

- JAVA WITH LIMITATIONS (DAVLIK VM)
- OPEN SOURCE PLATFORM
- TOOLS YOU KNOW AND LOVE (?)

# NATIVE II

- DEVELOPING THE 'SAME' APP FOR 2+ PLATFORMS == \$\$\$\$
- "LOW LEVEL" PROGRAMMING



# PHONE GAP

# PHONEGAP

- OPEN SOURCE, 100% FREE
- APACHE PROJECT
- LARGE COMMUNITY
- TONS OF PLUGINS

# MIND THE GAP II

- WRAPS A WEB BROWSER IN A NATIVE PROJECT
- YOUR CODE RUNS IN THE BROWSER
- PLUGINS ALLOW MORE NATIVE FUNCTIONS
- PROVIDES HOOKS INTO NATIVE FUNCTIONS
  - CAMERA, CONTACTS, ACCELEROMETER, ETC

# MIND THE GAP III

- YOU CAN DEVELOP RIGHT IN A DESKTOP BROWSER FOR MOST OF YOUR APP!
- CAN USE MOBILE WEB LIBS:
  - JQUERY MOBILE
  - SENCHA TOUCH
  - JO (JOAPP.COM)
  - KENDOU

phonegap demo



# APP DEV PLATFORMS

# BRIDGE

- VENDOR PROVIDES PROPRIETARY API ON TOP
- YOU CODE TO THIS API
- VENDOR WRITES HOOKS TO NATIVE API
- VENDOR MARSHALLS / UNMARSHALLS CALLS & DATA IN BOTH DIRECTIONS
- AGAIN, NO CODE GENERATION!

# HOW THEY WORK

you code here

platform provides API

platform bridges to native

```
var win1 = Titanium.UI.createWindow({
  url: 'main.js',
  title: 'Spice Guide',
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  tabBarHidden: true
});
```

app platform

ios sdk

android sdk



# MONOTOUCH

- BASED ON MONO
- C#
- \$600 FOR BOTH IOS AND ANDROID

# ANSCA CORONA

- BASED ON LUA - A SCRIPT LANG FOR C
- POPULAR WITH GAME DEVS
- \$349 FOR BOTH IOS AND ANDROID
- LESS BRIDGING

# RUBYMOTION

- BASED ON RUBY - BUT IOS ONLY
- FAIRLY NEW
- \$199
- LIVE REPL, OTHER NICE FEATURES

# TITANIUM

# TITANIUM

- OPEN SOURCE, 100% FREE
- SUPPORT CONTRACT COSTS \$
- EXTRA MODULES COST \$ (EX: STOREKIT)
- IDE - TITANIUM STUDIO - BASED ON ECLIPSE

# TITANIUM II

- CODE IN JAVASCRIPT
- AGAIN, NOT A GENERATOR

# PLATFORMS

- IOS
- ANDROID
- MOBILE WEB (BETA)
- BLACKBERRY 10 COMING SOON

# Titanium SDK

- JAVASCRIPT TO NATIVE BRIDGE
- CODE TO TITANIUM API (PROPRIETARY)
- WRITE ONCE, DEPLOY TO IOS + ANDROID
- PLATFORM SPECIFIC API'S TOO!



# WIDGETS

- BUTTONS, LABELS, WINDOWS, VIEWS
- SLIDERS, TEXTFIELDS, WEBVIEWS
- PICKERS, TABLES

# EVENTS

- ADD / FIRE EVENTS
- VERY MUCH LIKE "WEB" JAVASCRIPT DEV

# CODE REUSE?

- 100% OF NON-UI CODE IS REUSABLE
- 50% OF UI CODE IS REUSABLE
- UI CODE CAN BECOME *MORE* REUSABLE WITH EXPERIENCE AND PATTERNS!

# TITANIUM === NATIVE

- TITANIUM API CALLS NATIVE OBJECTS/METHODS
- NO CODE GENERATION
- NATIVE WIDGETS

# TITANIUM MODULES

- TITANIUM IS BASED ON MODULES
- EACH MODULE REPRESENTS AN API
- BRIDGE FROM JAVASCRIPT TO NATIVE RUNTIME
- EXAMPLE MODULES: NETWORKING, DATABASE, FILESYSTEM, UI, YAHOO, MEDIA, MAP, FACEBOOK, ACCELEROMETER

let's write a  
Titanium app



# LAYOUTS CODE

```
var view = Ti.UI.createView({
  backgroundColor: 'transparent',
  top:0,
  left:0,
  width: '100%',
  height: '100%',
  layout: 'vertical'
});
// create labels, buttons, text fields

view.add(usernameLabel);
view.add(usernameField);
view.add(submitButton);
```

# EVENTS CODE

```
Ti.App.addEventListener('event_type', function(e)
{
    Ti.API.info('The '+e.type+' event happened');
});
```

```
Ti.App.fireEvent('click',
    {datakey: 'value'});
```



# CUSTOM CONTROLS

```
var buttonView1 = Titanium.UI.createView({
  top: 0, left: 0, height: 50, width: 50,
  borderRadius: 10,
  backgroundColor: '#cef7ff' });
var selection1 = Titanium.UI.createLabel({
  text : 'Fish',
  color : '#f79e18',
  font : {fontSize : 40},
  textAlign: 'center' });
buttonView1.add(selection1);
```

# HTTPCLIENT

```
var url = "https://www.google.com";
var xhr = Ti.Network.createHttpClient({
  onload: function(e) {
    Ti.API.debug(this.responseText);
    alert('success');
  },
  onerror: function(e) {
    Ti.API.debug(e.error);
    alert('error');
  }, timeout:5000
});
xhr.open("GET", url);
xhr.send();
```

# DATABASE

```
var db = Titanium.Database.open('mydb');

db.execute('CREATE TABLE IF NOT EXISTS DATABASETEST (ID INTEGER, NAME TEXT)');
db.execute('DELETE FROM DATABASETEST');

db.execute('INSERT INTO DATABASETEST (ID, NAME ) VALUES(?,?)',1, 'Name 1');
db.execute('UPDATE DATABASETEST SET NAME = ? WHERE ID = ?', updateName, updateId);
var rows = db.execute('SELECT * FROM DATABASETEST');

while (rows.isValidRow())
{
    Titanium.API.info('ID: ' + rows.field(0) + ' NAME: ' +
rows.fieldByName('name') + ' COLUMN NAME ' + rows.fieldName(0));
    rows.next();
}
```

# FACEBOOK

```
var fbButton = Titanium.Facebook.createLoginButton({
  'style': 'wide',
  'apikey': '9494e611f2a93b8d7bfcdfa8cefdaf9f',
  'sessionProxy': 'http://api.appcelerator.net/p/fbconnect/',
  bottom:10, height:30, width:300
});
Titanium.Facebook.publishStream("Set your status",null,null,function(r)
{
  Titanium.API.info("received status response = "+JSON.stringify(r));
  if (r.success)
  {Ti.UI.createAlertDialog({title:'Facebook',
  message:'Your status was ublished'}).show();
  }
  else
  {Ti.UI.createAlertDialog({title:'Facebook', message:'Error ' +
  r.error}).show();
  }
});
```

# ANIMATIONS

```
var t3 = Ti.UI.create2DMatrix();
t3 = t3.rotate(20);
t3 = t3.scale(1.5);

var a = Titanium.UI.createAnimation();
a.transform = t3;
a.duration = 3000;

var view1 = Titanium.UI.createView({
  backgroundColor:'#336699',
  top:10, left:220, height:50, width:50,
  anchorPoint:{x:0,y:0}
});
win.add(view1);
topLeft.addEventListener('click', function()
{
  view1.animate(a);
});
```

# APP DEV PLATFORMS

# REDUX

- APP DEV PLATFORMS: A HIGH LEVEL ENV
- REUSE CODE
- ACCESS TO NATIVE (AND SPECIFIC) API'S

# REDUX II

- PERFORMANCE IS NEAR NATIVE (95%)
- DRAWBACKS:
  - ABSTRACTION
  - MUST KNOW APP PLATFORM + NATIVE PLATFORM



# CHOOSING

# NATIVE

- NO CODE REUSE
- BEST POSSIBLE EXPERIENCE
- GAMES, LOW-LEVEL NEEDS
- COST: \$\$\$\$\$

# PHONEGAP

- USE TECH YOU KNOW (HTML/JS/CSS)
- USER EXPERIENCE IS HARD TO PERFECT
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what would you  
pick?





# AU REVOIR

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