

POLYMER | Packaging Web App into Mobile Apps



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Android + Web Developer

How Many of Us Know Polymer ?

*Not Chemistry

<div>1.0.4</div> <div>Fe</div> <div>Iron Elements</div> <div>Polymer core elements</div>	<div>1.0.5</div> <div>Md</div> <div>Paper Elements</div> <div>Material design elements</div>	<div>1.0.1</div> <div>Go</div> <div>Google Web Components</div> <div>Components for Google's APIs and services</div>	<div>1.0.1</div> <div>Au</div> <div>Gold Elements</div> <div>Ecommerce Elements</div>
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First, Understanding Material Design with Roman Nurik

Coffee with a Googler

+Laurence Moroney
Episode 24 with Roman Nurik



Google Developers

Google

Little Callback : What's Polymer

TRUE

- Is Set of libraries includes reusable web-components
- Takes advantage of polyfills for emerging web standards < Web Component Model > across multiple browsers, including features:
 - Registering Elements
 - Lifecycle Callbacks
 - Property Observations
 - Local Dom Templates
 - Data Binding

FALSE

- Not ANGULAR JS
 - both have declarative templates & data binding
 - but Polymer has ShadowDOM to encapsulate its
- Not JS Libraries
- X-Tag by Mozilla (same reason as ShadowDOM)
- NOT A FRAMEWORK !



Applications

Existing Frameworks

Web Components built with Polymer (or not)

Web Platform

Example 1: Polymer Production-Ready

<https://gaming.youtube.com/>

Search games, channels, and videos

GO LIVE

Extra Life 2015

Play games. Heal kids.

GAME NAME	CURRENT AMOUNT
Any You, Pibbachi	\$275.00
Marble Madness Racing!	\$150.00
Paper Mario	\$140.00
Rock Band	\$110.00
Super Mario	\$100.00

@Twitter
You can support ExtraLife you will be proud to support the amazing
gaming of @gamingYT requests: "bring a girl to game night!"

Facebook
ExtraLife is a great idea. Let's get on with it.

Instagram
ExtraLife is a great idea. Let's get on with it.

YouTube
ExtraLife is a great idea. Let's get on with it.

Twitch
ExtraLife is a great idea. Let's get on with it.

GO LIVE

GO LIVE

Recommended
Just for you

11:24

【大獎】GTA5結局A 殺掉崔佛

15:14

Dendi vs Mushi Solo 1v1 DAC Final

4:41

FALLOUT 4 UNBOXING!! (Fallout 4 Pip-Boy Edition)

Elements

Network

Sources

Timeline

3

X

```
<!DOCTYPE html>
<html>
  <head>...</head>
  <body dir="ltr">
    <!-- end of chunk 2 -->
    <script>...</script>
    <ytg-app class="x-scope ytg-app-0 no-focus-outline" page="home">
      <ytg-search-controller id="searchController" class="style-scope ytg-app">...</ytg-search-controller>
      <ytg-help class="style-scope ytg-app">...</ytg-help>
      <div id="offScreenPlayer" class="style-scope ytg-app">...</div>
      <ytg-auth-helper>...</ytg-auth-helper>
      <div class="root style-scope ytg-app" id="root">...</div>
    </ytg-app>
    <script>...</script>
    <iron-ally-announcer>...</iron-ally-announcer>
    <script>...</script>
    <script>...</script>
    <iframe name="oauth2relay231584246" id="oauth2relay231584246" src="https://accounts.google.com/o/oauth2/postmessageRelay?parent=https%3A%2F%2Fgaming.youtube.com#rptoken=570435193&prcsecure=1" tabindex="-1" style="width: 1px; height: 1px; position: absolute; top: -100px;">...</iframe>
    <iframe id="apiproxy17f2b422328a62a6d5a44b67a3ea90e06246284a0.07928112824447453" name="apiproxy17f2b422328a62a6d5a44b67a3ea90e06246284a0.07928112824447453">...</iframe>
  </body>
</html>
```

html

body

Styles

Event Listeners

DOM Breakpoints

Properties

Filter

element.style {

body {

height: 100%;

margin: 0px;

background-color: #222;

font-family: Roboto, Arial, sans-serif;

body[Attributes Style] {

margin

border

padding

1077.600 x 760

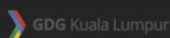
Filter

Show inherited

background-color:

Example 2: Polymer Production-Ready

<https://devfestkl2015.appspot.com/>



HOME SPEAKERS SCHEDULE REGISTER

GDG DevFest

Kuala Lumpur 2015

Powered By Google

This year on the 7th of November at MaGIC from 9 a.m till 5 p.m , we are bringing you guys another round of developer focused events at DevFest KL. For starters, we have Polymer Codelabs, Android design library, and even hacking up Cardboard apps with Unity!

Seats are limited,

[REGISTER NOW](#)

Fun

Interactive zones for you to play, explore, and collaborate with the latest from Google.

Talks

Shorter talks in pop-up spaces in the sandbox, letting you hear directly from us about developing with our latest APIs and

Code Labs

Hands-on space to work through technical modules at your own pace, with experts on hand to help you out

Make Friends

Mingle around with with industry experts, developers and designers.

Elements Network Sources Timeline » 2

```
<!DOCTYPE html>
<html>
  <head>...</head>
  <body>
    <my-toolbar>
      <!-- </paper-toolbar> -->
      <paper-drawer-panel force-narrow class="style-scope my-toolbar x-scope paper-drawer-panel-0" style="touch-action: pan-y;" narrow selected="main">
        <iron-media-query id="mq" class="style-scope paper-drawer-panel">
          </iron-media-query>
          <iron-selector attr-for-selected="id" activate-event class="narrow-layout left-drawer transition style-scope paper-drawer-panel">...</iron-selector>
        </paper-drawer-panel>
      </my-toolbar>
    </body>
  </html>
```

html body my-toolbar

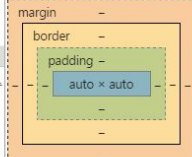
Styles Event Listeners DOM Breakpoints Properties

Filter

```
element.style {
}
```

Inherited from body

```
body {
  margin: 0;
  font-family: Roboto;
  background-color: #252525;
}
```



Filter Show inherited

display: inline;

Example 3: Polymer Production-Ready

<http://polymer-todo.herokuapp.com/>

Completed Tasks



4

Active Tasks

A tutorial by [Scotch.io](http://scotch.io) and [PubNub](http://pubnub.com)

Completed tasks will
appear here!

Task

Username

red-car

7/16



Make a Polymer app!



Created by: Kevin

11/8/2015, 2:35:25 AM



Drink some scotch.io



Created by: Justin

11/8/2015, 2:35:25 AM



Think of task.

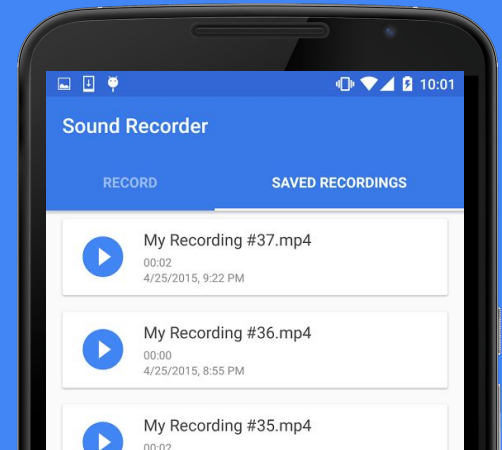


Created by: Tomomi

11/8/2015, 2:35:25 AM



Q: Alright Cool ! What if Polymer goes for *Mobile* Apps Development ?



A: Not yet. Why ? :(

The Difference Between NATIVE, WEB & HYBRID MOBILE APPLICATIONS



Native applications are coded in the native language of the device (e.g Objective C for iOS, Java for Android). They are run directly on the device.

- ✓ Access Native APIs
- ✓ Distribute through App Stores
- ✗ Run on multiple platforms



Web applications are coded in HTML, CSS and JavaScript. They are served through the Internet and run through a browser.

- ✗ Access Native APIs
- ✗ Distribute through App Stores
- ✓ Run on multiple platforms



Hybrid applications are coded in HTML, CSS and JavaScript*. They are run through an invisible browser that is packaged into a native application.

- ✓ Access Native APIs
- ✓ Distribute through App Stores
- ✓ Run on multiple platforms

*There are other ways to create hybrid applications, but this is the most popular

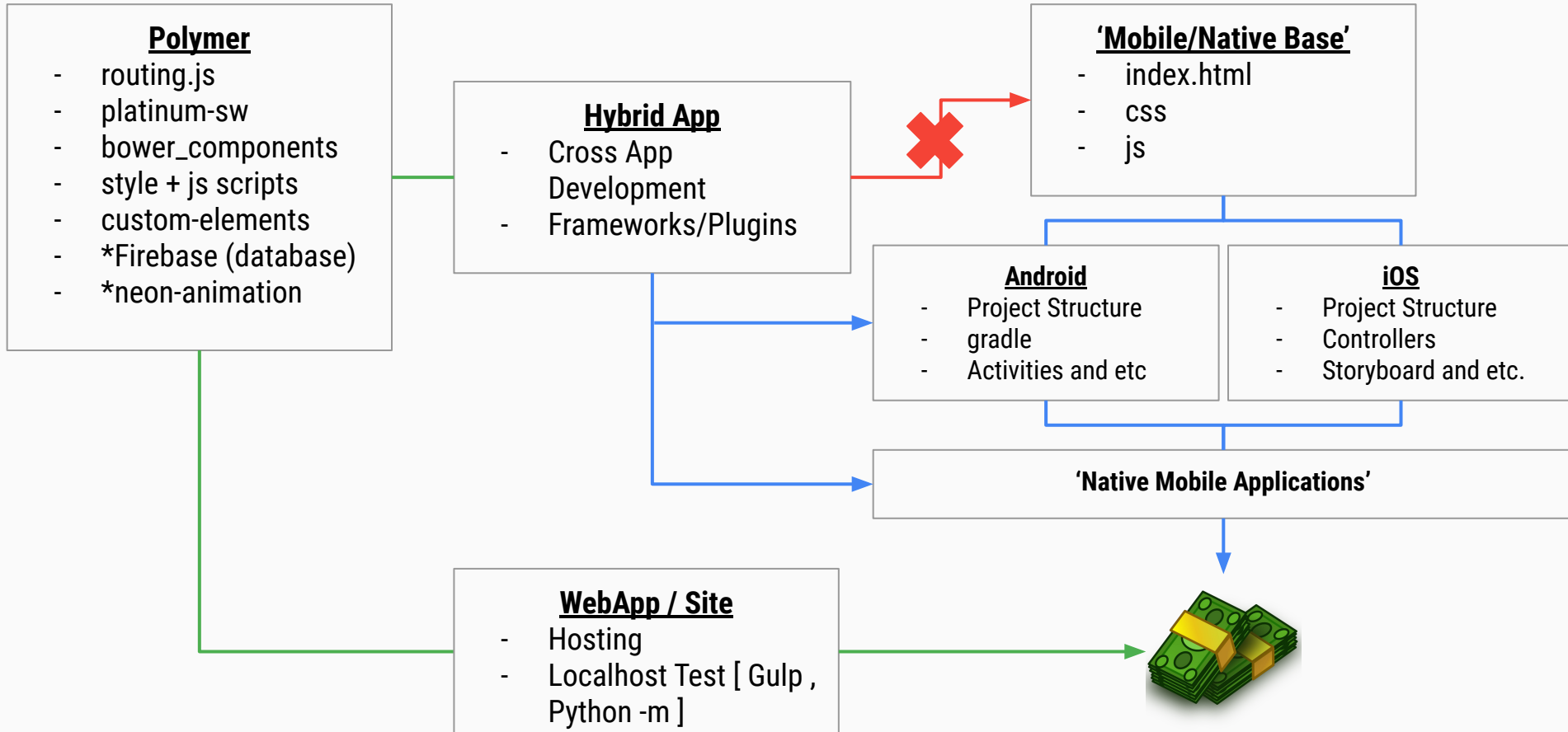
Understanding Native, Web, and Hybrid Applications

Source : *JoshMorony.com*



joshmorony.com

SC's Chart of Idealism



I see Blue Lines

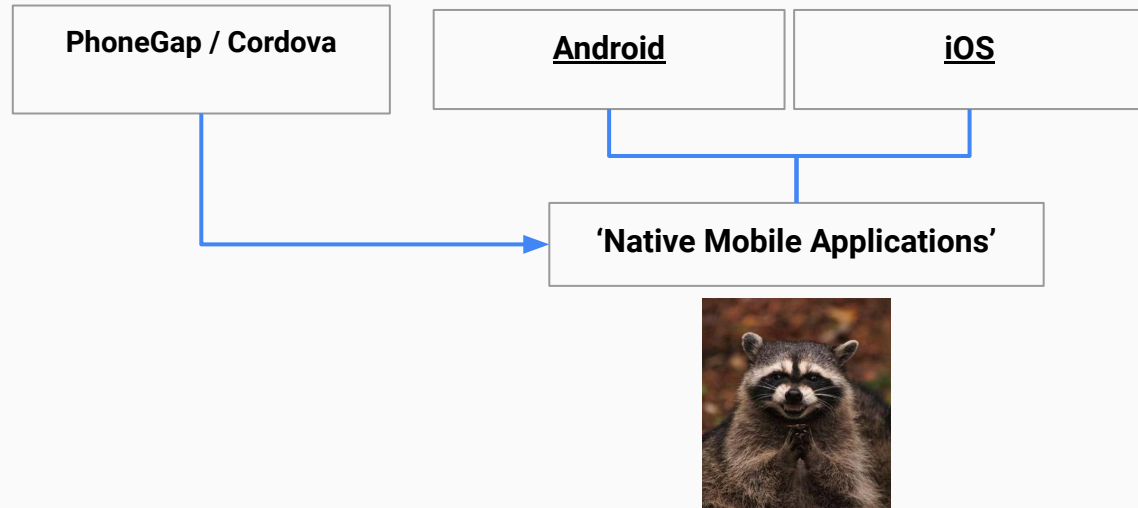
So there's a way for
'Mobile/Native Base' into
Multi-Platform Apps ?



POLYMER + PhoneGap / Cordova / Ionic

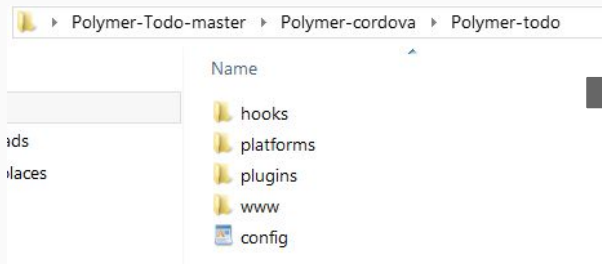
Mechanism:

- 1) Cordova creates Project as base
- 2) It uses the base project to include Android/iOS platforms
- 3) The Android/iOS Project will be created according Native Project Structure
- 4) May run development IDE (Android Studio / Eclipse) for bypassing settings and setup
- 5) Run App using *invisible browser*, Profit !

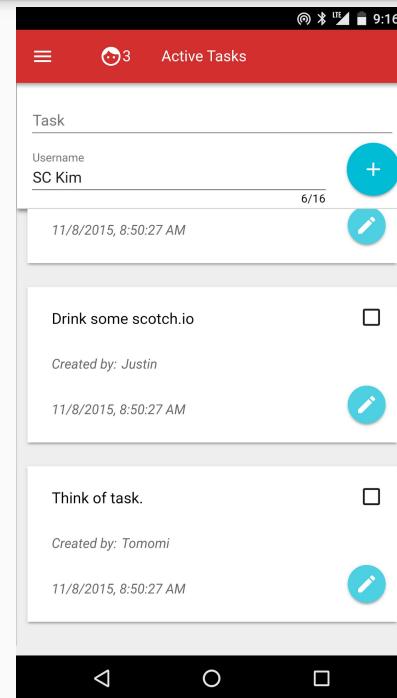
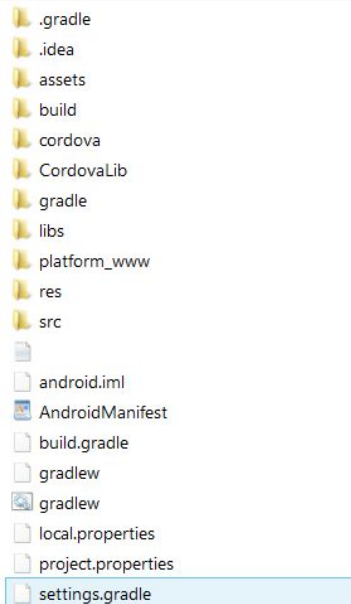


Project Structure of Cordova/Polymer for Android

Cordova Base Project Structure



Android Project Structure



Project Structure of Cordova+Polymer/Sites for Android

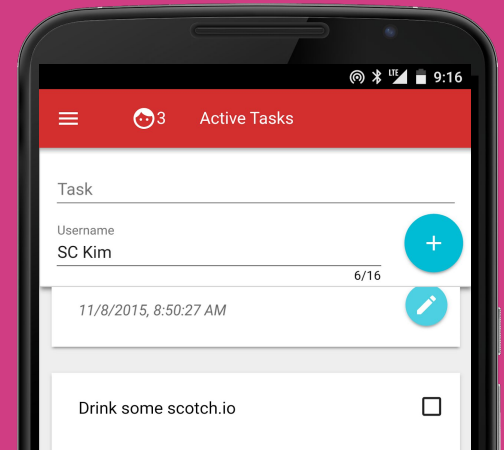
PROS :

- 1) No touching in Android Project source codes.
- 2) Fluid basic animation similar as native apps development
- 3) Just need to be web-guru ! (Knowledge of HTML, CSS, JS , Polymer)

CONS :

- 1) Might need extra rendering power in the application compared with native ones such as graphic processing, complex transitions and animations (because we're in *invisible browser*)
- 2) Might have little/some compatibility issues with host hardware's function

Q: That's Awesome yet 'Evil' ! Any more alternatives ?



A: NOT with Polymer, but they're good workarounds :)

Cross-Mobile Frameworks and Platforms for Hybrid HTML5 Apps

Material Designed (pseudo-Polymer)

- Ionic Material (ext. of ionic Framework)
- Angular Material (based on AngularJS)
- Bootswatch : Paper
- Material Design Bootstrap
- and etc.

Other Cross-Mobile Frameworks (non-Material Designed)

- Ionic Framework (based AngularJS)
- AngularJS
- Xamarin (not HTML5, but C#)
- jQuery Mobile
- Onsen UI
- Telerik.io
- KendoUI, etc.

Cross-Mobile Frameworks and Platforms for Hybrid HTML5 Apps

Material Designed (pseudo-Polymer)

- Ionic Material (ext. of ionic)
- Angular Material (based on AngularJS)
- Bootstrap : Paper
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- and etc.

Other Cross-Mobile Frameworks (non-Material)

Framework (based AngularJS)
S
(not HTML5, but C#)
mobile
etc.



My Little Insights

- Nothing is Perfect , Get your journey looking for Right ones
- Use what you feel comfortable (Developer) and make it comfortable to people as well (UX)
- High opportunities of evolution in Web Components, Polymer and cross-app frameworks, even browsers !
- Know well of your app's S.W.O.T
- Sharing is Caring
- **Lastly, know your Kaching (\$\$\$\$\$)**

References

- <http://ionicmaterial.com/demo/>
- <https://github.com/PolymerElements/polymer-starter-kit#getting-started>
- <https://cordova.apache.org/>
- <https://www.google.com/design/spec/material-design/introduction.html>
- <https://devfestkl2015.appspot.com>
- <https://www.youtube.com/playlist?list=PLOU2XLYxmsII5c3Mgw6fNYCzaWrsM3sMN> [POLYCAST + POLYMER TUTORIAL, thanks @RobDobson]

THANK YOU FOR READING !



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