Unleash the full fury of web innovation in your Android app today

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Open Source Technology Center

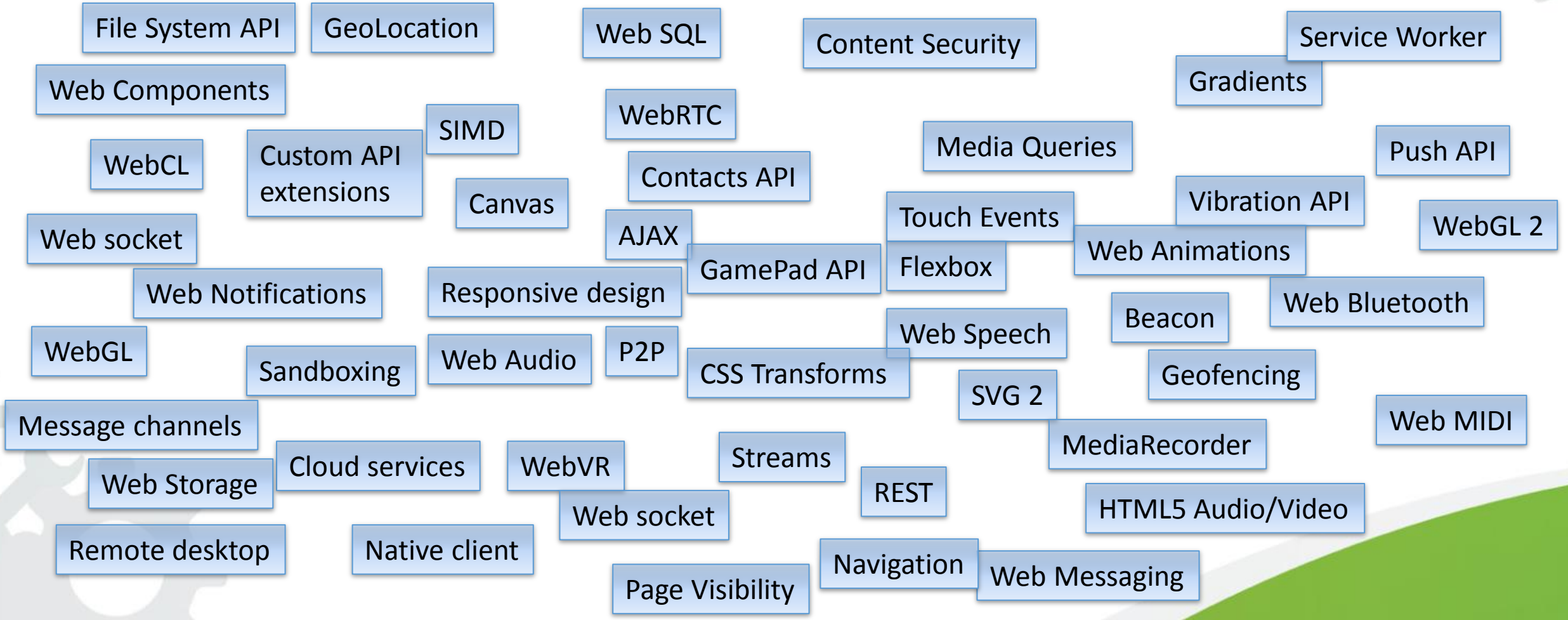
Community Manager

SENCHACON 2015
DESIGN
DEVELOP
DEPLOY

Web Innovation

Web app capabilities are plentiful and improving rapidly.

...But not all features are available on all platforms



What if...

- **New web technologies were available and usable...**
- **Your latest application behaved the same...**
- **Your target market increased...**

...on all Android devices!

- Advanced HTML5 runtime based on Google's Blink and Chromium
- Designed for ambitious web apps
- Exceptional performance for Android apps using web technologies
- Reduces Android fragmentation

CROSSWALK PROJECT

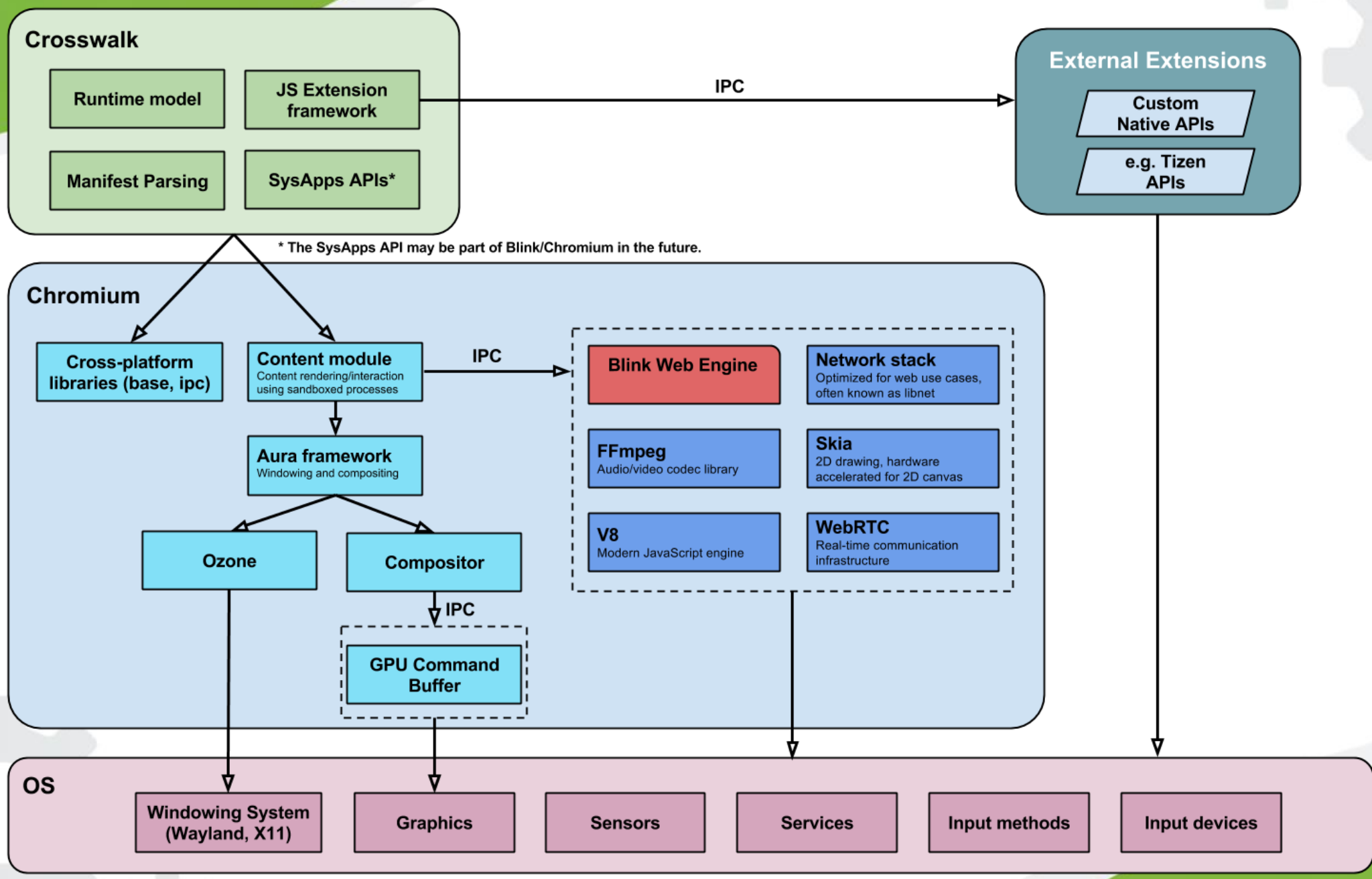
Crosswalk Project Goals

- Enable latest, advanced web application features across all Android devices (v4.0+)
- Based on W3C standards and landing zone for new draft APIs and Intel differentiation, such as SIMD and Presentation API
- Bring web applications to the next level, closer to native
- Easy adaptation for downstream projects
  - Integrated with Cordova, Sencha*, Intel® XDK or even existing Android Java applications.
- Good co-operation with upstream projects
  - Chromium, Blink, Skia, V8, Wayland

CROSSWALK PROJECT

Wonderfully Open Source

- Fully open source project – embraces participation
- BSD licensed. Started in September, 2013.
- 6-week release cadence. Stable, Beta and Canary channels.
- GitHub for code and reviews. JIRA for features and bugs. FreeNode for IRC.
- Plans, support, and feature ownership via mailing list


Crosswalk
Runtime model
JS Extension framework
Manifest Parsing
SysApps APIs*
IPC
External Extensions
Custom Native APIs
e.g. Tizen APIs
* The SysApps API may be part of Blink/Chromium in the future.
Chromium
Cross-platform libraries (base, ipc)
Content module
Content rendering/interaction using sandboxed processes
IPC
Blink Web Engine
Network stack
Optimized for web use cases, often known as libnet
Aura framework
Windowing and compositing
FFmpeg
Audio/video codec library
Skia
2D drawing, hardware accelerated for 2D canvas
Ozone
Compositor
V8
Modern JavaScript engine
WebRTC
Real-time communication infrastructure
IPC
GPU Command Buffer
OS
Windowing System (Wayland, X11)
Graphics
Sensors
Services
Input methods
Input devices

Features and APIs

- Web Components
  - Future of the web app design
- Service Worker
  - Closing the gap between the native and web applications
- Responsive Design
  - Media queries (L4), @viewport, Picture element, srcset attribute
- Native Client
  - Portable version, pNaCl
- Manifest
  - Standard manifest for web applications
- W3C SysApps: Raw Sockets
- W3C SysApps: Device Capabilities
- W3C SysApps: App URI

Features and APIs (cont.)

- W3C Promises API
- W3C Resource Timing API
- W3C User Timing API
- W3C Ambient Light API
- W3C GamePad API
- EcmaScript SIMD
- W3C WebRTC
- W3C WebGL, Canvas
- W3C Web Animations
- HTML5 input enhancements
  - context menu, pattern attribute, data list element, autocomplete
- Beacon
- Vehicle API (IVI)
- DLNA API (IVI)

Building with Crosswalk

3 easy steps:

1. Download Crosswalk

	Stable	Beta	Canary
Android (ARM + x86)	11.40.277.7	12.41.296.4	13.41.313.0
Android webview (x86)	11.40.277.7	12.41.296.4	13.41.313.0
Android webview (ARM)	11.40.277.7	12.41.296.4	13.41.313.0

2. Package Crosswalk with your application using make_apk.py:

```
$ python make_apk.py --package=org.abc.myapp \
                     --manifest=myapp/manifest.json
```

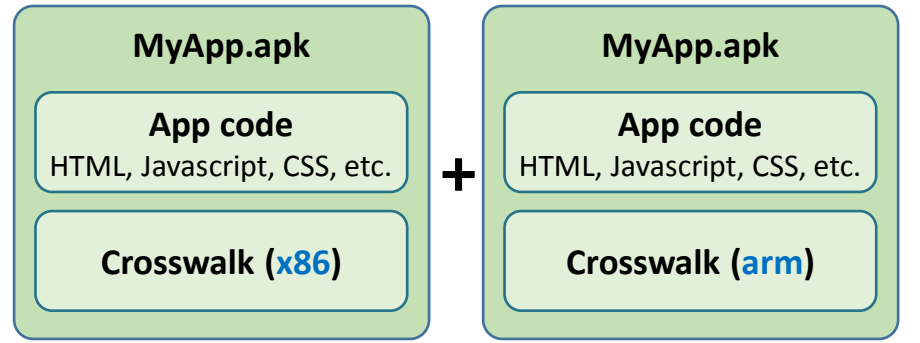
- Bundles Crosswalk runtime with your application
- Creates apk for both x86 and arm

3. Install

```
$ adb install -r myapp_x86.apk
```

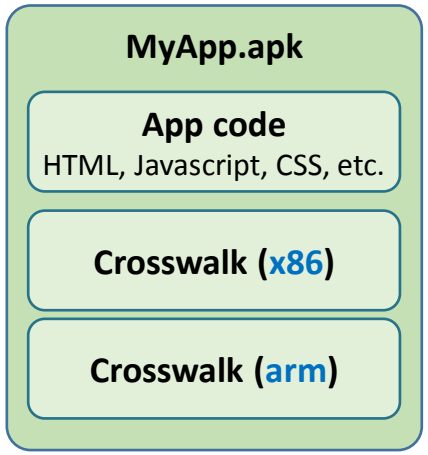
Crosswalk and your Android app

Embedded



- Two apks: one for each arch
- Crosswalk size:
  - +20MB in apk
  - +50MB installed
- Submit two apps to the store

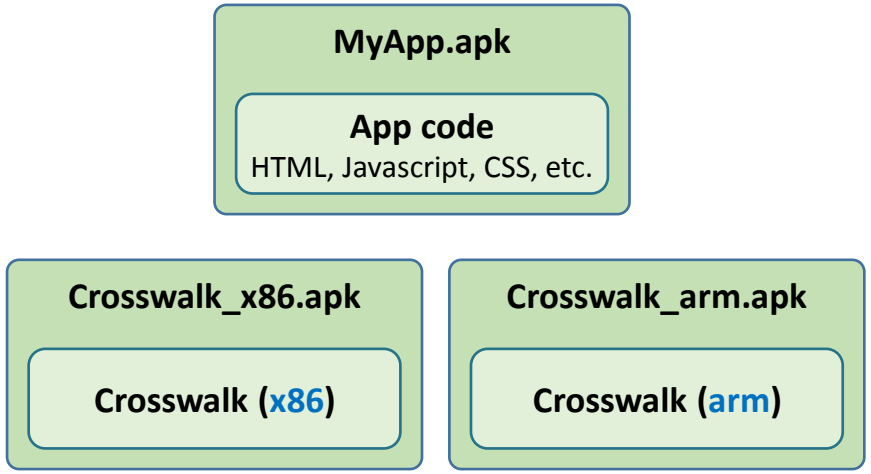
OR



- One “fat” apk: includes x86 and arm
- Crosswalk size:
  - +40MB in apk
  - +100MB installed
- Submit one app to store

OR

Shared



- Link to shared Crosswalk library
- Dynamically downloaded
- Version dynamically updated

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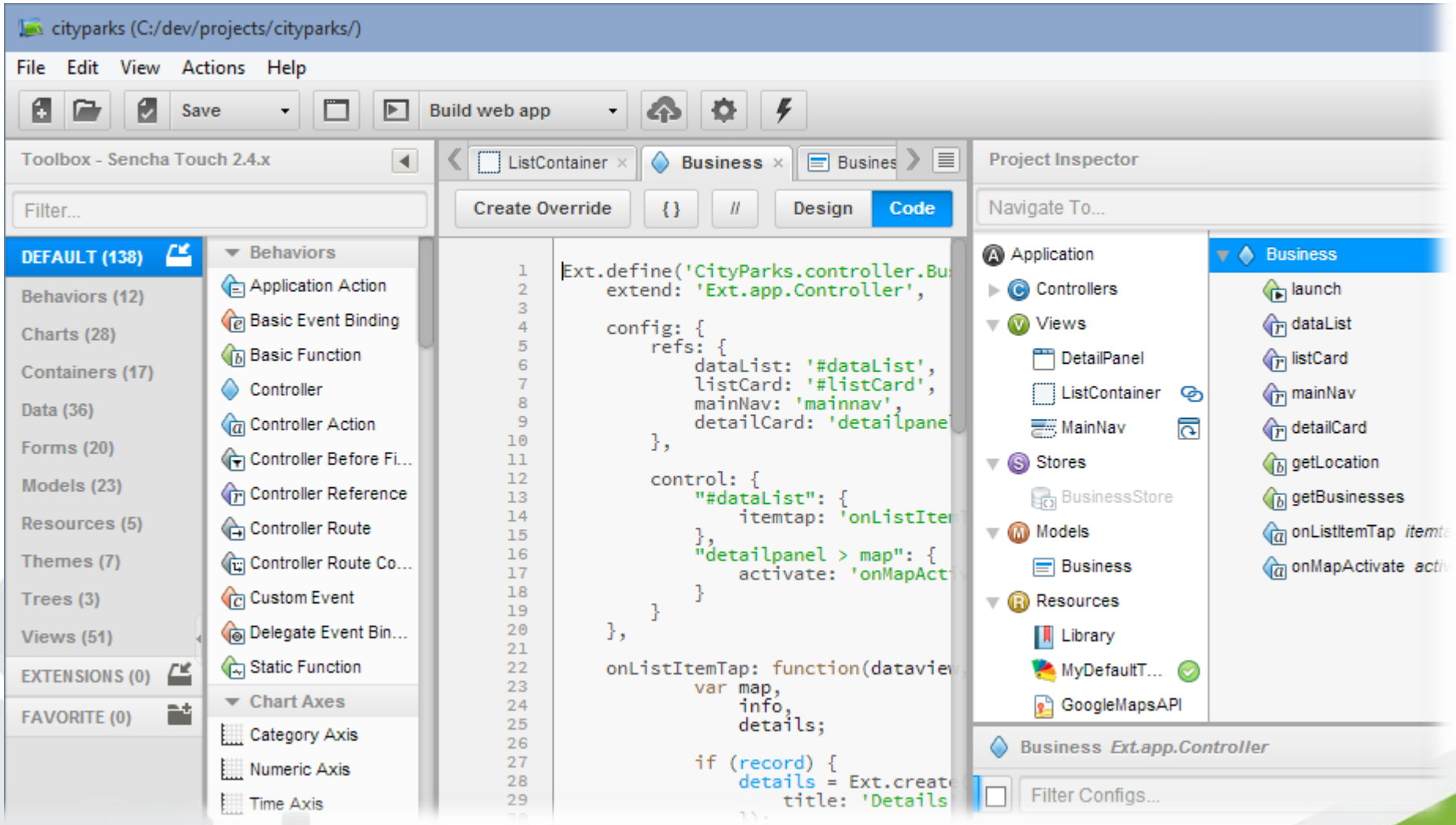
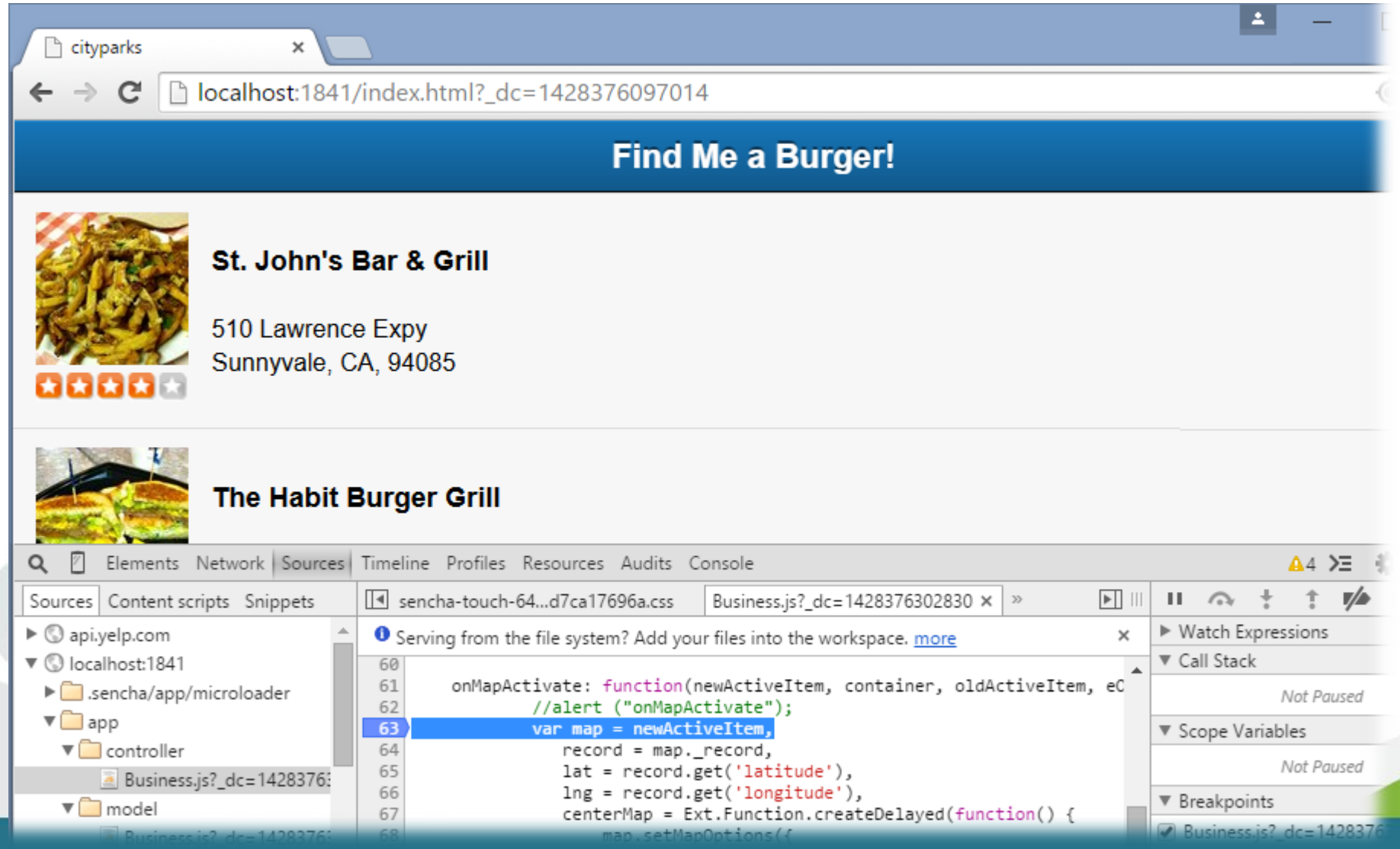
Sencha and Crosswalk



Design and develop using your preferred process and tools.

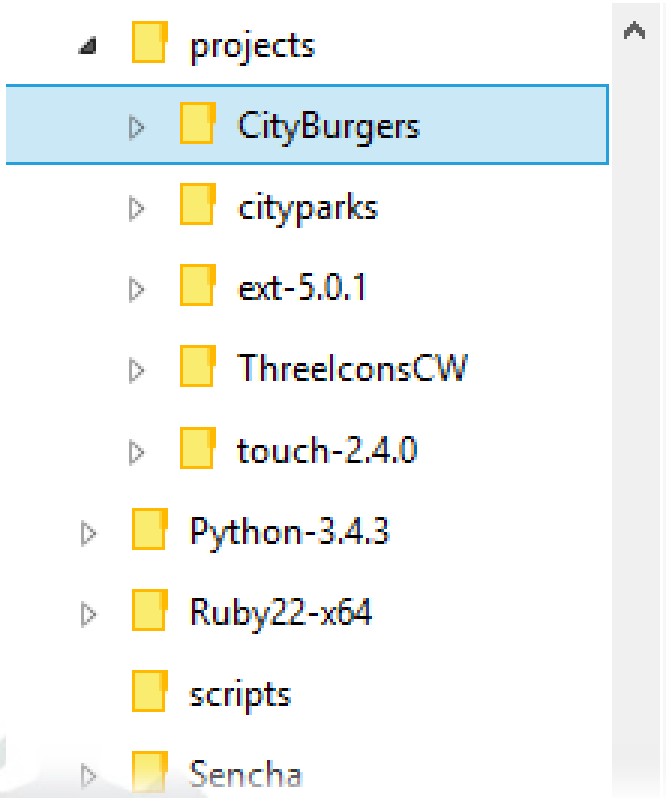
CROSSWALK PROJECT

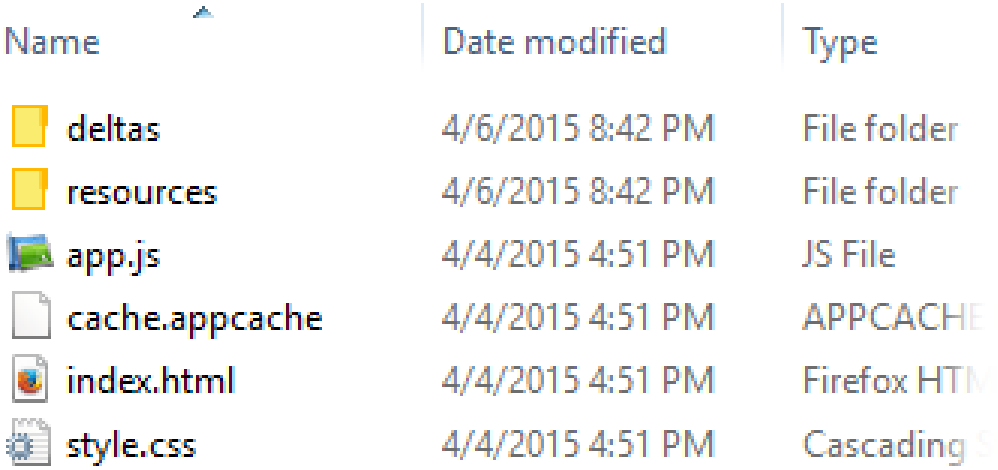
Sencha and Crosswalk



Debug and validate using your preferred process and tools.

Sencha and Crosswalk

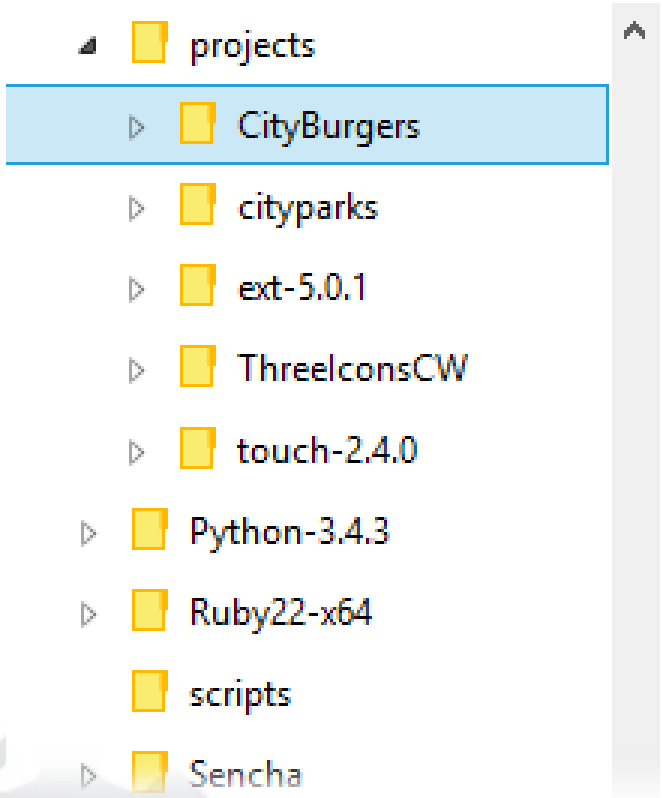


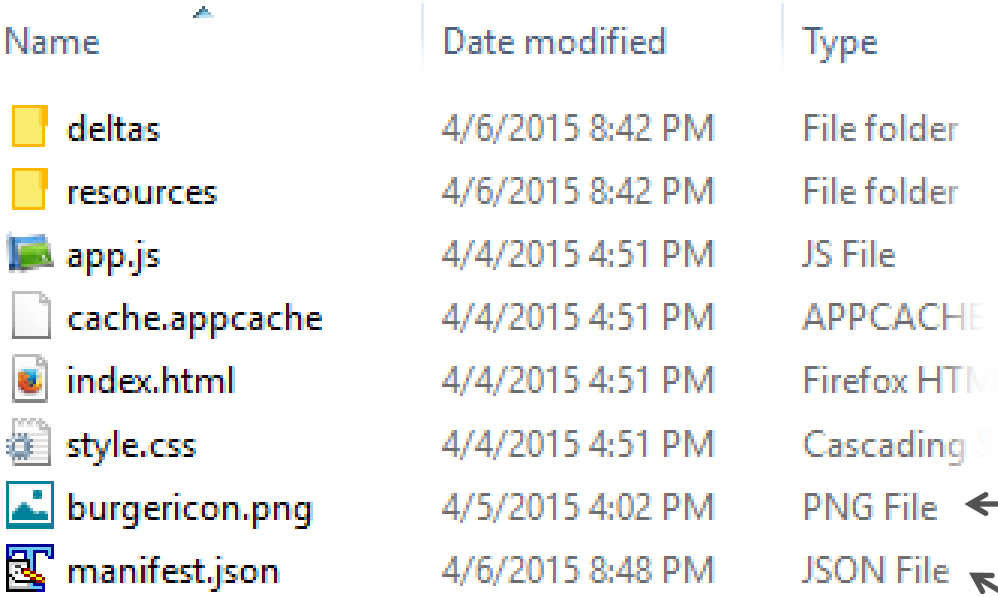


Start with web application project directory

CROSSWALK PROJECT

Sencha and Crosswalk





Add icon and manifest.json files

manifest file

Crosswalk manifest file

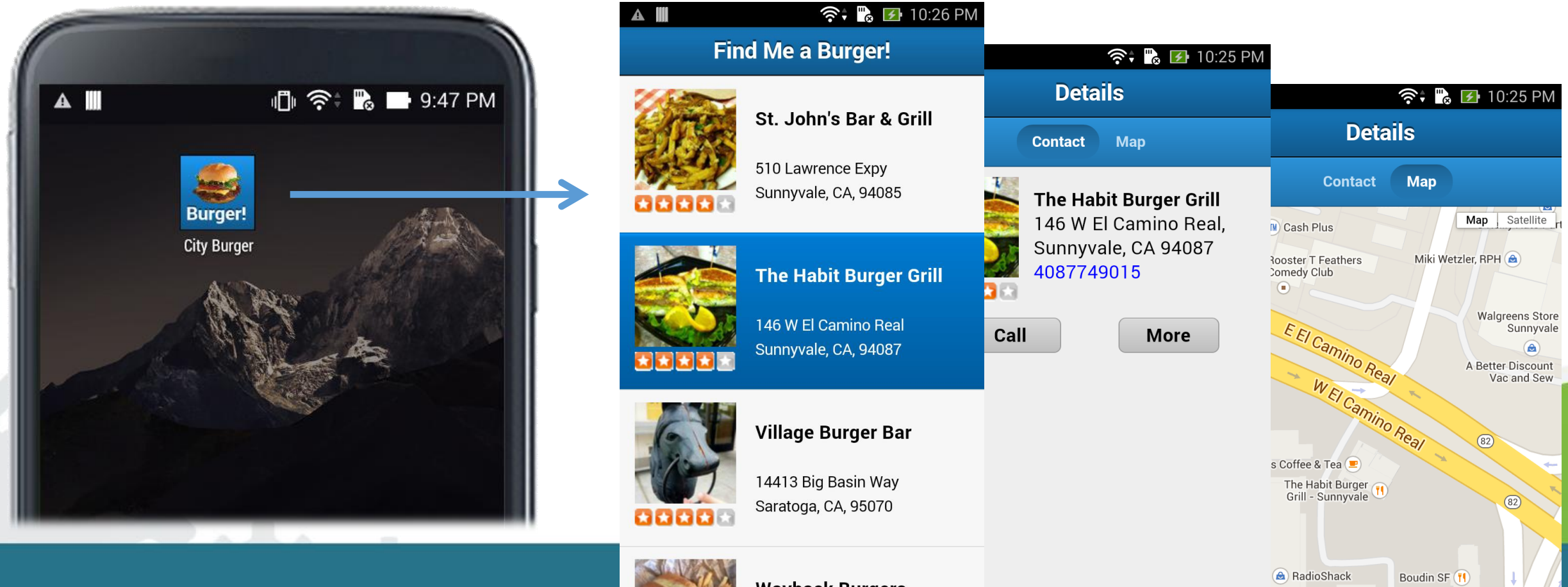
```
{
  "name": "City Burger",
  "xwalk_version": "0.0.1",
  "xwalk_description": "Bob is hungry for a Burger",
  "start_url": "index.html",
  "icons": [
      {
          "src": "burgericon.png",
          "sizes": "128x128",
          "type": "image/png",
          "density": "4.0"
      }
  ],
  "xwalk_permissions": [
    "Geolocation"
  ]
}
```

```
> make_apk.py --package=org.bob.cityburger \
              --manifest=../projects/CityBurger/manifest.json
```

CROSSWALK PROJECT

Create Store-ready APK and Deploy

```
> adb install -r Cityburgers_0.0.1_x86.apk
```



Crosswalk Lite

Research project to reduce size of APK and installed app

Size estimates:

Crosswalk Project		Crosswalk Lite	
APK	Installed	APK	Installed
20M	55M	10-15M	40M

Changes:

- Use LZMA compression. Longer first-time startup.
- Removed support for:
  - Web Inspector, remote debugging, FTP protocol, WebRTC, WebP, and XSLT

https://crosswalk-project.org/blog/crosswalk-lite-10.html

CROSSWALK PROJECT

The Crosswalk Advantage

- Advanced web runtime and webview features available for legacy Android platforms
- Application consistency across all Android versions
- Extendable
- Full control over upgrade cycle
- Based on Blink and Chromium
  - Latest innovations, strong performance
  - Intel is driving innovation in Blink and Chromium, including reviewing and owning various areas of the code base
- Wide community adoption and strong corporate backing
- Easy to use. A nice combination with Sencha tools and frameworks
- Open source

CROSSWALK PROJECT

@xwalk_project I replaced my regular cordova project to Crosswalk and now everything works much better in all devices! *--* #html5 #mobile

Mozart Diniz @mozartdiniz

The Crosswalk Project looks like the new, best way to publish HTML5 content to Android.

Ashley Gullen
Creator of the Construct 2 game engine

@Ionicframework @xwalk_project It's much easier now to debug my #Ionic #apps using @googlechrome Dev Tools in my browser.

aferrerDev @aferrerDev

I am very confident in my hybrid project now :) @xwalk_project

David Yarham @davidyarham

CROSSWALK PROJECT

It’s finally possible to build hybrid apps that use a modern web view and run on almost every Android device released within the past three years.

Max Woghiren
Software Engineer @ Google

@xwalk_project that's some awesome kit you're building there guys. Just factored it into a @meteorjs app and Android perf greatly improved.

Joe Buckle @ bambattajb

10x perf improvement for hybrid apps on Android 4.0-4.3 for 15mb with @xwalk_project Seems well worth it to me. http://ionicframework.com/blog/crosswalk-comes-to-ionic/ …

Chris Wheatley @swirlycheetah

@xwalk_project Finally something that works!

Remzi Cavdar @ remzicavdar

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