Google TV

Seamless integration of TV, Web and Apps

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Google TV
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Shawn Shen ”Life-long” dream coming true to be at IEEE

Studied Super String Theory in Physics

First job: Semiconductor testing

Worked at eBay, Yahoo, now Google

5 Google TVs as GIFTS

Google TV

01 Introduction to Google TV (What?)

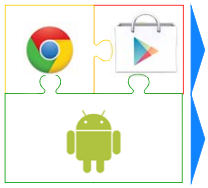
02 Opportunities to Participate

03 Getting Started

Google Confidential and Proprietary

Product Overview
Introduction to Google TV

Google TV



- Chrome browser
- Google Play

- Operating system Android 3.2

Google TV is an operating system

•Android 3.2 (Honeycomb) optimized for TV devices (e.g. TV, STB, BD player, buddy-box)

Google TV openly accessible

•Google Chrome browser (full internet access)

•Google Play (open platform for TV apps)

•Android SDK (tools/ APIs for developing apps)

Seamlessly integrates TV, web, and apps

Google TV integrates web and apps into TVs

•enables access to TV screen for content providers and app developers

Linear TV remains at center of experience

•Simple and easy-to-use UI

•Seamless integration with existing TV set-up (no switching between inputs necessary)

Google TV is an open operating system that seamlessly integrates TV, web, and apps

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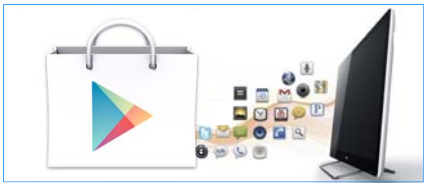
Apps and web on the TV
Introduction to Google TV

Google Play



Google TV has Google Play

•allows users to browse and download TV optimized apps published by third parties

Developers can build an Android app for TV

•create new or optimize existing Android app

•publish on Google Play

•promote, distribute, and monetize

Chrome browser

Google TV has a full Chrome browser

•allows users to easily browse the web and access TV optimized websites

Developers can optimize web site for TV

•develop Web app using modern HTML5, CSS, JavaScript platforms

•optimize UI, sound, navigation

Two easy ways to directly access the TV screen via Google TV: Android Apps and Web Apps

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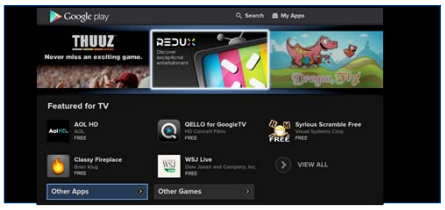
Significantly improved version 2
Introduction to Google TV

Better, simpler UI

Google Play for TV-optimized apps



All applications

Chrome Browser for full internet access

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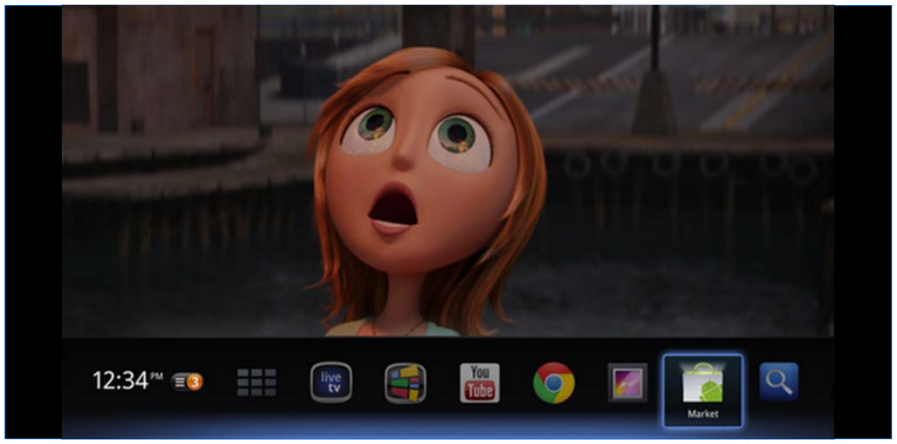
GTV v2: Home
Introduction to Google TV



- Home screen is simple, easy-to-use, and customizable by users

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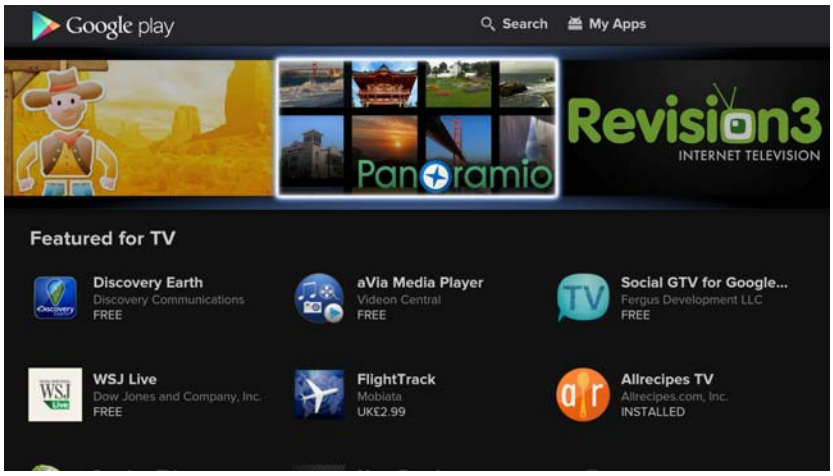
GTV v2: Google Play

Introduction to Google TV



- Access to Google Play, an open application platform for TV apps

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GTV v2: All Applications

Introduction to Google TV

- All Applications shows downloaded and installed apps

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GTV v2: Chrome browser
Introduction to Google TV

- Chrome Browser enables open access the web displays general internet content as well as TV optimized Web Apps (e.g. “The New York Times”-App)

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Sony’s Google TV boxes
Introduction to Google TV

SONY make.believe

Internet TV Blu-ray Disc player powered by Google TV

- With the **NSZ-GP9**, search everything with the world’s first Internet TV Blu-ray Disc player powered by Google TV

Network Media Player powered by Google TV

- Sony’s new **NSZ-GS7** Netbox will upgrade your HDTV, providing you with full internet capabilities thanks to Google TV

What’s the Wow?

- All in one network home entertainment with a Sony Internet TV box powered by Google TV

Highlights

- Find your favorite content easy thanks to the new touch-pad remote control
- Use your Smartphone as a remote control with Sony’s Media Remote app

D-Pad

Virtual Input Devices

Google TV Remote Able Remote

https://code.google.com/tv/remote/

https://code.google.com/p/google-tv-remote/

Smart TV: Multi-Screen Experience

Google TV
Agenda

01 Introduction to Google TV

02 Opportunities to Participate (Why?)

03 Getting Started

You all know this guy....

Friday, April 20, 12

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America's #1 Past Time:

Friday, April 20, 12

2.9 TVs per household Nielsen

~5 hr TV watching daily Nielsen

500M web enabled TVs by 2015 Source Crave Asia, July, 2011

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Work with a compelling solution
Opportunities to Participate

Build once and for all

Develop for multi screens

•Android compatibility across devices (TV, tablet, smart phone)

Build across devices

•access to devices (TVs, STBs, BD players etc.) of div. manufacturers

Obtain global reach

•easy internationalization

Work with known platforms

Android software framework

•incl. access to known APIs and development tools

Google Play for app publishing

•incl. monetization tools (e.g. in-app payments)

Full Chrome web browser

•work on HTML5 to build Web Apps

Benefit from innovation

Create a multi-screen experience

•enable phones, tablets and other devices to interact with Google TV

Work on latest TV software

•tap into rapid pace of innovation

•maintain backwards compatibility

▶Google TV makes it easy to manage applications across screens and devices

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Promote, distribute and monetize
Opportunities to Participate

Paid Apps

Sell your Android app

•price relative to your category and region to optimize sales

•in-app payments in addition possible

In-app Payments

Monetize within Android apps

•in-app purchases can include add-ons, game tokens, music, video, and other content

Grant authenticated access

•authenticate access to content via an app

•more views, higher ratings, more monetization opportunities

Advertising

Advertise on the TV screen

•all current ad formats supported

•no associated fees or revenue share

Innovate with new ad formats

•host innovative targeted ads in apps or on websites

•use third party advertising

▶Promotion and distribution for content, products, and brands
▶Monetization opportunities (in-app payments, authenticated access, paid apps, in-app ads)

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Google TV
Agenda

01 Introduction to Google TV

02 Opportunities to Participate

03 Getting Started (How?)

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03 Getting Started (How?)

- **A** Development Options: Web vs Android
- B Setup and Configuration
- C UX Design, Best Practice, All That

Two Development Options
Web vs Android
Javascript vs Java

Web: Optimized sites for Google TV
(For Web Developers)

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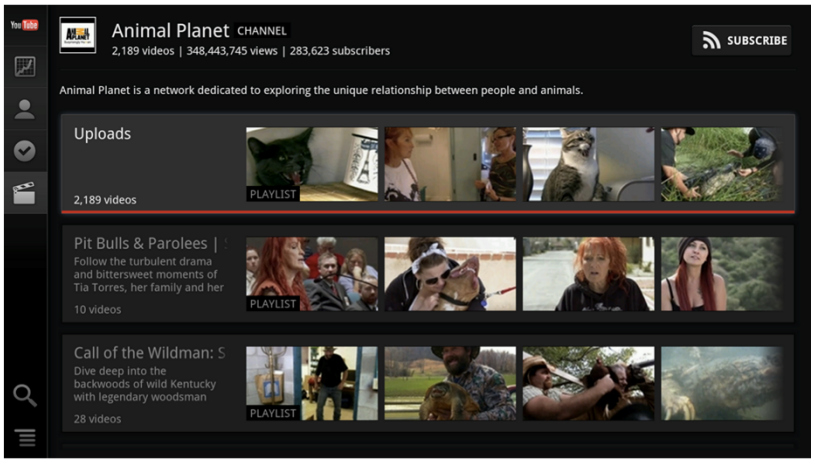
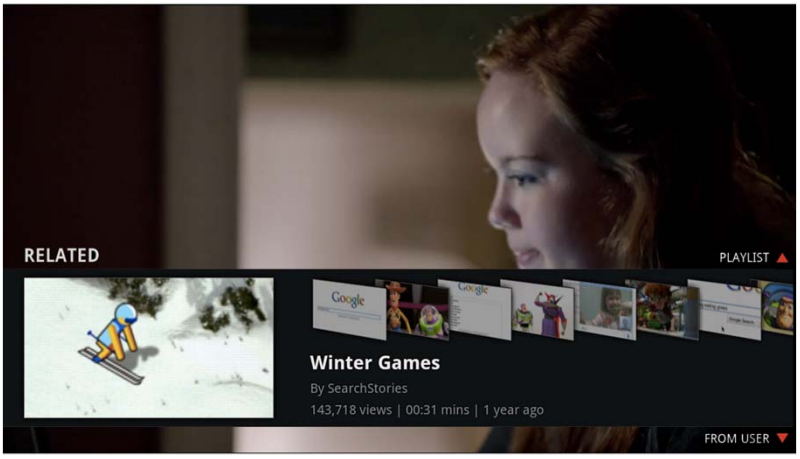
-

TV Optimization

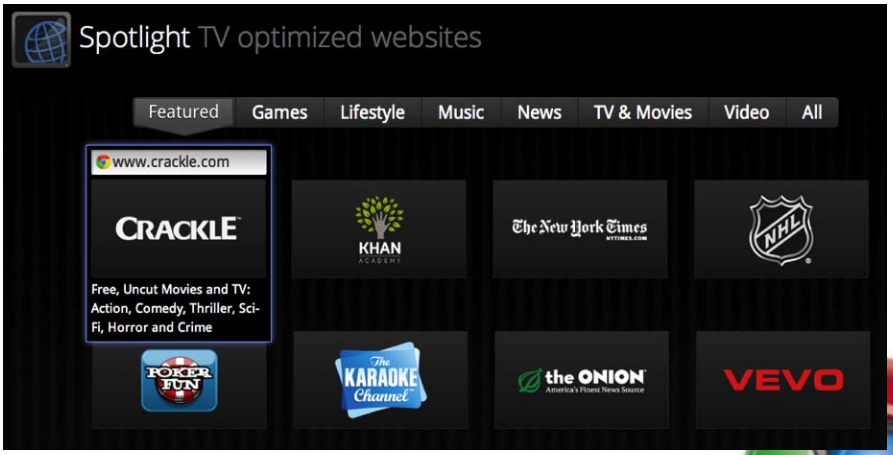
TV Optimization !



TV Optimization !



Web App Spotlight



http://gtv-gallery.appspot.com/

Native Apps for Google TV (For Android Developers)

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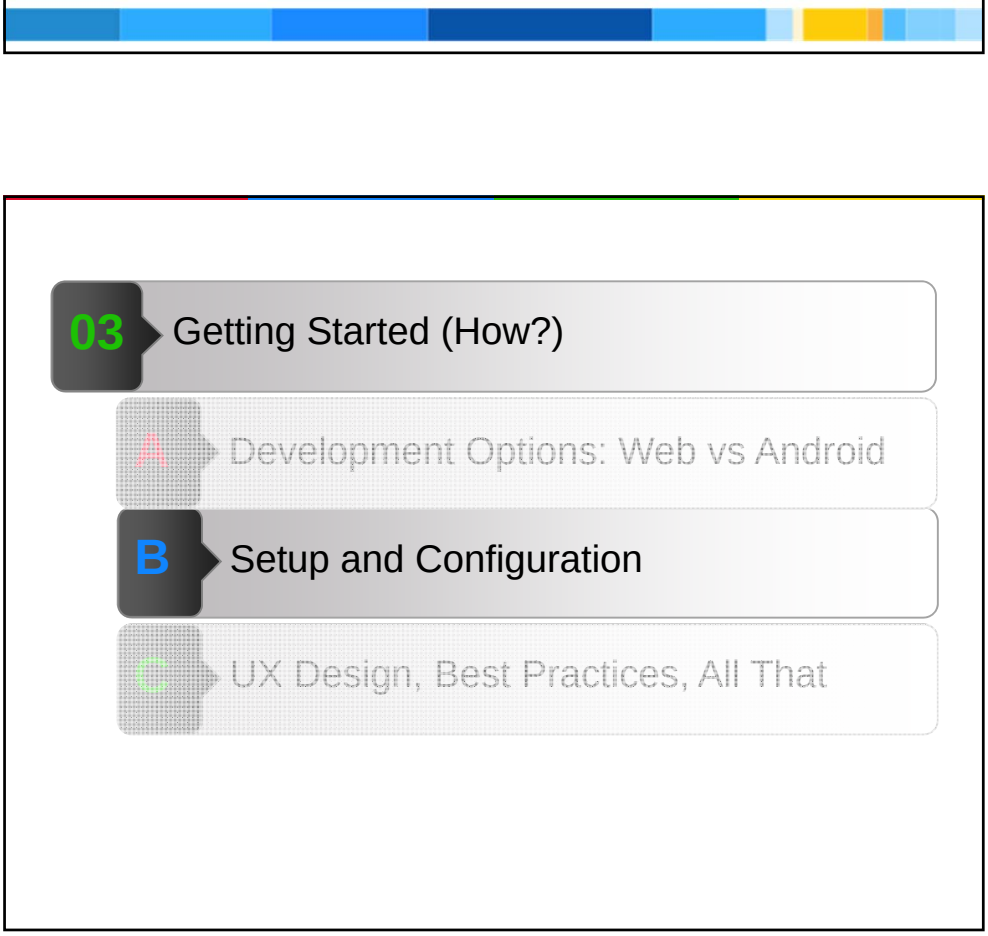
Developing for Google TV

Creating Android Apps



Android Setup

- Install the Android SDK
- Install Google TV Add-on for Eclipse
- Set up Google TV Boxes

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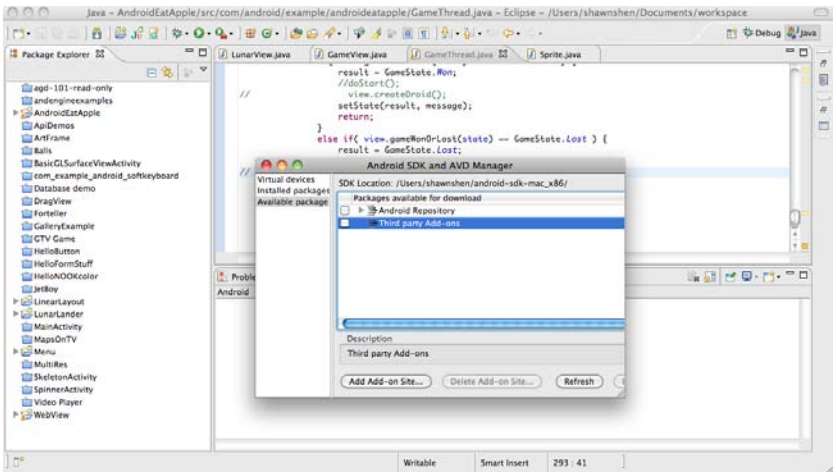

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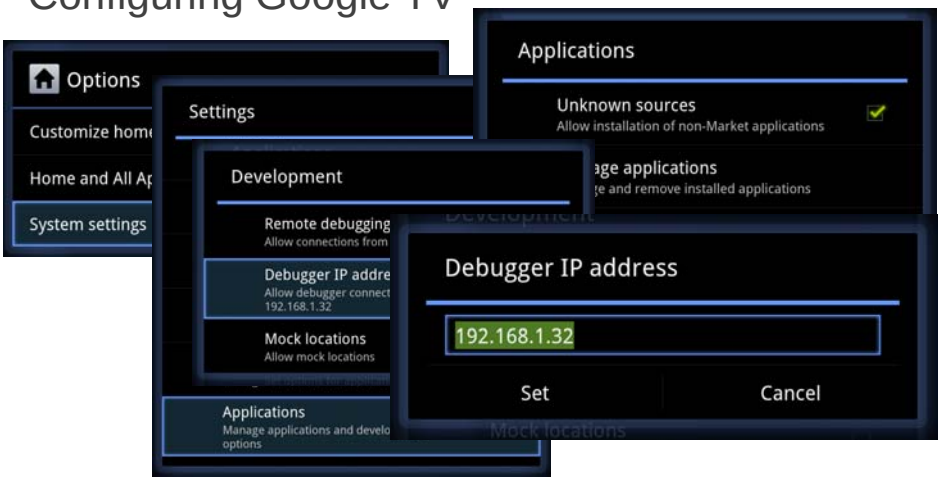
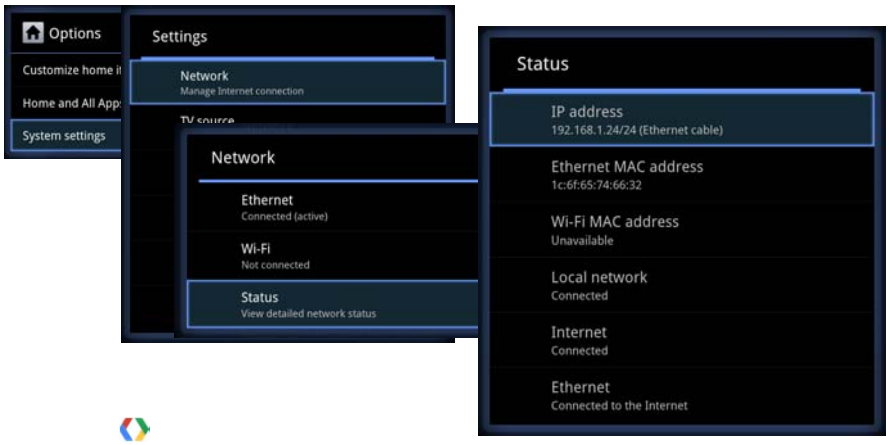
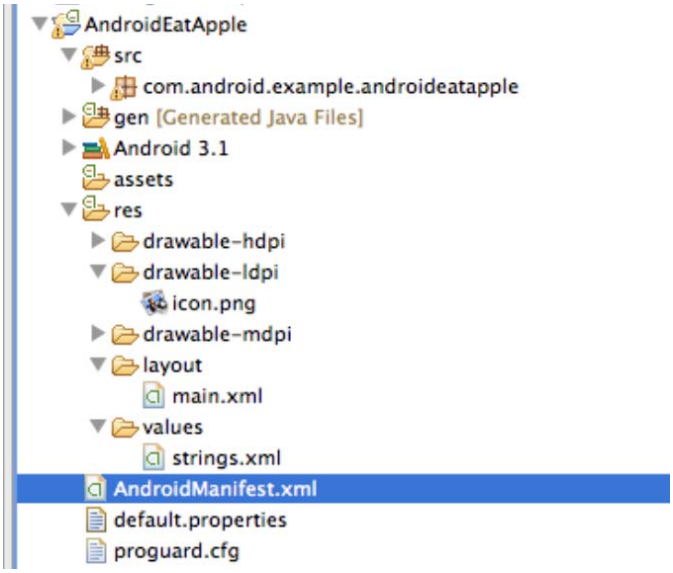
Configuring Google TV



Connecting from DevBox to Google TV

Command: adb connect 192.168.1.24





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Manifest and Google TV

- Apps filtered for Google TV Android Market
- No Touch
  - `<uses-feature android:name="android.hardware.touchscreen" android:required="false"/>`
- Landscape
  - `<uses-feature android:name="android.hardware.screen.portal" android:required="false"/>`
- GPS
  - `<uses-feature android:name="android.hardware.location.gps" android:required="false"/>`
    - zip code available to LocationManager

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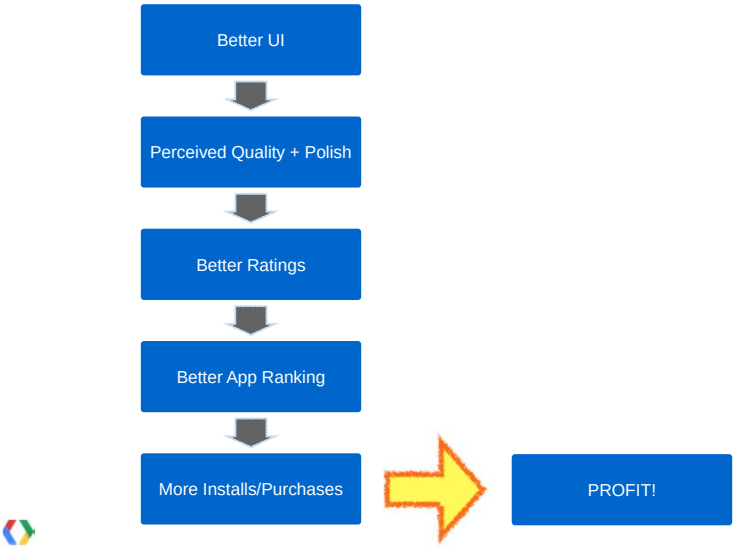
03 Getting Started (How?)

A Development Options: Web vs Android

B Setup and Configuration

C UX Design, Best Practices, All That

Why do you care?



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10’ UI

- Traditionally for consuming content
- Viewing experience is a mix of computer and TV
- TV’s have high-quality sound
- Requires simple and visible navigation tools.

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Tips for a Good 10' Experience (cont.)

- Use pure white sparingly use #F1F1F1
- Simplify category navigation
- Distinction between selected and focus should be clear and predictable.
- Use Animation to help users understand what's going on.

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UI Design Tips

- Not "just" a big screen Android
- Focus on vital parts of your application
  - Group content, controls & interactions by priority (use progressive disclosure)
- Throw out the non-essential (keep it simple)
- Multiple screens better than overloading users
- Design using fluid layout and scalable assets (9-patch images)
- Have a simple mental model
- Consider hiring an interaction designer

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UI Design

- Dark background
- BOLD fonts
- Short lines
- Increased Line Spacing

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Social Device

- TVs are used by multiple people, often simultaneously
- Think about how you protect a users private data.
- Consider supporting Multiple accounts.

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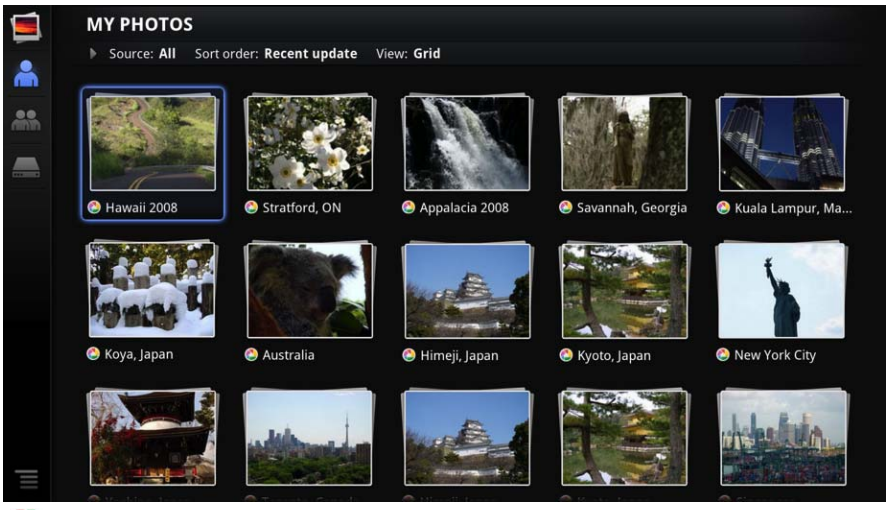
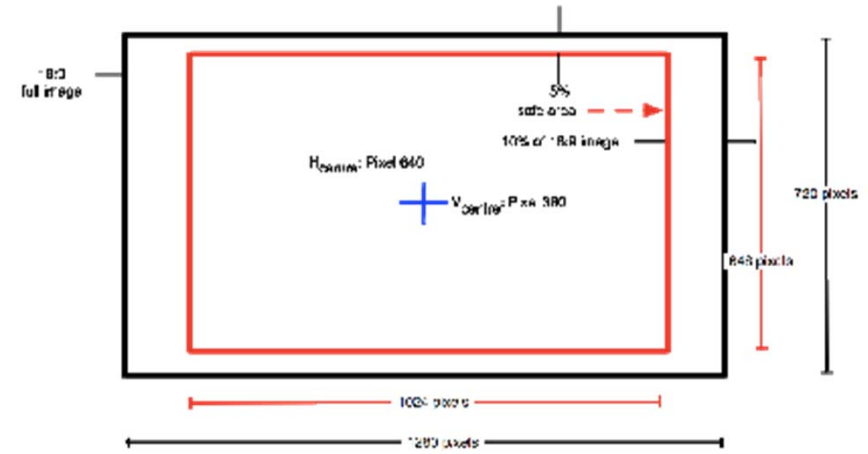
TV specific guidelines

Let’s take a Simple UI...

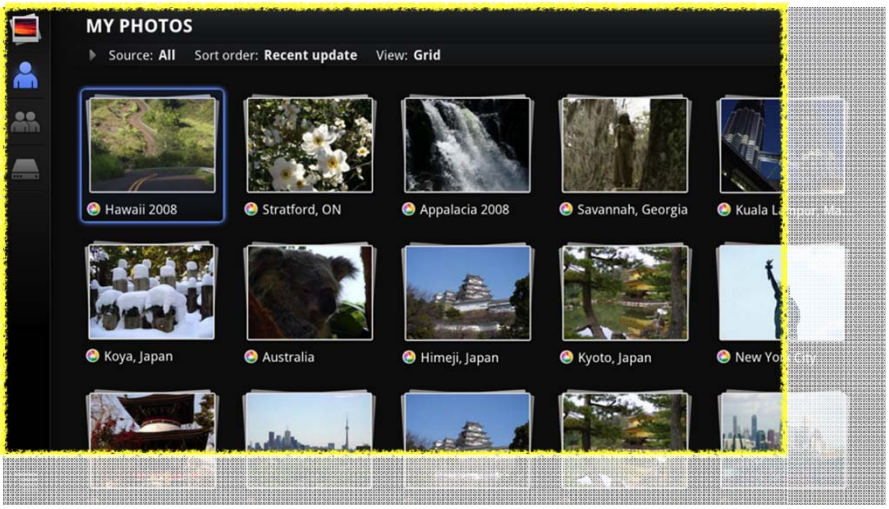


“Safe Area” for a 720p Video

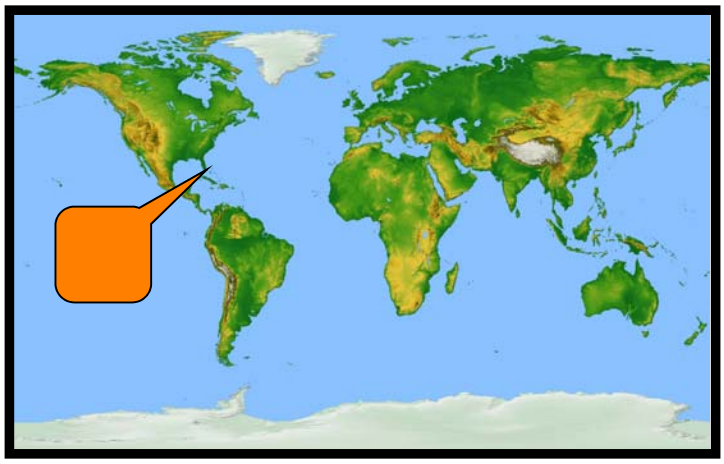


Overscan

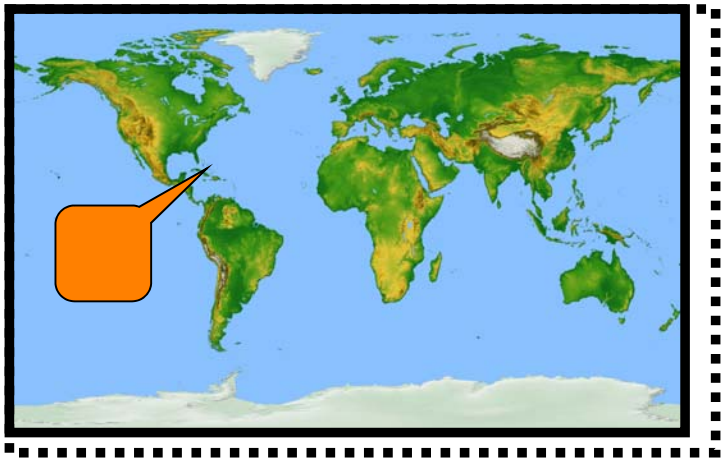
Overscan



Where this fails “horribly”



Scale Background



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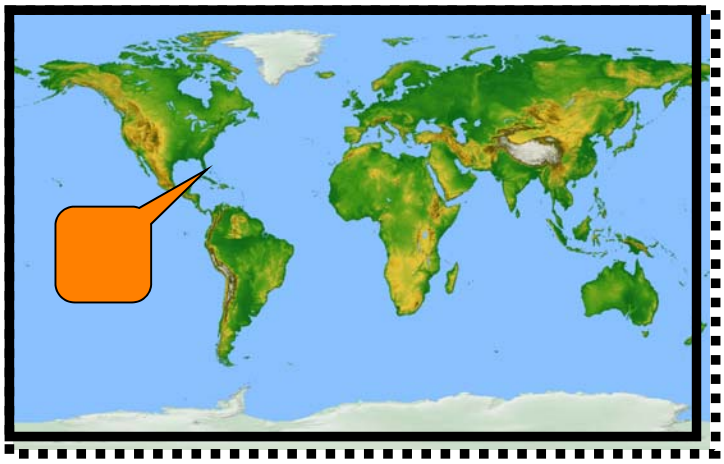
Better: Cropping



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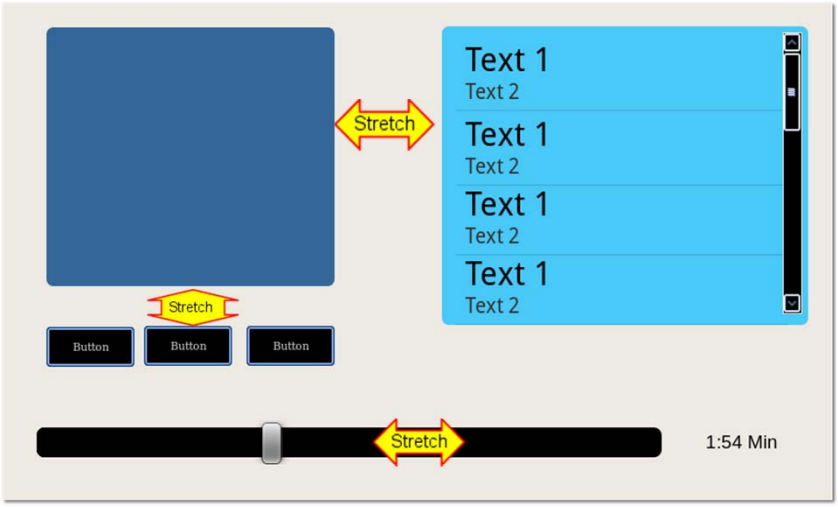
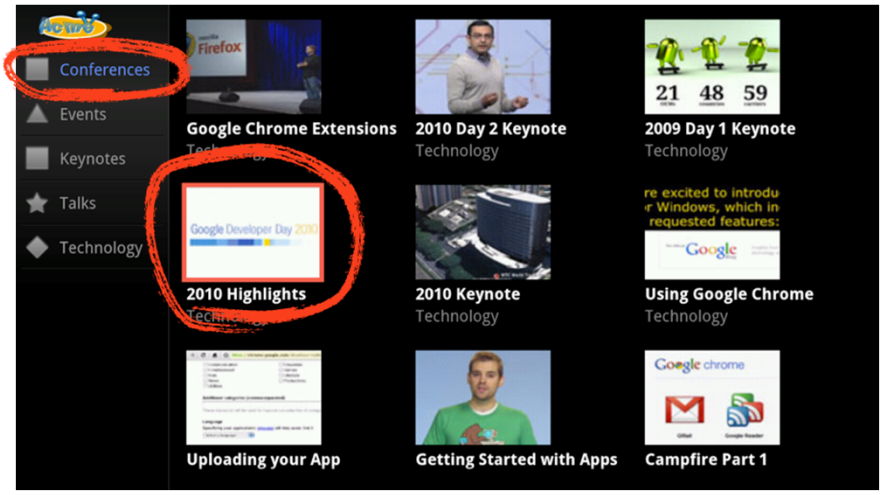
Best: Use Fluid Layouts



Design Patterns

Selection and Focus



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Selection and Focus

- android:focusable

• Show selection & focus (state list)

```
<selector>  <item    android:drawable="…"
android:state_focused="false"
android:state_selected="true" />
  <item    android:drawable="…"
android:state_focused="true"
android:state_selected="false" />
  <item    android:drawable="…"
android:state_focused="true"
android:state_selected="true" /></selector>
```

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Focus and Navigation

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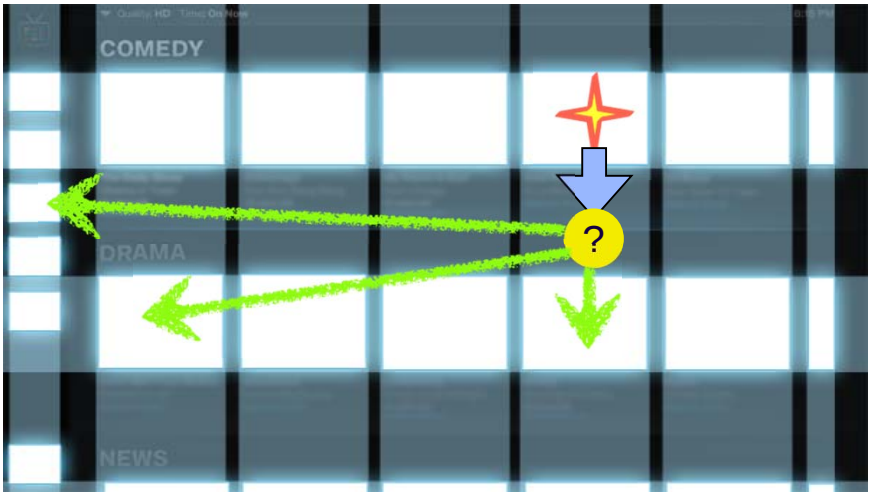
Grid Pattern for Navigation



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Focus (cont.)

android:nextFocusDown
android:nextFocusLeft
android:nextFocusRight
android:nextFocusUp
android:nextFocusForward [tab]
requestFocus() [default focus;an element]

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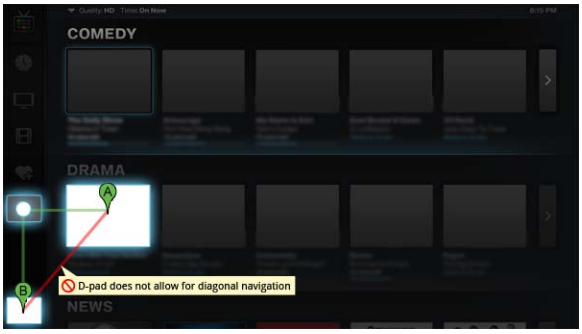
Scrolling Alignment and Grid Layout



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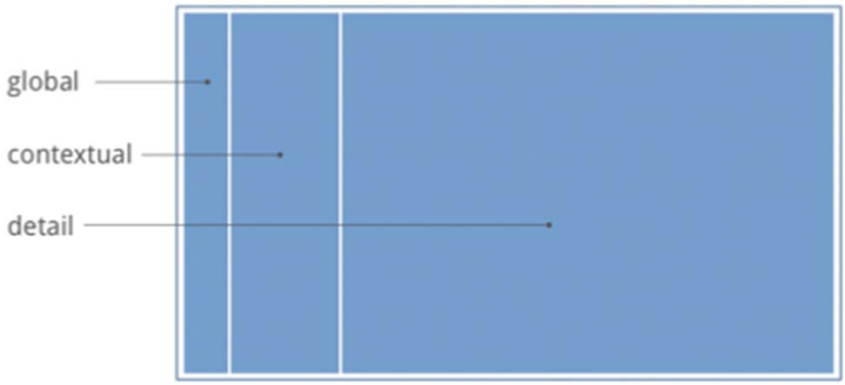
Design your Activities with Zones



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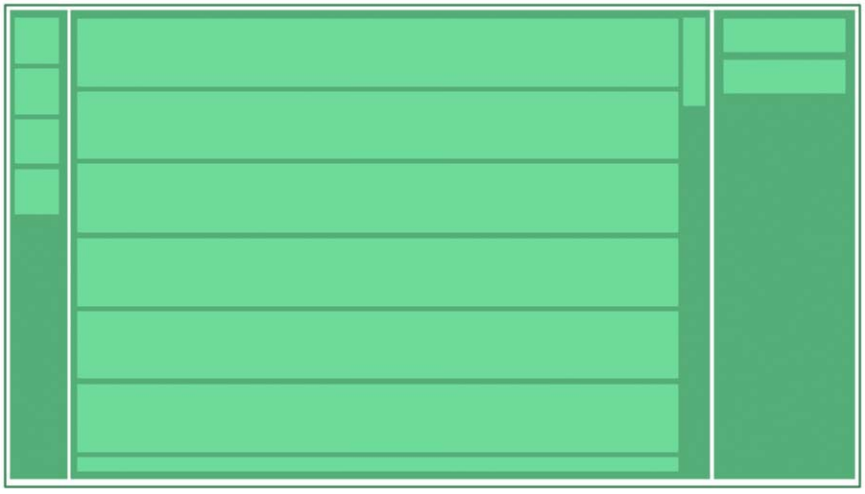
Desirable Zone & Pattern Organization



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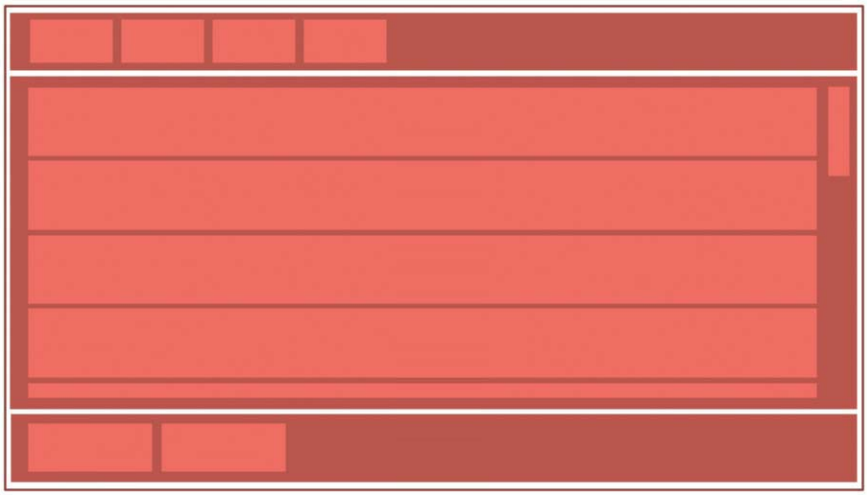
Undesirable Zone & Pattern Layout



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Best Practices

Listen to your users

- Public beta alpha
- Release early, release often
- Provide a place for feedback

Listen to your users

Content Performance

Pageviews	Unique Pageviews	Avg. Time on Page	Bounce R
32,171,724	6,310,205	00:17:59	43.31%
% of Site Total: 100.00%	% of Site Total: 100.00%	Site Avg: 00:17:59 (0.00%)	Site Avg: 4

	Page None	Pageviews	Unique Pageviews
1.	/refresh_earthquakes	25,505,418	3,834,412
2.	/exception_parsing_feed	3,508,268	621,731
3.	/application_created	1,350,416	820,078
4.	/map_view	592,940	319,004
5.	/list_view	529,530	305,304
6.	/widget_enabled	410,780	190,433
7.	/menu_refresh	150,740	121,481
8.	/menu_preferences	45,775	38,485
9.	/quake_detail_dialog	22,166	16,872
10.	/exception_cursor_to_quake	16,507	14,760

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Google Analytics for Android

- Track every Activity
- Track settings
- Track exceptions and errors

```
// Start tracking
tracker.start("UA-MY_CODE-XX", this);

// Register a page view
tracker.trackPageView("/map_view");

// Send views to server
tracker.dispatch();
```

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Be Responsive

Don’t block the UI Thread

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Be fast

- No I/O on the UI thread!
- No serious computing either
- Use StrictMode
- Learn about **`AsyncTask`** and **`IntentService`**

What's NOT on: Workaround

Typical TV Applications

- Better Program Guide
- Overlay IMs / Social over TV
- Embed TV inside your App

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User Location

Get the device's **Geo Coded Postal Code**.

```
android.permission.ACCESS_COARSE_LOCATION
```

```
LocationManager lm = (LocationManager)
  this.getSystemService
    (Context.LOCATION_SERVICE);

Location loc =
  lm.getLastKnownLocation("static");
```

Channel Listing & Changing

Channel Listing Content Provider

`com.google.android.tv.permission.READ_CHANNELS`

`content://com.google.android.tv.provider/channel_listing`

_ID	channel_name	callsign	channel_number	channel_uri
1	CNBC	CNBC	401	[tv uri]
2	Discovery Channel	DSC	445	[tv uri]
3	KQED	KQED	500	[tv uri]
...	...	...		...

... so you want to Overlay on top of TV

Consider Android Toasts

Think about Toast.setView (View v)
Remember Toast.setBackgroundColor
(keep in mind - Transparent IS a color)

Consider Toast.setDuration

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... you want to embed TV in your View

Don’t Do it.

It is not supported, and it WILL break.

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But....

Read: http://en.wikipedia.org/wiki/HDCP

http://code.google.com/p/googletv-issues/

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Google Play

formerly Android Market

What Is Google Play?

App marketplace for compatible Android devices

2

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Google Play is Open for Business

- Publish anytime, as many times as you want
- Users have access to your apps right away
- Available for compatible Android devices

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Easy for Developers

1. Develop

- Android SDK
- Development resources
- Developer Advocates

2. Register

- Create profile & register
- Developer Distribution Agreement
- Setup merchant account

3. Publish

- Sign & upload .apk
- Filtering options
- Marketing & promotions

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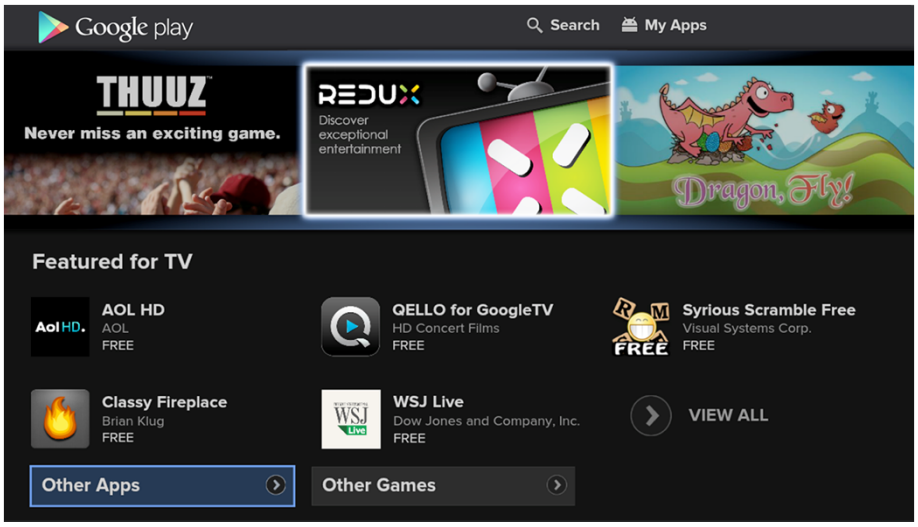
The Google Play Store on Google TV



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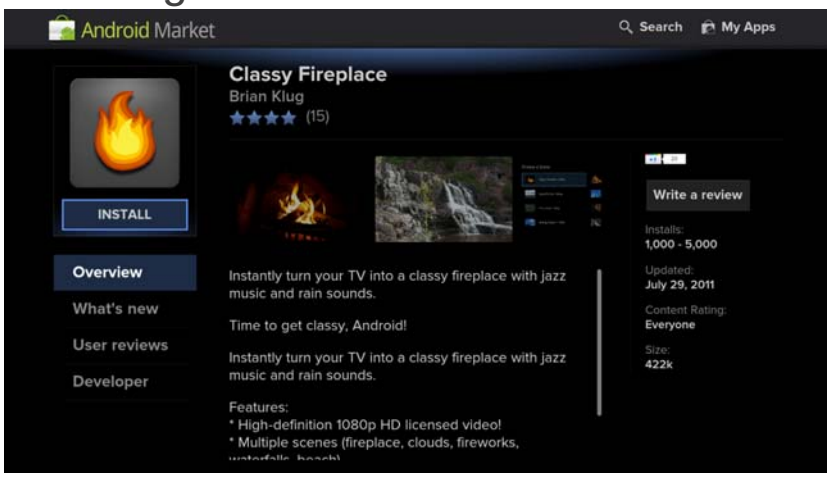
Installing



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Designed for Flexibility

- Capability targeting
  - Platform version, Screen size & density, OpenGL ES version, Hardware/software features, GL texture-compressions format, ABI
- Business targeting
  - Countries and carriers
- Support for multiple apks
  - Platform versions, Screen sizes & densities, Texture compression formats
- Device availability list – based on app manifest file
  - Show all supported devices for published or draft apps
  - Option to exclude specific devices if need be
- Detailed stats
  - Country, Language, Screen size, OS version
  - Comparison against other apps in the same category
- Large Apps
  - Support for large apps – 50MB app package + up to two 2 GB archives

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"Special" Features

- android.hardware.touchscreen
  - Only feature required by default
  - Must be disabled for apps destined for Google TV

XML

```
<uses-feature
android:name="android.hardware.touchscreen"
android:required= "false" />
```

- com.google.android.tv
  - Can be used to target a class of devices

XML

```
<uses-feature
android:name="com.google.android.tv"
android:required= "target" />
```

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Checking Your App's Manifest

CL

```
$ aapt dump badging MyApplication.apk
package: name='com.example.mysweetapp' versionCode='1' versionName='1.0'
sdkVersion:'12'
targetSdkVersion:'13'
uses-permission:'android.permission.INTERNET'
uses-permission:'android.permission.ACCESS_NETWORK_STATE'
uses-feature:'com.google.android.tv'
uses-feature-not-required:'android.hardware.touchscreen'
...
```

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Got an App? Let Us Know and review it!

http://goo.gl/DqCNL

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Google TV
Agenda

01 Introduction to Google TV

02 Opportunities to Participate

03 Getting Started (Know How Now, Excited?!)

We're Here to HELP!

http://developers.google.com/tv/

Find us on:
stackoverflow.com/tags/**google-tv/**

Google +: Google TV Developers page: **http://goo.gl/2d03y**
Weekly Hangout

Want a Google TV Box?

Let's Raffle!!!

- goo.gl/GkZqm
- Referral code: **SS-20120424-IEEE**

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<Q & A>

Google
Developers