Google TV
Seamless integration of TV, Web and Apps

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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 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)

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)

Apps and web on the TV
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
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

GTV v2: Home
Introduction to Google TV

Home screen is simple, easy-to-use, and customizable by users
GTV v2: Google Play

Introduction to Google TV

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

GTV v2: All Applications

Introduction to Google TV

All Applications shows downloaded and installed apps
GTV v2: Chrome browser
Introduction to Google TV

Chrome Browser enables open access to the web by displaying general internet content as well as TV optimized Web Apps (e.g., "The New York Times"-App).

Sony’s Google TV boxes
Introduction to Google TV

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 touchpad 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?)

Getting Started
2.9 TVs per household Nielsen

~5 hr TV watching daily Nielsen

500M web enabled TVs by 2015 Source
Crave Asia, July, 2011
Work with a compelling solution

Opportunities to Participate

**Build once and for all**
- Android compatibility across devices (TV, tablet, smart phone)
- Access to devices (TVs, STBs, BD players etc.) of div. manufacturers
- 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

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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

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- Google TV makes it easy to manage applications across screens and devices
- Promote, distribute and monetize
- Paid Apps
- In-app Payments
- Advertising
- Monetization opportunities (in-app payments, authenticated access, paid apps, in-app ads)
Google TV

Agenda

01 Introduction to Google TV
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03 Getting Started (How?)

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)
TV Optimization

TV Optimization!
TV Optimization!

Web App Spotlight

http://gtv-gallery.appspot.com/
Native Apps for Google TV (For Android Developers)

Developing for Google TV

• Everything you love about Android:
  • Deep Integration with System
  • Familiar Language
  • Powerful APIs (Media Players, Renderscript, OpenGL)

• ... And MORE!
Creating Android Apps

03 Getting Started (How?)

A Development Options: Web vs Android

B Setup and Configuration

C UX Design, Best Practices, All That
Android Setup

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

Connecting from DevBox to Google TV
Command: adb connect 192.168.1.24
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
03 Getting Started (How?)

A Development Options: Web vs Android

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C UX Design, Best Practices, All That

UX Design & Guidelines
Why do you care?

Better UI
Perceived Quality + Polish
Better Ratings
Better App Ranking
More Installs/Purchases

PROFIT!

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.
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.

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
UI Design

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

Social Device

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

Let’s take a Simple UI...
“Safe Area” for a 720p Video

Overscan
Overscan

Where this fails “horribly”
Scale Background

Better: Cropping
Best: Use Fluid Layouts

Design Patterns
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>
```
Focus and Navigation

Grid Pattern for Navigation
Focus (cont.)

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

Scrolling Alignment and Grid Layout
Design your Activities with Zones

Desirable Zone & Pattern Organization
Undesirable Zone & Pattern Layout

Best Practices
Listen to your users

• Public beta alpha
• Release early, release often
• Provide a place for feedback
Google Analytics for Android

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

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

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

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

Be Responsive

Don’t block the UI Thread
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

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

<table>
<thead>
<tr>
<th>_ID</th>
<th>channel_name</th>
<th>callsign</th>
<th>channel_number</th>
<th>channel_uri</th>
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<tr>
<td></td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

... 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
... you want to embed TV in your View

Don’t Do it.

It is not supported, and it WILL break.

But....

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

http://code.google.com/p/googletv-issues/
What Is Google Play?

App marketplace for compatible Android devices
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

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
The Google Play Store on Google TV

Installing
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

“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"/>
```
Checking Your App’s Manifest

```bash
$ aapt dump badging MyApplicatıon.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'
...
```

Got an App? Let Us Know and review it!

[http://goo.gl/DqCNL](http://goo.gl/DqCNL)
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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

<Q & A>