Google
Developers

#io12

Mobile YouTube API Apps for Content Creators, Curators and Consumers

Andrey Doronichev, Shannon - JJ Behrens, Jarek Wilkiewicz (YouTube)
Arthur van Hoff, Jason Culverhouse (Flipboard)
Kiran Bellubbi (955 Dreams), Krishna Menon (WeVideo)
v00.13

Agenda

- The Opportunity
- Creation
- Curation
- Consumption
- Panel Discussion and Q&A

The Opportunity

YT Mobile is growing up

Mobile Usage: 3X Growth YoY

600M playbacks per day

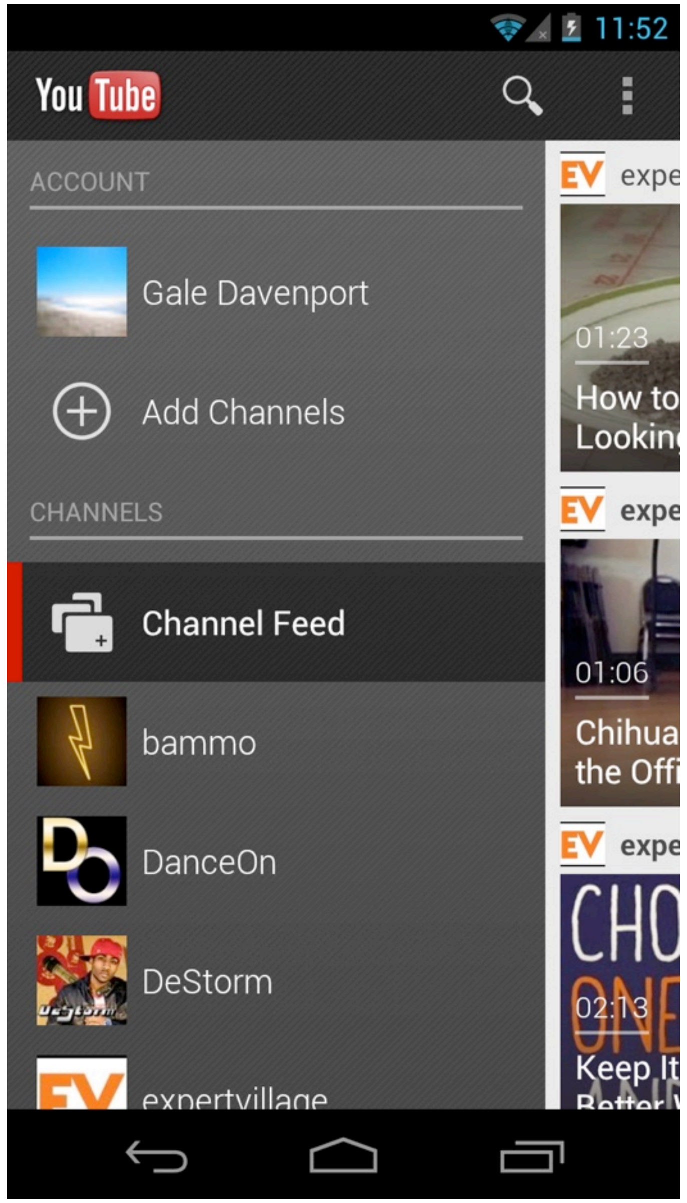
3 hours uploaded every minute

Keep up with your favorite YouTube channels and access the world’s videos, anywhere

Strategy 2012

1. Consumption
2. Monetization
3. API

Consumption



11:52

You Tube

ACCOUNT

Gale Davenport

Add Channels

CHANNELS

Channel Feed

bammo

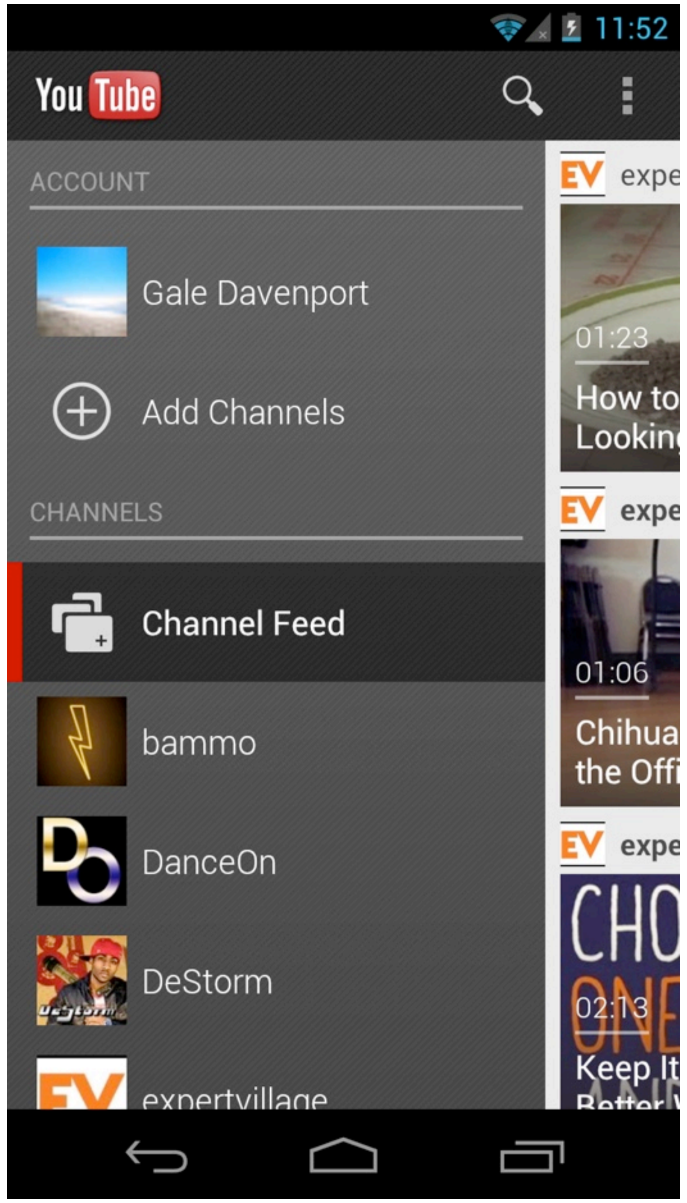
DanceOn

DeStorm

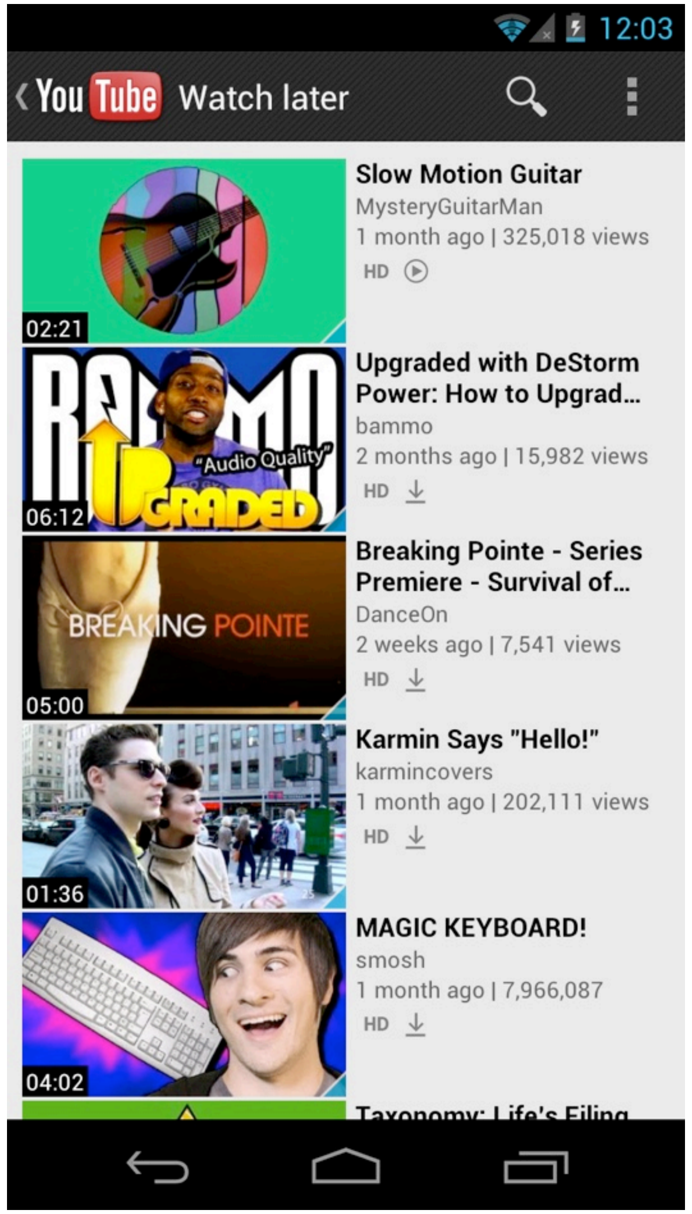
expertvillage

Guide

Consumption



Guide



02:21 Slow Motion Guitar
MysteryGuitarMan
1 month ago | 325,018 views
HD

06:12 Upgraded with DeStorm Power: How to Upgrad...
bammo
2 months ago | 15,982 views
HD

05:00 Breaking Pointe - Series Premiere - Survival of...
DanceOn
2 weeks ago | 7,541 views
HD

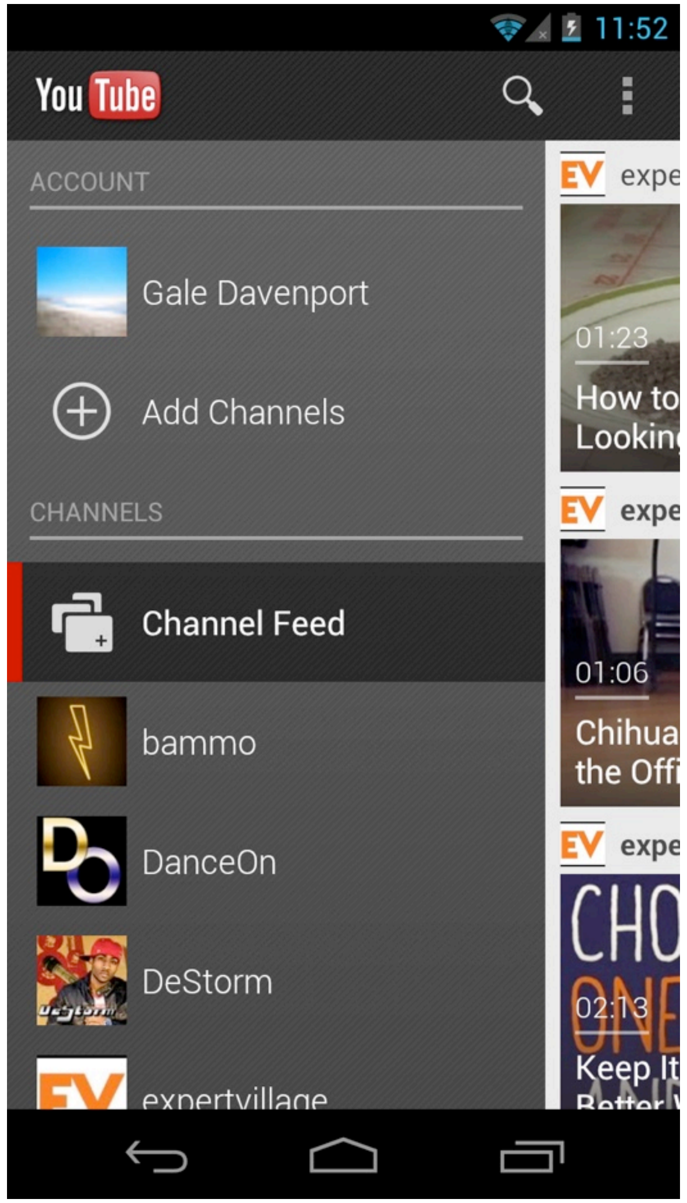
01:36 Karmin Says "Hello!"
karmincovers
1 month ago | 202,111 views
HD

04:02 MAGIC KEYBOARD!
smosh
1 month ago | 7,966,087
HD

Taxonomy: Life's Filing

Pre-loading

Consumption



11:52

ACCOUNT

Gale Davenport

Add Channels

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bammo

DanceOn

DeStorm

expertvillage

expe

01:23

How to Lookin

expe

01:06

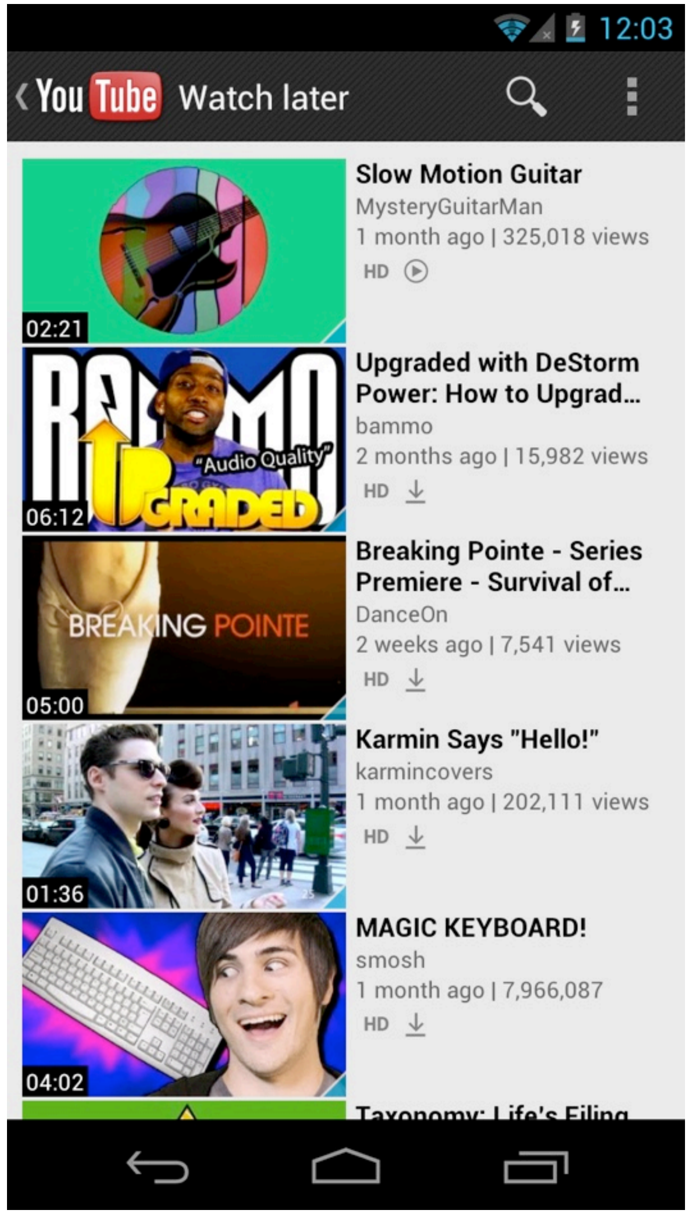
Chihua the Offi

expe

02:13

Keep It Better

Guide



12:03

Watch later

Slow Motion Guitar
MysteryGuitarMan
1 month ago | 325,018 views
HD
02:21

Upgraded with DeStorm Power: How to Upgrad...
bammo
2 months ago | 15,982 views
HD
06:12

Breaking Pointe - Series Premiere - Survival of...
DanceOn
2 weeks ago | 7,541 views
HD
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Karmin Says "Hello!"
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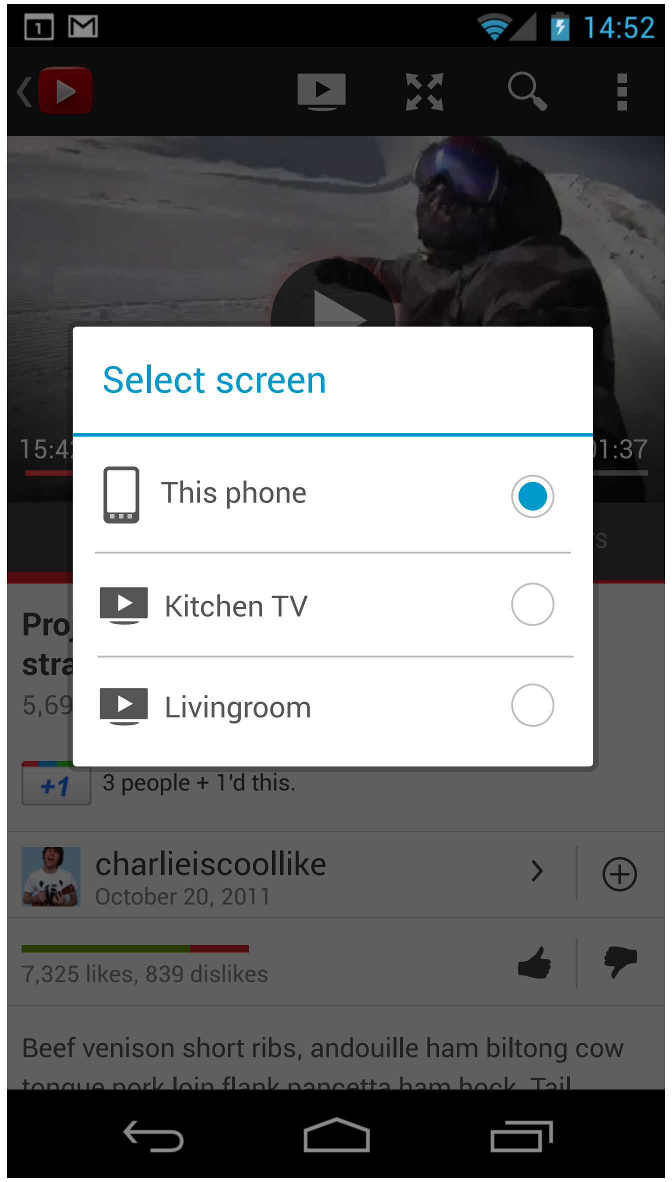
Taxonomy: Life's Filing

Pre-loading



14:52

Select screen

This phone ●

Kitchen TV ○

Livingroom ○

3 people + 1'd this.

charlieiscoollike
October 20, 2011

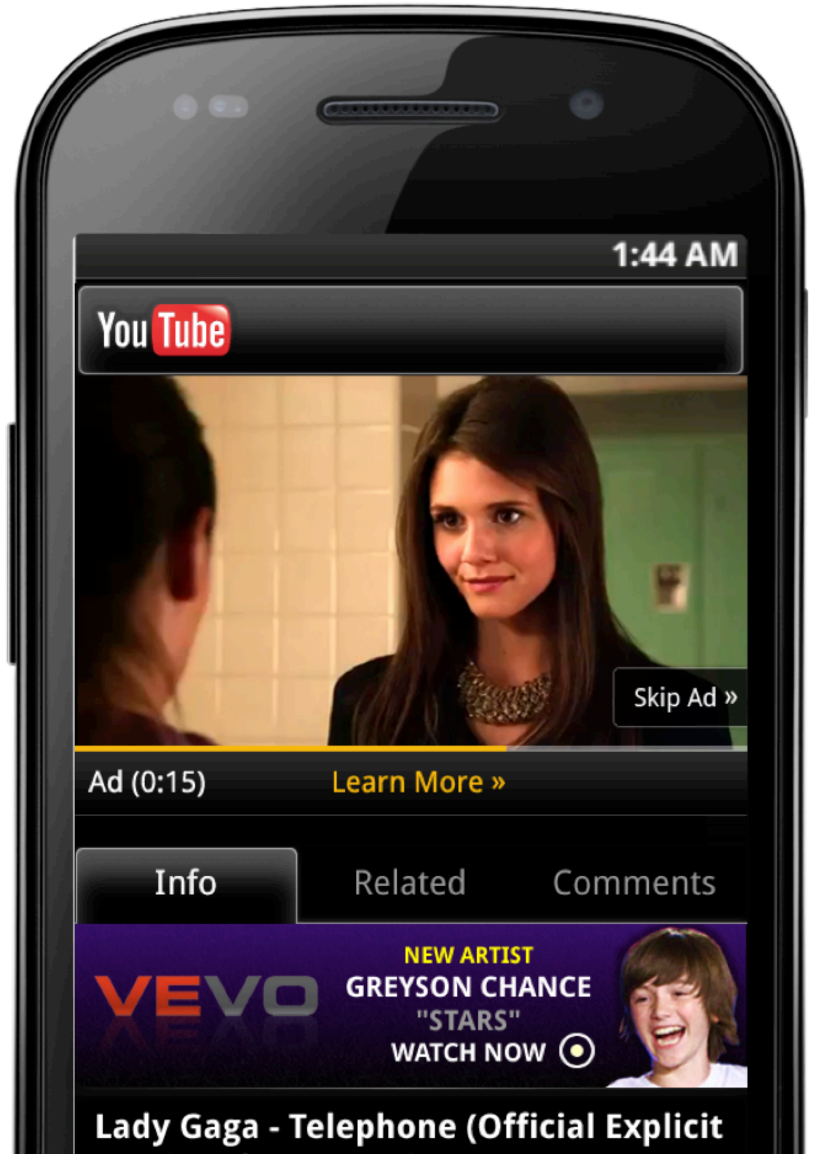
7,325 likes, 839 dislikes

Beef venison short ribs, andouille ham biltong cow tongue pork loin flank pancetta ham hock. Tail

Remote

Monetization

- Enabler for full catalog on mobile
- Advertisers use video to tell a powerful story
- Partners earn higher revenue for their content
- Viewers choose to watch relevant ads



API: We Want To Share The Success

Don’t

- Build YouTube copycat apps
- Build content downloaders
- Build audio only / background players

Do

- Embed video content in your app
- Explore new ways of video discovery
- Build apps for creation and curation

YouTube APIs

The Refresher

Data APIs

Player APIs

Creation

By 1a2b3c? (File:Creación de Adán-crop.jpg) [CC-BY-SA-3.0 (http://creativecommons.org/licenses/by-sa/3.0) or GFDL (http://www.gnu.org/copyleft/fdl.html)], via Wikimedia Commons

Creation APIs

Authorization

- ~~ClientLogin~~ is deprecated, OAuth2, of course!
    - https://developers.google.com/youtube/2.0/developers_guide_protocol_oauth2
- Android GoogleAuthUtil
- iOS http://code.google.com/p/gtm-oauth2/

Java

```java
import com.google.android.auth.GoogleAuthUtil;
import com.google.android.auth.FatalAuthException;
import com.google.android.auth.TransientAuthException;
import com.google.android.auth.UserRecoverableAuthException;
try {
   // if this works, token is guaranteed to be usable
   String token = GoogleAuthUtil.authenticate(activity, email, scope);
   // go ahead and use token in your HTTP headers
} catch (UserRecoverableAuthException userAuthEx) { [...]
} catch (TransientAuthException transientAuthEx) { [...]
} catch (FatalAuthException fatalAuthEx)  { [...]
}
```

Creation APIs

Resumable Uploads (Content-Range: bytes <first_byte>-<last_byte>/<length>)

Java

```java
HttpURLConnection conn = getGDataConn();
conn.setRequestProperty("Content-Range", "bytes */*");
conn.setRequestMethod("POST");
conn.setRequestProperty("X-HTTP-Method-Override", "PUT");
conn.setFixedLengthStreamingMode(0);
Httpconn.setFollowRedirects(false);
conn.connect();
int responseCode = conn.getResponseCode();
if (responseCode >= 300 && responseCode < 400) {
  int nextByteToUpload;
  String range = conn.getHeaderField("Range");
  if (range == null) {
    nextByteToUpload = 0;
  } else {
    String[] parts = range.split("-");
    if (parts.length > 1) {
      nextByteToUpload = Integer.parseInt(parts[1]) + 1;
    } else {
      nextByteToUpload = 0;
    }
  }
}
```

Creation APIs

Must Have Metadata

- Developer key: `X-GData-Key: key=<developer_key>`
- Developer tags `scheme=”http://gdata.youtube.com/schemas/2007/developertags.cat”`
- Geo-location info (if the user permits)

Java

```
HttpURLConnection conn = getGDataConn();
conn.setRequestMethod("POST");
conn.setRequestProperty("Content-Type", "application/atom+xml");
String atomData;
String template = Util.readResourceFile(this, R.raw.gdata_template).toString();
atomData = String.format(template, title, description, category, this.tags,
                         this.devtags, videoLocation.getLatitude(),
                         videoLocation.getLongitude());
OutputStreamWriter outStreamWriter = new OutputStreamWriter(conn.getOutputStream());
outStreamWriter.write(atomData);
outStreamWriter.close();
```

Creation APIs

Request Body Example

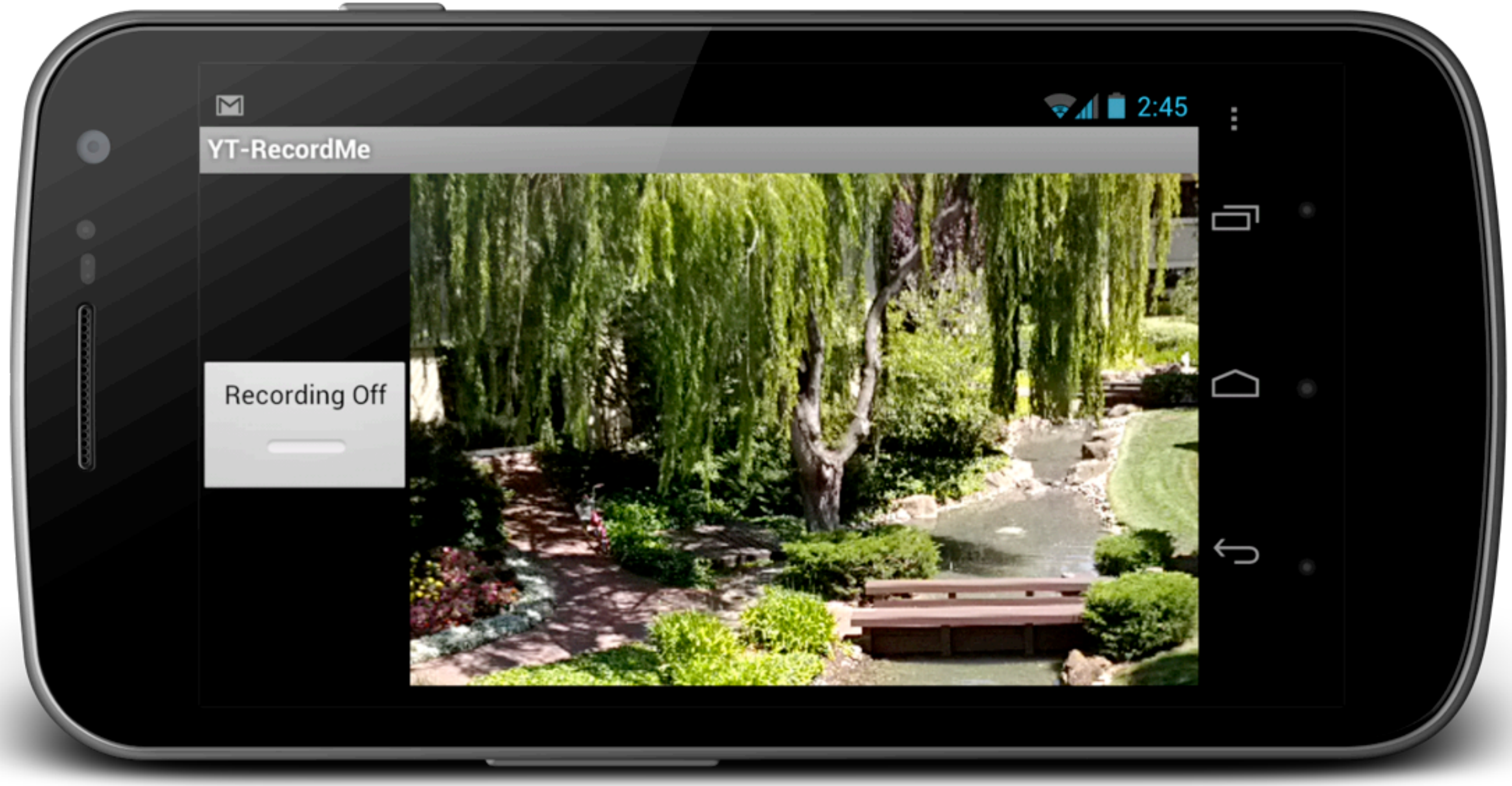
XML

```xml
<?xml version="1.0"?>
<entry xmlns="http://www.w3.org/2005/Atom" xmlns:media="http://search.yahoo.com/mrss/"
       xmlns:yt="http://gdata.youtube.com/schemas/2007">
<media:group>
    <media:title type="plain">Title</media:title>
    <media:description type="plain">Description</media:description>
    <media:category scheme="http://gdata.youtube.com/schemas/2007/categories.cat">News</media:category>
    <media:category scheme="http://gdata.youtube.com/schemas/2007/developertags.cat">DEVTAG1</media:category>
    <media:keywords>Mobile, Development, Google IO</media:keywords>
</media:group>
<georss:where xmlns:georss="http://www.georss.org/georss" xmlns:gml="http://www.opengis.net/gml">
 <gml:Point xmlns:gml="http://www.opengis.net/gml">
  <gml:pos>40.44263458251953 -79.94313049316406</gml:pos>
 </gml:Point>
</georss:where>
</entry>
```

Putting It All Together

Demo

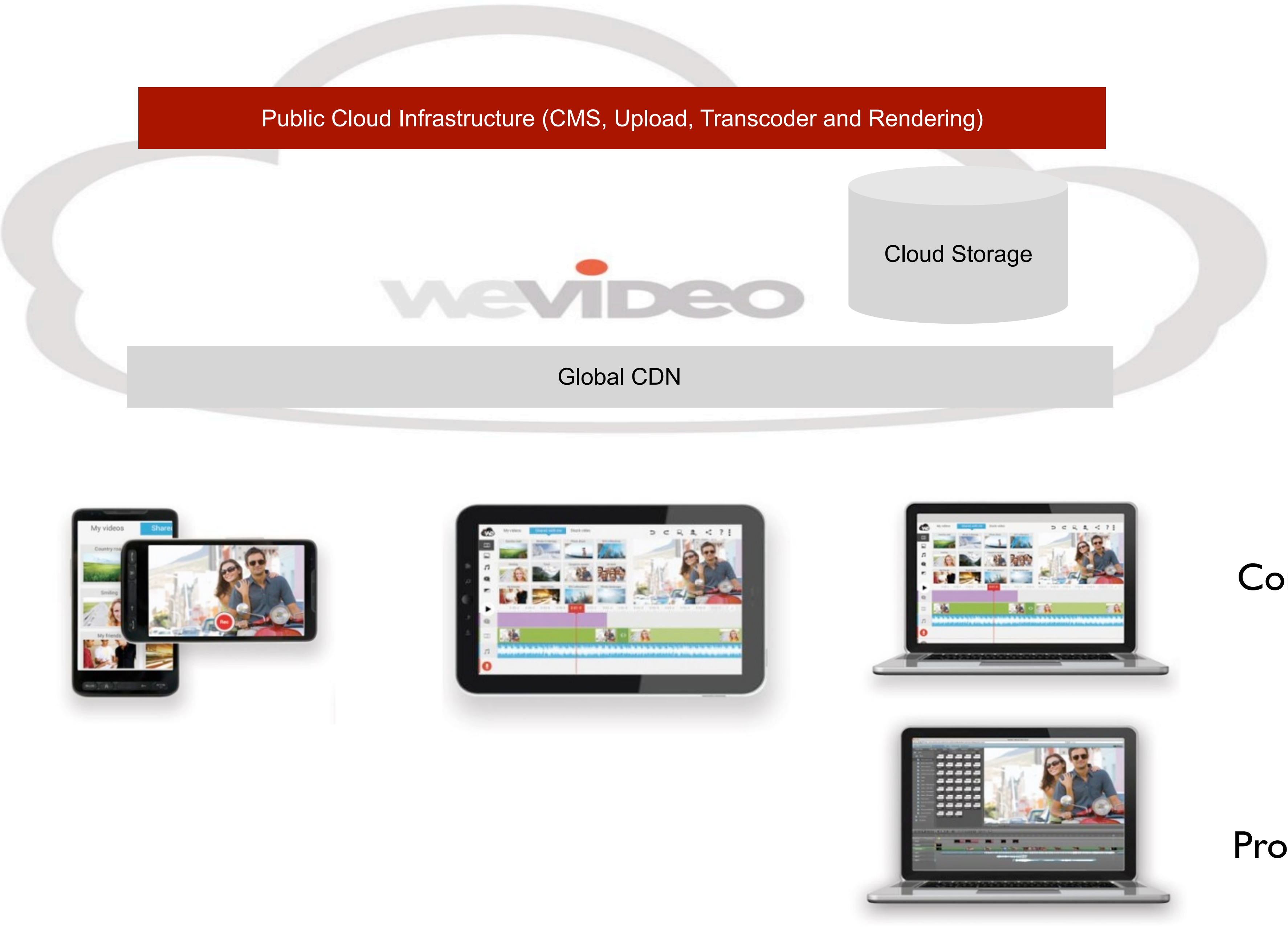
Demo



WeVideo

Creation

WeVideo- Multiple Applications on Multiple Devices



Public Cloud Infrastructure (CMS, Upload, Transcoder and Rendering)

Cloud Storage

Global CDN

Consumer

Pro-sumer

Smartphone

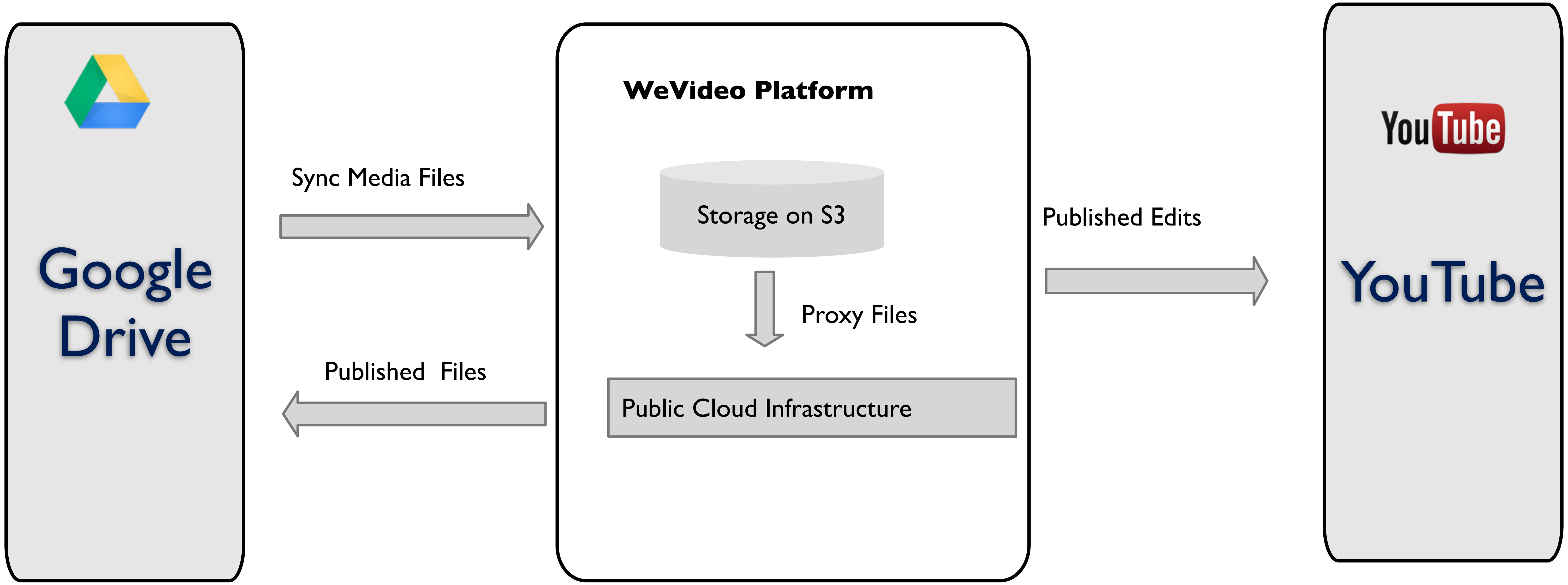
Tablet

Desktop

Core Technology

- Support multiple devices with multiple apps
- Breadth of editing capabilities from semi-pro editing to theme based automated styling
- Supports novice to pro users
- Editing efficiency through proxies to generate high quality output (includes 1080p)
- Collaboration features from private to public groups
- WYSIWYG editing with real-time preview
- Scalable cloud based video processing infrastructure

Google Drive + WeVideo + YouTube



Google Drive

Sync Media Files

Published Files

WeVideo Platform

Storage on S3

Proxy Files

Public Cloud Infrastructure

Published Edits

YouTube

Google Integration Touch Points

- Authentication (OpenID+OAuth federated sign-in)
  - Need OpenID token to identify user
  - Need OAuth credentials to perform actions on users' behalf

- Youtube Publishing
  - User requests export of their production in the app
  - Rendering farm prepares complete movie from high-quality originals
  - Rendering node publishes to user's YouTube channel using GData API

- Google Drive Integration
  - Sync files that are under "project folders"
  - Files are transferred to WeVideo storage and transcoded to create proxy versions
  - Uses Documents List API 3.0. Will be moving to Drive API v2

Curation

By MykReeve (File:Guggenheim-bilbao-jan05.jpg) [CC-BY-SA-3.0 (http://creativecommons.org/licenses/by-sa/3.0) or GFDL (http://www.gnu.org/copyleft/fdl.html)], via Wikimedia Commons

Curation APIs

Search

- Video Search
  - https://gdata.youtube.com/feeds/api/videos?q=minecraft&v=2&prettyprint=true
- Channel search
  - https://gdata.youtube.com/feeds/api/channels?q=minecraft&v=2&prettyprint=true
- Related
  - https://gdata.youtube.com/feeds/api/videos/lVQ1EKR1v1I/related?v=2&prettyprint=true

Curation APIs

Trends

- Trends
    - https://gdata.youtube.com/feeds/api/standardfeeds/on_the_web?v=2&prettyprint=true
    - http://gdata.youtube.com/feeds/api/standardfeeds/on_the_web?v=2&start-index=1&max-results=2&fields=entry/title&prettyprint=true
- Most shared
    - https://gdata.youtube.com/feeds/api/standardfeeds/most_shared?v=2&prettyprint=true
- More APIs coming

Curation APIs

Personalization via Authenticated Access Feeds

- Watch_later
  - `https://gdata.youtube.com/feeds/api/users/default/watch_later?v=2&prettyprint=true`
- Watch history
  - `https://gdata.youtube.com/feeds/api/users/default/watch_history?v=2&prettyprint=true`
- Favorites
  - `https://gdata.youtube.com/feeds/api/users/default/favorites?v=2&prettyprint=true`
- Subscriptions
  - `https://gdata.youtube.com/feeds/api/users/default/subscriptions?v=2&prettyprint=true`

Flipboard

Curation

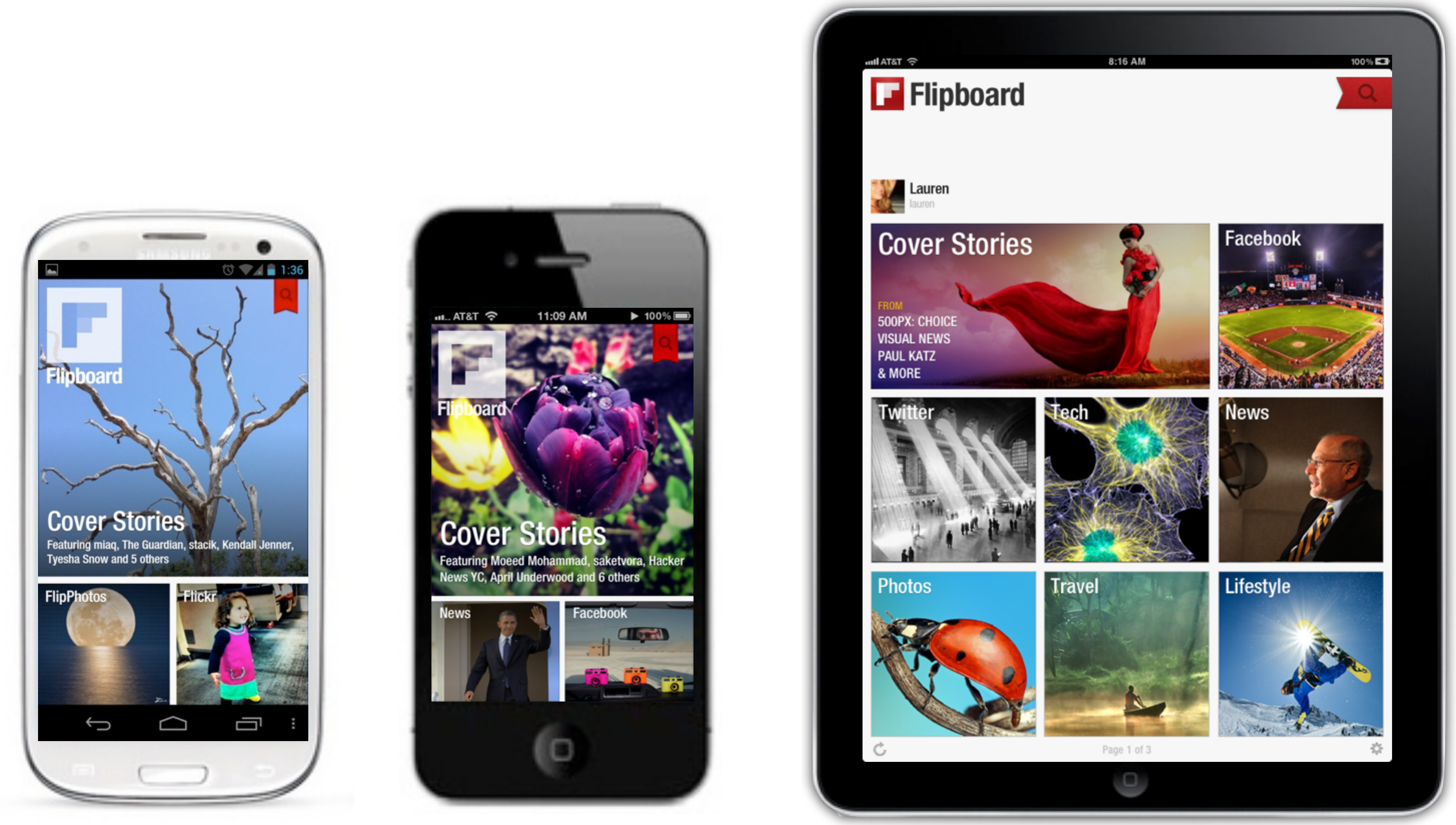
Flipboard

BofA's Secret of Success: Real Estate
The Bes
FAS
Flipboard
toy car

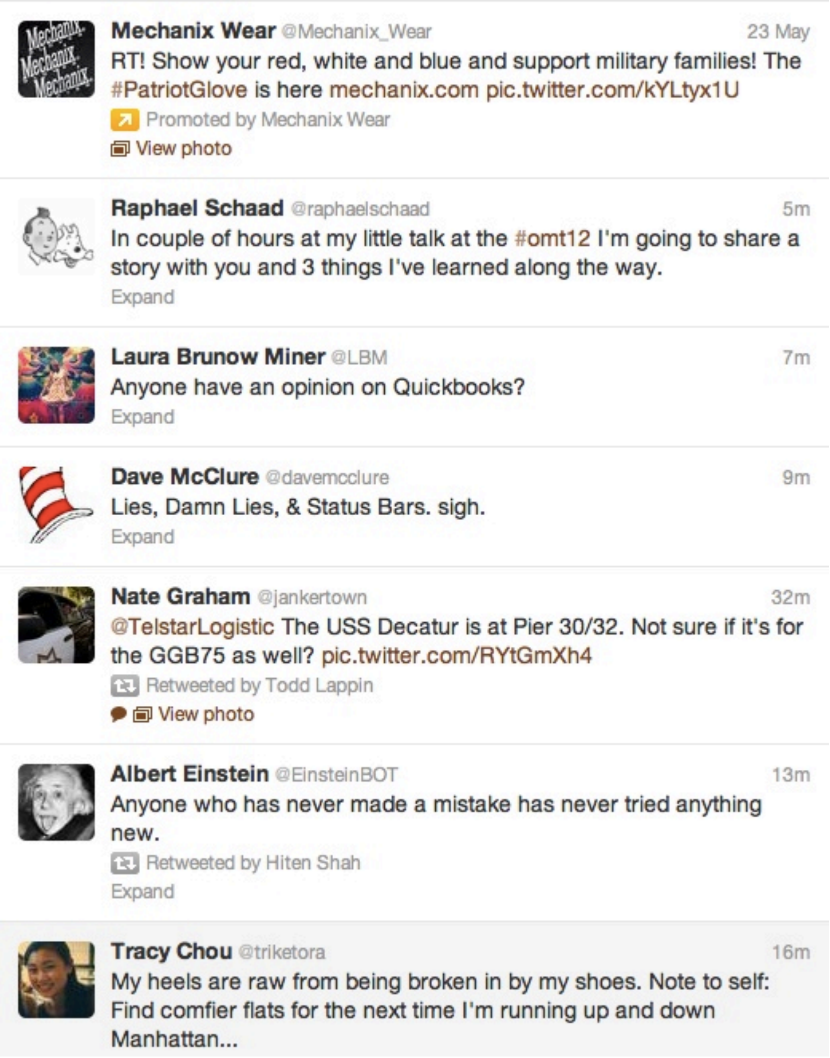
Your Social Magazine

Flipboard helps people discover, view and share content across social networks.

Named Apple’s iPad App of the Year and Time Magazine’s Top 50 inventions, Flipboard is the world’s first social magazine designed for iPad, iPhone, and Android.



Your feeds on Flipboard



Mechanix Wear @Mechanix_Wear 23 May
RT! Show your red, white and blue and support military families! The #PatriotGlove is here mechanix.com pic.twitter.com/kYLtyx1U
Promoted by Mechanix Wear
View photo

Raphael Schaad @raphaelschaad 5m
In couple of hours at my little talk at the #omt12 I'm going to share a story with you and 3 things I've learned along the way.
Expand

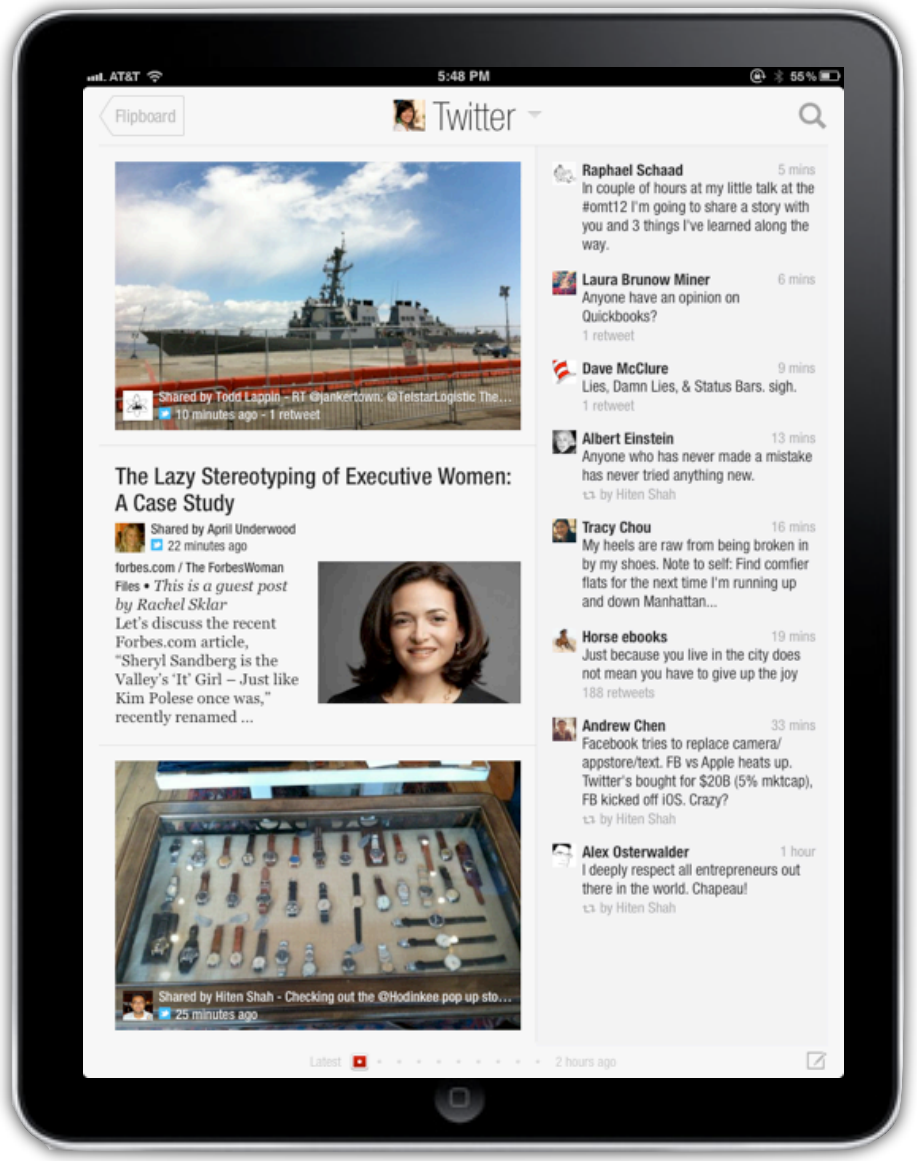
Laura Brunow Miner @LBM 7m
Anyone have an opinion on Quickbooks?
Expand

Dave McClure @davemcclure 9m
Lies, Damn Lies, & Status Bars. sigh.
Expand

Nate Graham @jankertown 32m
@TelstarLogistic The USS Decatur is at Pier 30/32. Not sure if it's for the GGB75 as well? pic.twitter.com/RYtGmXh4
Retweeted by Todd Lappin
View photo

Albert Einstein @EinsteinBOT 13m
Anyone who has never made a mistake has never tried anything new.
Retweeted by Hiten Shah
Expand

Tracy Chou @triketora 16m
My heels are raw from being broken in by my shoes. Note to self: Find comfier flats for the next time I'm running up and down Manhattan...



Shared by Todd Lappin - RT @jankertown: @TelstarLogistic The…
10 minutes ago - 1 retweet

The Lazy Stereotyping of Executive Women: A Case Study
Shared by April Underwood
22 minutes ago
forbes.com / The ForbesWoman Files • *This is a guest post by Rachel Sklar*
Let's discuss the recent Forbes.com article, "Sheryl Sandberg is the Valley's 'It' Girl – Just like Kim Polese once was," recently renamed ...

Shared by Hiten Shah - Checking out the @Hodinkee pop up sto…
25 minutes ago

Raphael Schaad 5 mins
In couple of hours at my little talk at the #omt12 I'm going to share a story with you and 3 things I've learned along the way.

Laura Brunow Miner 6 mins
Anyone have an opinion on Quickbooks?
1 retweet

Dave McClure 9 mins
Lies, Damn Lies, & Status Bars. sigh.
1 retweet

Albert Einstein 13 mins
Anyone who has never made a mistake has never tried anything new.
by Hiten Shah

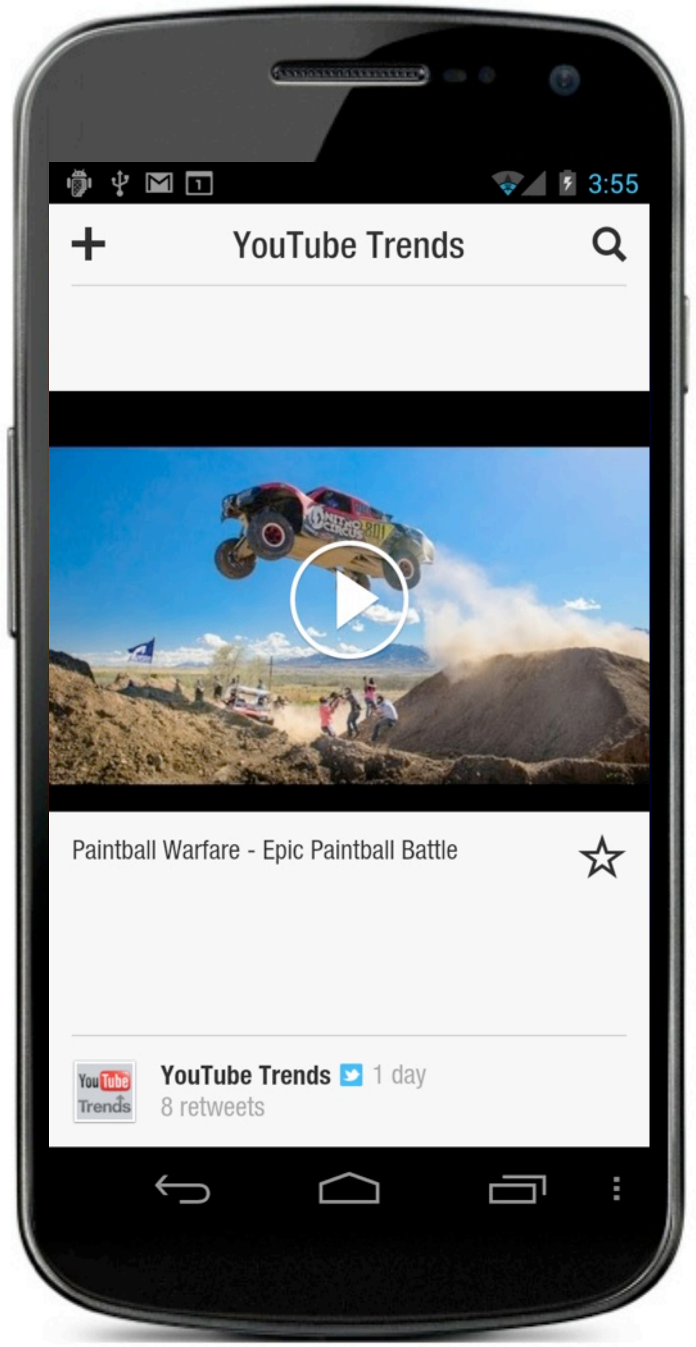
Tracy Chou 16 mins
My heels are raw from being broken in by my shoes. Note to self: Find comfier flats for the next time I'm running up and down Manhattan...

Horse ebooks 19 mins
Just because you live in the city does not mean you have to give up the joy
188 retweets

Andrew Chen 33 mins
Facebook tries to replace camera/appstore/text. FB vs Apple heats up. Twitter's bought for $20B (5% mktcap), FB kicked off iOS. Crazy?
by Hiten Shah

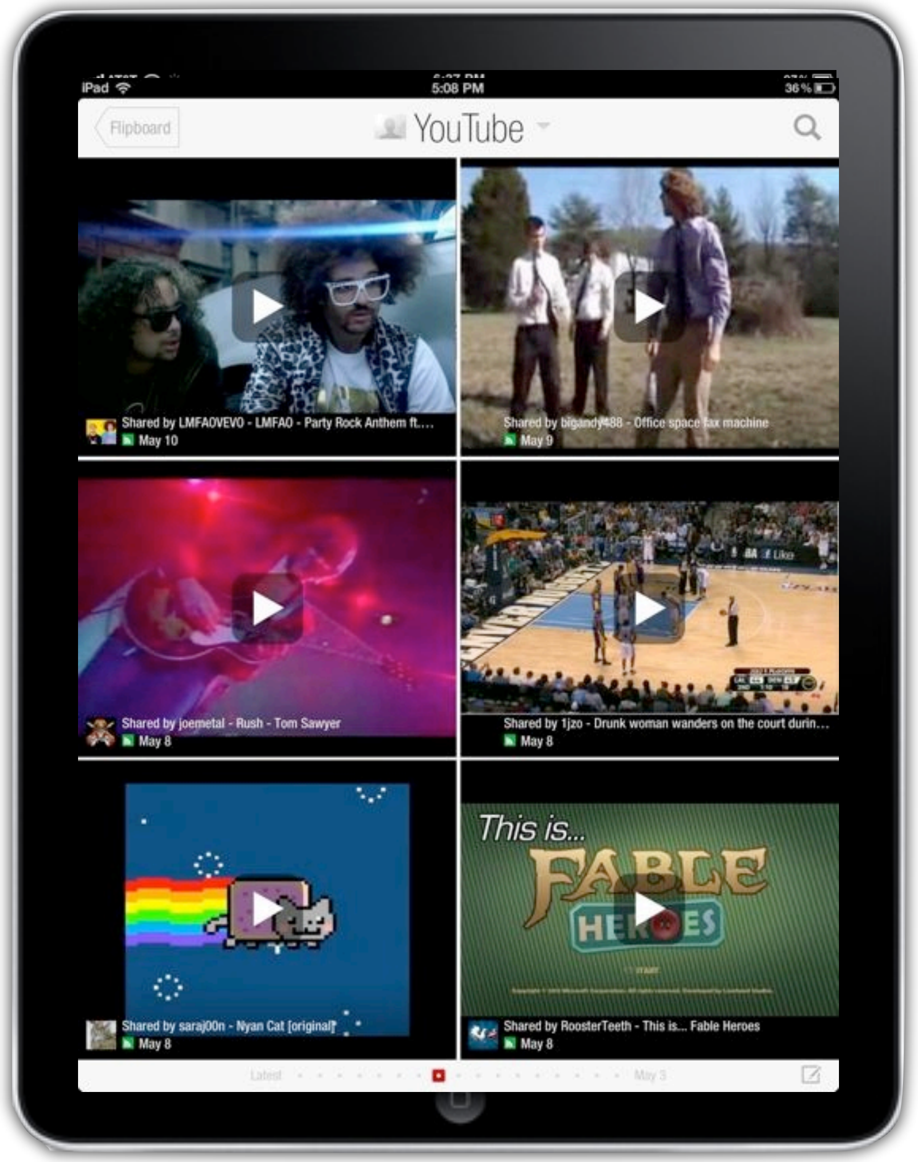
Alex Osterwalder 1 hour
I deeply respect all entrepreneurs out there in the world. Chapeau!
by Hiten Shah

...now with YouTube



Paintball Warfare - Epic Paintball Battle

YouTube Trends 1 day
8 retweets



Shared by LMFAOVEVO - LMFAO - Party Rock Anthem ft....
May 10

Shared by bigandy488 - Office space fax machine
May 9

Shared by joemetal - Rush - Tom Sawyer
May 8

Shared by 1jzo - Drunk woman wanders on the court durin...
May 8

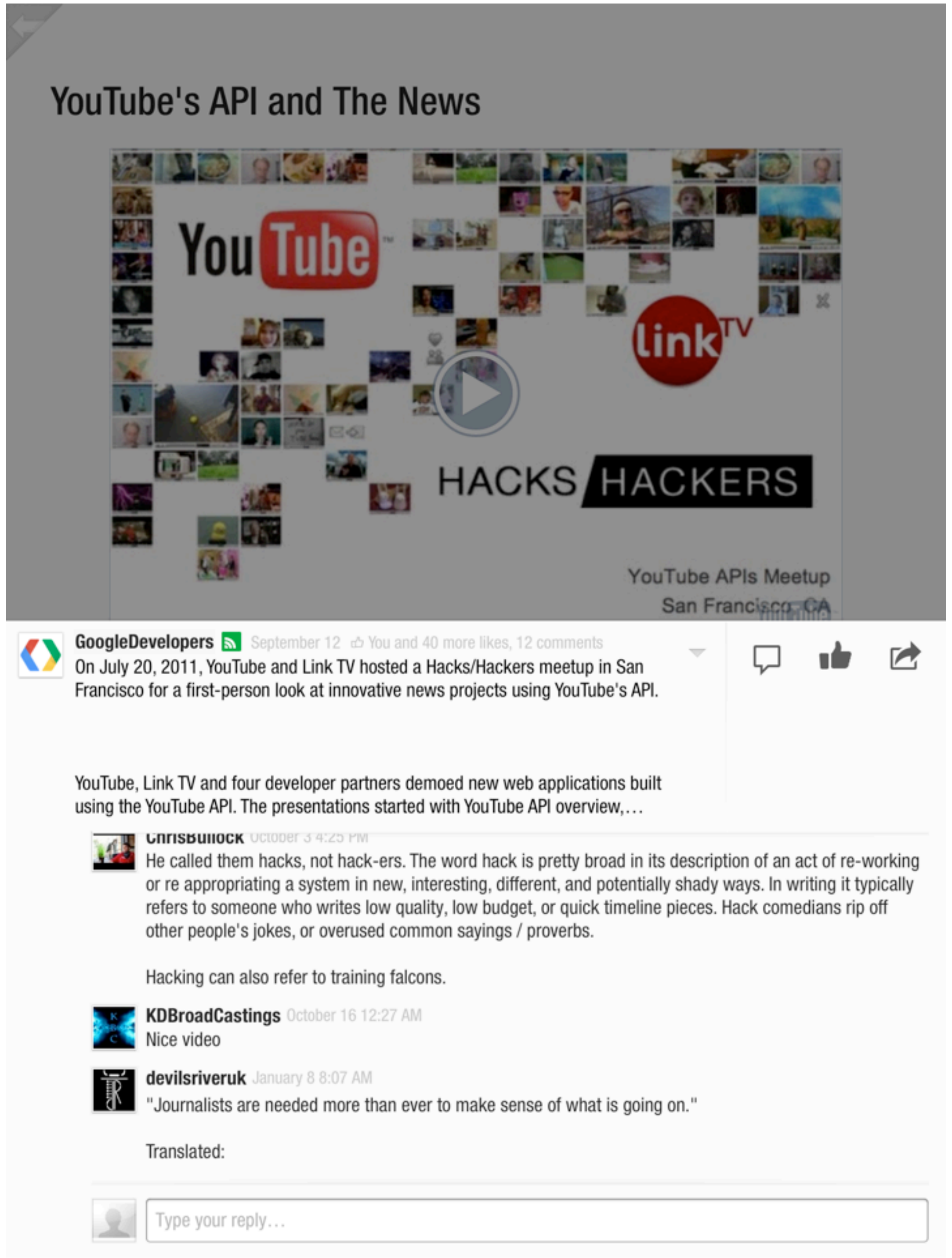
Shared by saraj00n - Nyan Cat [original]
May 8

Shared by RoosterTeeth - This is... Fable Heroes
May 8

YouTube Data API

YouTube Data API access happens on the Flipboard servers. The API is used to expose YouTube content in the familiar Flipboard format.

- Search or users and videos
- Retrieve Standard feeds
- View your subscriptions
- Rate and comment on videos
- Subscribe to YouTube users
- Surface interesting content from your social graph
- Filter videos suitable for mobile playback



YouTube's API and The News

GoogleDevelopers September 12 You and 40 more likes, 12 comments
On July 20, 2011, YouTube and Link TV hosted a Hacks/Hackers meetup in San Francisco for a first-person look at innovative news projects using YouTube's API.

YouTube, Link TV and four developer partners demoed new web applications built using the YouTube API. The presentations started with YouTube API overview,…

ChrisBullock October 3 4:25 PM
He called them hacks, not hack-ers. The word hack is pretty broad in its description of an act of re-working or re appropriating a system in new, interesting, different, and potentially shady ways. In writing it typically refers to someone who writes low quality, low budget, or quick timeline pieces. Hack comedians rip off other people's jokes, or overused common sayings / proverbs.

Hacking can also refer to training falcons.

KDBroadCastings October 16 12:27 AM
Nice video

devilsriveruk January 8 8:07 AM
"Journalists are needed more than ever to make sense of what is going on."

Translated:

Type your reply…

Smart API Usage

Currently using the JSON format for API responses, This format is very verbose so it's a good idea to use partial feeds and partial responses and let the API filter out data that you don't need.

- The clients only support mobile videos, so filter

```
entry[link/@rel='http://gdata.youtube.com/schemas/2007#mobile']
```

- Fetch only the portions of a feed that are "newer" than the last time

```
entry[xs:dateTime(published) > xs:dateTime('xxx)]
```

- Limit size of JSON Responses

```
entry(published,yt:statistics,yt:rating,media:group(yt:videoid),gd:comments)
```

- The newer JSONC format is much more compact but is not (yet) supported on all the feeds and searches

Consumption

Consumption APIs

Launch the App

- Works well but not a deep integration (a.k.a. “Outer Body Experience”)
- ACTION_VIEW intent (Android)

Java

```
Intent i = new Intent(Intent.ACTION_VIEW,
                      Uri.parse("http://www.youtube.com/watch?v=lVQ1EKR1v1I”));
startActivity(i);
```

- openURL method of the UIApplication class (iOS)

Objective-C

```
[[UIApplication sharedApplication] openURL:[NSURL URLWithString:@”http://www.youtube.com/watch?
v=lVQ1EKR1v1I”]];
```

Consumption APIs

(UI)WebView

- A.K.A “Old School”
- Uses the HTML5 player on mobile platforms (typically)
- `iframe` embed/`iframe` API

HTML

```html
<iframe class="youtube-player" type="text/html" width="640"
height="385" src="http://www.youtube.com/embed/VIDEO_ID"/>
```

Java

```java
webView = (WebView) findViewById(R.id.webview);
webView.getSettings().setJavaScriptEnabled(true);
webView.loadUrl("http://jarek-io-iframe-api.appspot.com/player.html");
```

Objective-C

```objc
[view setMediaPlaybackRequiresUserAction:NO];
[view loadRequest:[NSURLRequest requestWithURL:[NSURL URLWithString:@"http://jarek-io-iframe-api.appspot.com/
player.html"]]];
```

Consumption APIs

YouTube Android Player API

- Come to our session tomorrow

Java

```
import com.google.android.youtube.api.YouTube;
import com.google.android.youtube.api.YouTubeBaseActivity;
import com.google.android.youtube.api.YouTubePlayer;
import com.google.android.youtube.api.YouTubePlayerView;

public class MyYouTubePlayerActivity extends YouTubeBaseActivity {
  private YouTubePlayer youTubePlayer;

  [...]
  YouTubePlayerView youTubeView = (YouTubePlayerView) findViewById(R.id.youtube_view);
  registerPlayerView(youTubeView);
  youTubePlayer = youTubeView;
  [...]
  youTubePlayer.loadVideo(vid);
}
```

955 Dreams

Consumption

955dreams

create beautiful mobile experiences

we ♥ YouTube

it helps create a compelling experience in our apps

think experience first

APIs are there to help

our ground rules

no loading signs

make it easier for users

keep it clean and simple

engagement

35% of our sessions watch at least 1 YouTube video

9% of avg. session length (17mins) is spent on YouTube videos

Mobile Video Apps

A panel discussion

#io12
goo.gl/sessionfeedback

<Thank You!>

www.youtube.com/dev

G+: YouTube For Developers

G+: Jarek Wilkiewicz

G+: Shannon JJ Behrens

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goo.gl/sessionfeedback

Google Developers