Lesson 18

Android
Internet Content
RSS Feeds

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Notes are based on:
http://developer.android.com/index.html
http://www.w3.org/TR/NOTE-CDFsubmit.html

State of the Internet - 2010

Internet Users - 2010

1.97 billion –	Internet users worldwide (June 2010).
14% –	Increase in Internet users since the previous year.
825.1 million –	Internet users in Asia.
475.1 million –	Internet users in Europe.
266.2 million –	Internet users in North America.
204.7 million –	Internet users in Latin America / Caribbean.
110.9 million –	Internet users in Africa.
63.2 million –	Internet users in the Middle East.
21.3 million –	Internet users in Oceania / Australia.

References: http://royal.pingdom.com/2011/01/12/internet-2010-in-numbers/

State of the Internet - 2010

Email - Year 2010	
107 trillion –	The number of emails sent on the Internet in 2010.
294 billion –	Average number of email messages per day.
1.88 billion –	The number of email users worldwide.
480 million –	New email users since the year before.
89.1% –	The share of emails that were spam.
262 billion –	The number of spam emails per day (assuming 89% are spam).
2.9 billion –	The number of email accounts worldwide.
25% –	Share of email accounts that are corporate.

References: http://royal.pingdom.com/2011/01/12/internet-2010-in-numbers/

State of the Internet - 2010

Social Media

152 million – T he number of blogs on the Internet (as tracked by BlogPulse).

25 billion – Number of sent tweets on Twitter in 2010
100 million – New accounts added on Twitter in 2010
175 million – People on Twitter as of September 2010
7.7 million – People following @ladygaga (Lady Gaga, Twitter's most followed user).

600 million – People on Facebook at the end of 2010.
250 million – New people on Facebook in 2010.
→ **30 billion** – Pieces of content (links, notes, photos, etc.) shared on Facebook per month.
70% – Share of Facebook's user base located outside the United States.
20 million – The number of Facebook apps installed each day.

References: http://royal.pingdom.com/2011/01/12/internet-2010-in-numbers/

State of the Internet - 2010

Videos	Images
2 billion – The number of videos watched per day on YouTube. → **35** – Hours of video uploaded to YouTube every minute. **186** – The number of online videos the average Internet user watches in a month (USA). **84%** – Share of Internet users that view videos online (USA). **14%** – Share of Internet users that have uploaded videos online (USA). **2+ billion** – The number of videos watched per month on Facebook. **20 million** – Videos uploaded to Facebook per month.	**5 billion** – Photos hosted by Flickr (September 2010). **3000+** – Photos uploaded per minute to Flickr. **130 million** – At the above rate, the number of photos uploaded per month to Flickr. **3+ billion** – Photos uploaded per month to Facebook. ← **36 billion** – At the current rate, the number of photos uploaded to Facebook per year.

References: http://royal.pingdom.com/2011/01/12/internet-2010-in-numbers/

State of the Internet - 2012

Browers 2012	Internet Explorer	Firefox	Chrome	Safari	Opera
October	16.1 %	31.8 %	44.9 %	4.3 %	2.0 %
September	16.4 %	32.2 %	44.1 %	4.2 %	2.1 %
August	16.2 %	32.8 %	43.7 %	4.0 %	2.2 %
July	16.3 %	33.7 %	42.9 %	3.9 %	2.1 %
June	16.7 %	34.4 %	41.7 %	4.1 %	2.2 %
May	18.1 %	35.2 %	39.3 %	4.3 %	2.2 %
April	18.3 %	35.8 %	38.3 %	4.5 %	2.3 %
March	18.9 %	36.3 %	37.3 %	4.4 %	2.3 %
February	19.5 %	36.6 %	36.3 %	4.5 %	2.3 %
January	20.1 %	37.1 %	35.3 %	4.3 %	2.4 %

References: http://www.w3schools.com/browsers/browsers_stats.asp

Internet

Background: **RSS Feeds**

What?

- 'The Channel Definition Format (or RSS) is an open specification that permits a web publisher to offer frequently updated collections of information, or channels, from any web server for automatic delivery to compatible receiver programs on PCs or other information appliances'

- RSS (Rich Site Summary) is typically used for retrieving blog entries, news headlines, weather reports, audio and video.

Why?

- RSS feeds keep users informed about subjects of interest to them.

Who?

- Content distributors (or Aggregators) *expose* web feeds allowing users to *subscribe* to them.

Internet

Background: **Web Feeds**

- First version of RSS was created by Netscape around 1999.

- A typical *news feed (or channel)* contains entries which may be:
  - ✓ headlines,
  - ✓ full-text articles excerpts,
  - ✓ summaries,
  - ✓ Thumbnails, and/or
  - ✓ links to content on a website along with various metadata

- The *Atom Syndication Format* and RSS are common XML standards used to organize, create and update web feeds (these formats have been adopted by Google, Yahoo!, Apple/iTunes, CNN, NY Times,…)

- Validity of ATOM/RSS documents can be tested at http://validator.w3.org/appc/ (many other tools also available)

Internet

Background: **Web Feeds**

Common child elements of **<channel>**

Elements	Description	Type	# allowed
LastMod	Last modified date for this web page	ISO 8601:1988 Date	0 or 1
Title	Title	String	0 or 1
Abstract	Short description summarizing the article (200 characters or less recommended)	String	0 or 1
Author	Author	String	Any
Publisher	Publisher	String	Any
Copyright	Copyright	String	0 or 1
PublicationDate	Publication Date	String	0 or 1
Logo	Visual Logo for channel	Logo element	Any
Keywords	Comma delimited keywords that match this channel	String	Any
Category	A category to which this web page belongs in. The string value is a URI to a **CategoryDef** element.	Category element	Any
Ratings	Rating of the channel by one or more ratings services. (String found in PICS label meta tag.)	String	Any
Schedule	Schedule for keeping channel up to date	Schedule element	0 or 1
UserSchedule	Reference to a client/user specified schedule	UserSchedule element	0 or 1

Reference: http://www.w3.org/TR/NOTE-CDFsubmit.html

Internet

Background: **Web Feeds**

Elements of <item>

A channel may contain any number of **<item>**s. An item may represent a "story" -- much like a story in a newspaper or magazine.

Element	Description
title	The title of the item.
link	The URL of the item.
description	The item synopsis.
author	Email address of the author of the item.
category	Includes the item in one or more categories.
comments	URL of a page for comments relating to the item.
enclosure	Describes a media object that is attached to the item.
guid	A string that uniquely identifies the item.
pubDate	Indicates when the item was published.
source	The RSS channel that the item came from.

Reference: http://www.w3.org/TR/NOTE-CDFsubmit.html

Internet

Background: **Web Feeds**

Example:

```
<?xml version="1.0" encoding="utf-8" ?>
<rss version="2.0" xmlns:atom="http://www.w3.org/2005/atom" >

  <channel>
    <title>rss title</title>
    <description>this is an example of an rss feed</description>
    <link>http://www.aggregatorsDomain.com/main.html</link>
    <lastbuilddate>wed, 07 nov 2012 12:28:29 -0500</lastbuilddate>
    <pubdate>thu, 08 nov 2012 12:28:29 -0500</pubdate>

    <item>
      <title>Item's title</title>
      <description>Place here the item's synopsis</description>
      <link>http://www.theItemsUrlLink.org/</link>
      <guid>http://www.example.com/archives/000054.html</guid>
      <pubdate>thu, 08 nov 2012 12:28:29 -0500</pubdate>
    </item>

  </channel>
</rss>
```

Source: http://en.wikipedia.org/wiki/RSS

Internet

Background: **Web Feeds**

Using the <![CDATA[. . .]]> Tag

You may simplify the **<description>** portion of an **<item>** by entering non-escaped HTML text inside a **CDATA** tag.

For example, if your item's text is literally: `This is <b>bold</b>`
then the escaped **<description>** would be:

<description> **`This is &lt;b&gt;bold&lt;/b&gt;`** **</description>**

In the example "**<**" becomes "**&lt;**" and "**>**" turns into "**&gt;**".

The equivalent version using the XML **CDATA** tag would be:

<description>`<![CDATA[ This is <b>bold</b> ]]>`**</description>**

Aggregators

Internet Feeders

US weather:
http://www.weather.gov/view/national.php?map=on
The Weather Channel
http://rss.weather.com/weather/rss/local/44114?cm_ven=LWO&cm_cat=rss&par=LWO_rss
World weather
http://www.rssweather.com/dir

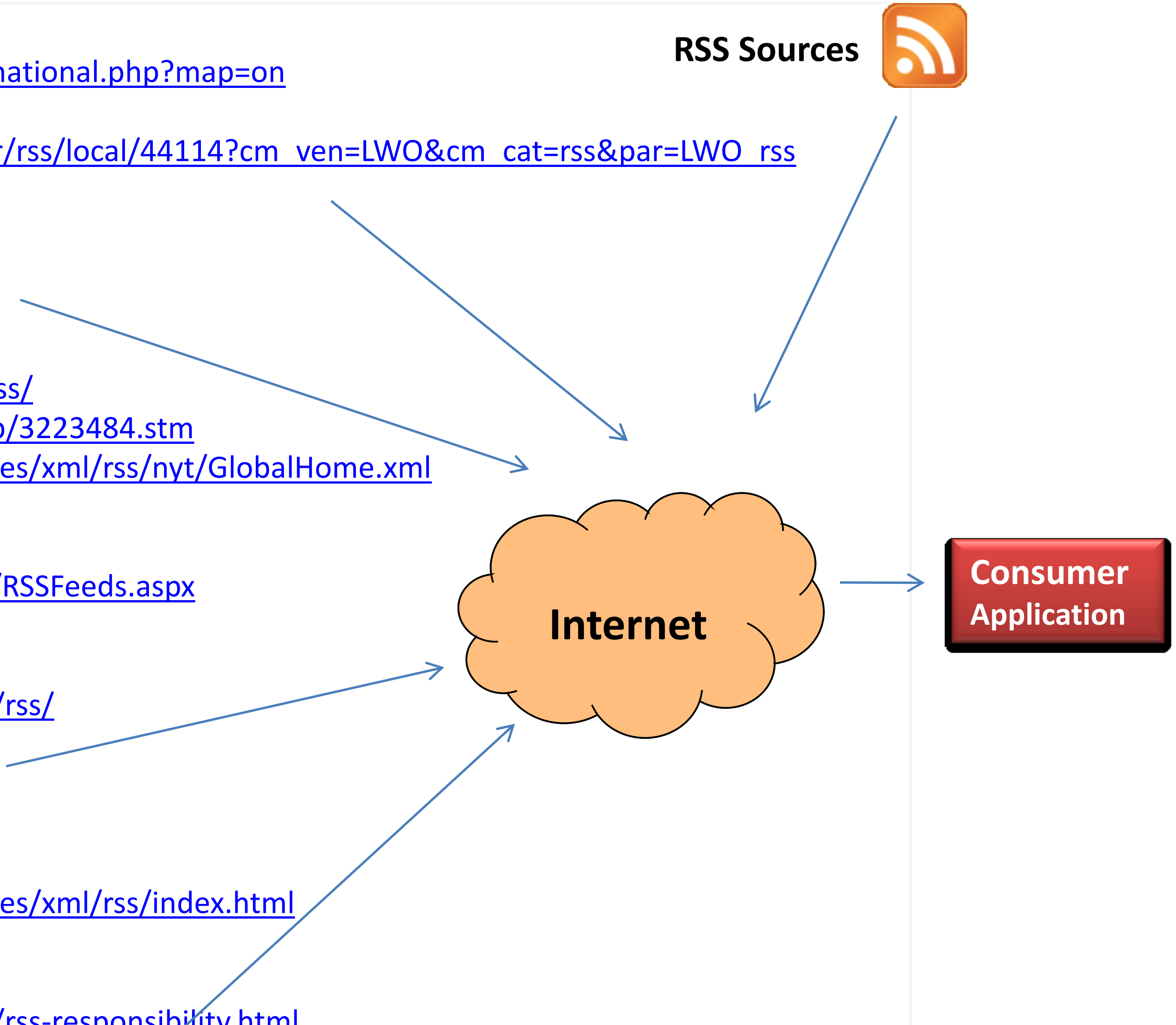
News
http://www.npr.org/rss/
http://www.cnn.com/services/rss/
http://news.bbc.co.uk/2/hi/help/3223484.stm
http://www.nytimes.com/services/xml/rss/nyt/GlobalHome.xml

Money Exchange
http://themoneyconverter.com/RSSFeeds.aspx

Entertainment
http://www.nbclosangeles.com/rss/
http://www.movies.com/rss/

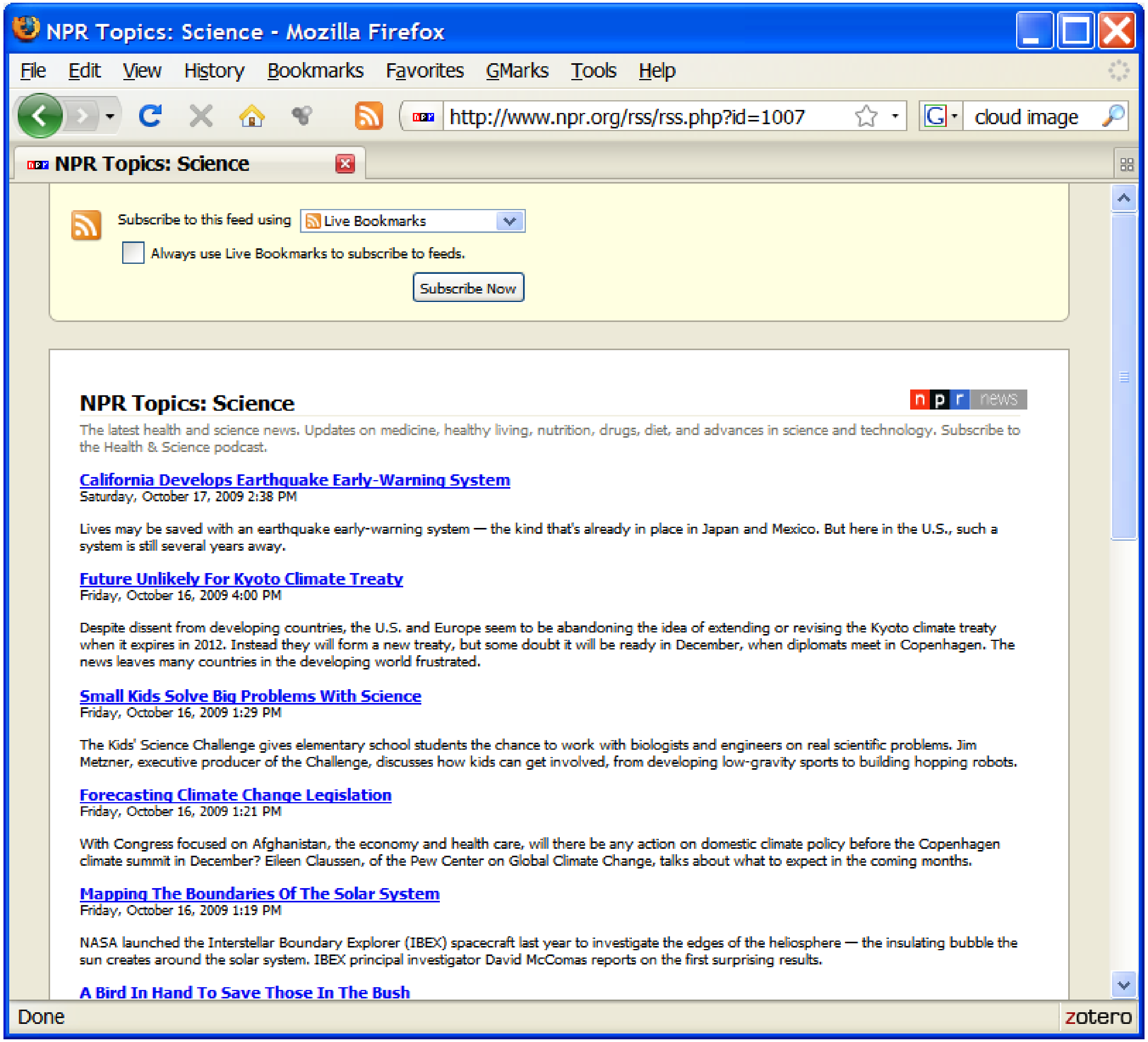
RSS Aggregator
http://www.rss-network.com/
http://www.nytimes.com/services/xml/rss/index.html

Corporate
http://www.toyota.co.jp/en/rss/rss-responsibility.html
http://home3.americanexpress.com/corp/rss/
http://www.aa.com/i18n/urls/rss.jsp



How do RSS feeds look like when using a browser?

NPR National Public Radio (17-Oct-2009)
http://www.npr.org/rss/


NPR Topics: Science - Mozilla Firefox
File Edit View History Bookmarks Favorites GMarks Tools Help
http://www.npr.org/rss/rss.php?id=1007
cloud image
NPR Topics: Science
Subscribe to this feed using Live Bookmarks
Always use Live Bookmarks to subscribe to feeds.
Subscribe Now
Done
zotero

NPR Topics: Science

The latest health and science news. Updates on medicine, healthy living, nutrition, drugs, diet, and advances in science and technology. Subscribe to the Health & Science podcast.

California Develops Earthquake Early-Warning System
Saturday, October 17, 2009 2:38 PM

Lives may be saved with an earthquake early-warning system — the kind that's already in place in Japan and Mexico. But here in the U.S., such a system is still several years away.

Future Unlikely For Kyoto Climate Treaty
Friday, October 16, 2009 4:00 PM

Despite dissent from developing countries, the U.S. and Europe seem to be abandoning the idea of extending or revising the Kyoto climate treaty when it expires in 2012. Instead they will form a new treaty, but some doubt it will be ready in December, when diplomats meet in Copenhagen. The news leaves many countries in the developing world frustrated.

Small Kids Solve Big Problems With Science
Friday, October 16, 2009 1:29 PM

The Kids' Science Challenge gives elementary school students the chance to work with biologists and engineers on real scientific problems. Jim Metzner, executive producer of the Challenge, discusses how kids can get involved, from developing low-gravity sports to building hopping robots.

Forecasting Climate Change Legislation
Friday, October 16, 2009 1:21 PM

With Congress focused on Afghanistan, the economy and health care, will there be any action on domestic climate policy before the Copenhagen climate summit in December? Eileen Claussen, of the Pew Center on Global Climate Change, talks about what to expect in the coming months.

Mapping The Boundaries Of The Solar System
Friday, October 16, 2009 1:19 PM

NASA launched the Interstellar Boundary Explorer (IBEX) spacecraft last year to investigate the edges of the heliosphere — the insulating bubble the sun creates around the solar system. IBEX principal investigator David McComas reports on the first surprising results.

A Bird In Hand To Save Those In The Bush

Internet Feeders

XML Version of the NPR RSS Feed (1/3 just a fragment!)

```
<?xml version="1.0"?>
<?xml-stylesheet title="XSL_formatting" type="text/xsl" href="/include/xsl/rss.xsl"?>

<rss xmlns:npr="http://www.npr.org/rss/" xmlns:nprml="http://api.npr.org/nprml"
    xmlns:itunes="http://www.itunes.com/dtds/podcast-1.0.dtd"
    xmlns:content="http://purl.org/rss/1.0/modules/content/" version="2.0">

  <channel>
      <title>NPR Topics: Science</title>
      <link>http://www.npr.org/templates/story/story.php?storyId=1007&amp;ft=1&amp;
            f=1007 </link>

    <description>The latest health and science news. Updates on medicine, healthy
          living, nutrition, drugs, diet, and advances in science and technology.
          Subscribe to the Health &amp; Science podcast.</description>

    <copyright>Copyright 2009 NPR - For Personal Use Only</copyright>
    <generator>NPR API RSS Generator 0.93</generator>
    <lastBuildDate>Sat, 17 Oct 2009 14:38:00 -0400</lastBuildDate>

    <image>
        <url>http://media.npr.org/images/npr_news_123x20.gif</url>
        <title>Science</title>
       <link>http://www.npr.org/templates/story/story.php?storyId=1007&amp;ft=1&amp;
            f=1007</link>
    </image>
```

Internet Feeders

XML Version of the NPR RSS Feed (2/3 just a fragment!)

```
<item>

    <title>California Develops Earthquake Early-Warning System</title>

    <description>Lives may be saved with an earthquake early-warning system
        &amp;mdash; the kind that's already in place in Japan and Mexico. But
        here in the U.S., such a system is still several years away.</description>

    <pubDate>Sat, 17 Oct 2009 14:38:00 -0400</pubDate>

    <link>http://www.npr.org/templates/story/story.php?storyId=113877510&amp;
          ft=1&amp;f=1007</link>

    <guid>http://www.npr.org/templates/story/story.php?storyId=113877510&amp;
          ft=1&amp;f=1007</guid>

    <content:encoded><![CDATA[<p>Lives may be saved with an earthquake early-warning
    system &mdash; the kind that's already in place in Japan and Mexico. But
          here in the U.S., such a system is still several years away.</p><p>
          <a href="http://www.npr.org/templates/email/emailAFriend.php
          ?storyId=113877510"> &raquo; E-Mail This</a>&nbsp;&nbsp;&nbsp;&nbsp;
          <a href="http://del.icio.us/post?url=http%3A%2F%2Fwww.npr.org
          %2Ftemplates%2Fstory%2Fstory.php%3FstoryId%3D113877510">
          &raquo; Add to Del.icio.us</a></p>]]></content:encoded>

</item>
```

Many <ITEM>s were intentionally removed to fit page size

Internet Feeders

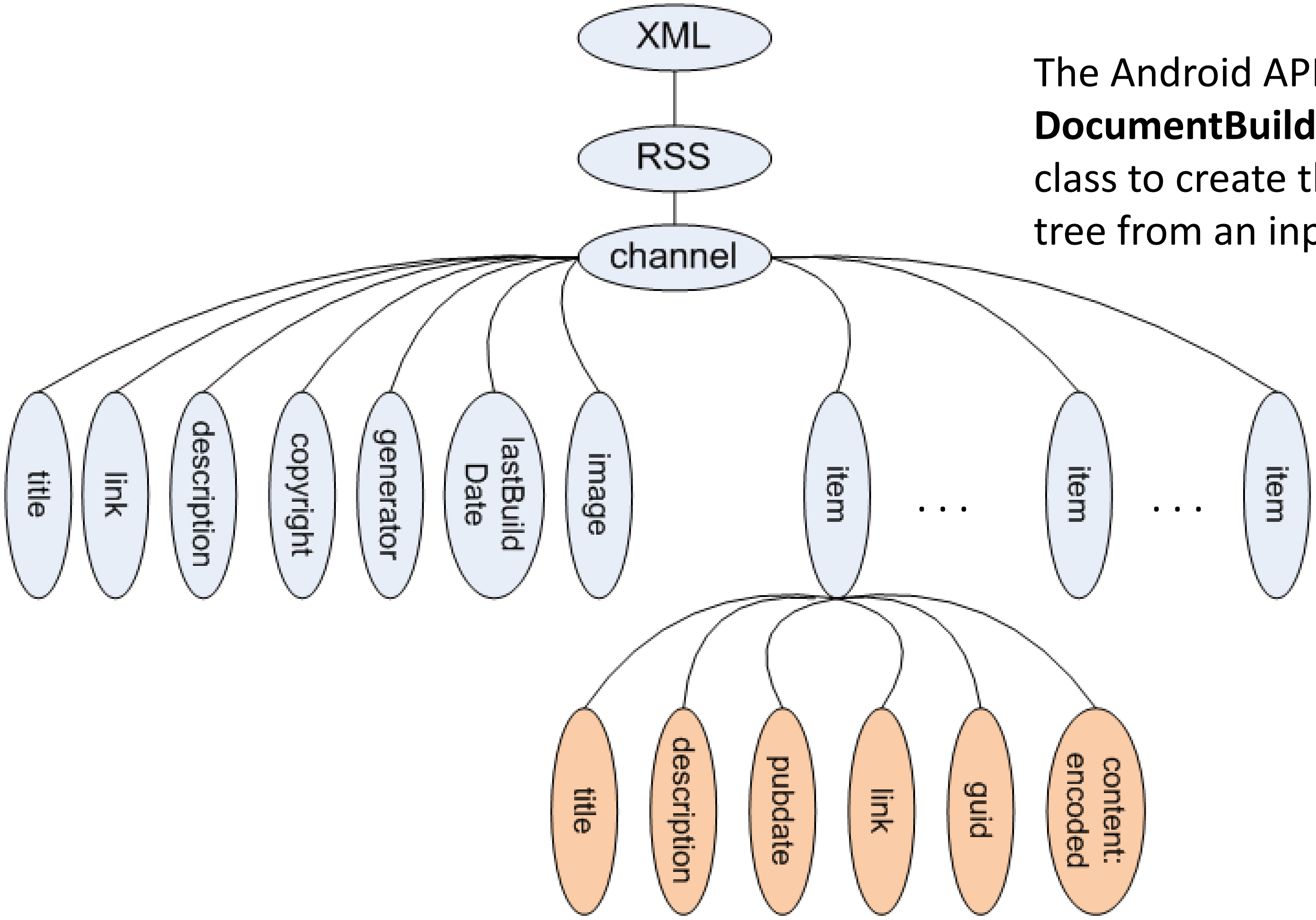
XML Version of the NPR RSS Feed (3/3 just a fragment!)

```
<item>
  <title>Mapping The Boundaries Of The Solar System</title>
  <description>NASA launched the Interstellar Boundary Explorer (IBEX)
      spacecraft last year to investigate the edges of the heliosphere
      &amp;mdash; the insulating bubble the sun creates around the solar system.
      IBEX principal investigator David McComas reports on the first surprising
      results.</description>
  <pubDate>Fri, 16 Oct 2009 13:19:00 -0400</pubDate>
  <link>http://www.npr.org/templates/story/story.php?storyId=113870291
        &amp;ft=1&amp;f=1007</link>
 <guid>http://www.npr.org/templates/story/story.php?storyId=113870291
        &amp;ft=1&amp;f=1007</guid>
 <content:encoded><![CDATA[<p>NASA launched the Interstellar Boundary Explorer
    (IBEX) spacecraft last year to investigate the edges of the heliosphere
    &mdash; the insulating bubble the sun creates around the solar system.
    IBEX principal investigator David McComas reports on the first surprising
    results.</p><p><a href="http://www.npr.org/templates/email/emailAFriend.php?
    storyId=113870291">&raquo;E-Mail This</a>&nbsp;&nbsp;&nbsp;&nbsp;
    <a href="http://del.icio.us/post?url=http%3A%2F%2Fwww.npr.org
    %2Ftemplates%2Fstory%2Fstory.php%3FstoryId%3D113870291">&raquo;
    Add to Del.icio.us</a></p>]]></content:encoded>
</item>

  </channel>
</rss>
```

Many <ITEM>s were intentionally removed to fit page size

Internet Feeders

Representing the RSS XML as a Tree



The Android API includes a **DocumentBuilderFactory** class to create this type of tree from an input stream

Internet

Document Objcet Model (DOM).

The **Document Object Model** (**DOM**) is an application programming interface API for valid *HTML* and well-formed *XML* documents.

With the Document Object Model, programmers can build documents, navigate their structure, and add, modify, or delete elements and content.

Android includes support for DOM managers.

```
DocumentBuilder db = DocumentBuilderFactory
                                .newInstance();
                                .newDocumentBuilder();

Document dom = db.parse(someHttpInputStream);
```

Internet

Android's HTTP API Support

Android's handling of HTTP network resources could be done using either of the Client-side included APIs

1. Standard Java network **java.net** package, and/or
2. Apache **HttpClient** library.

Google favors the **java.net** API. The java.net package can be divided in two sections:

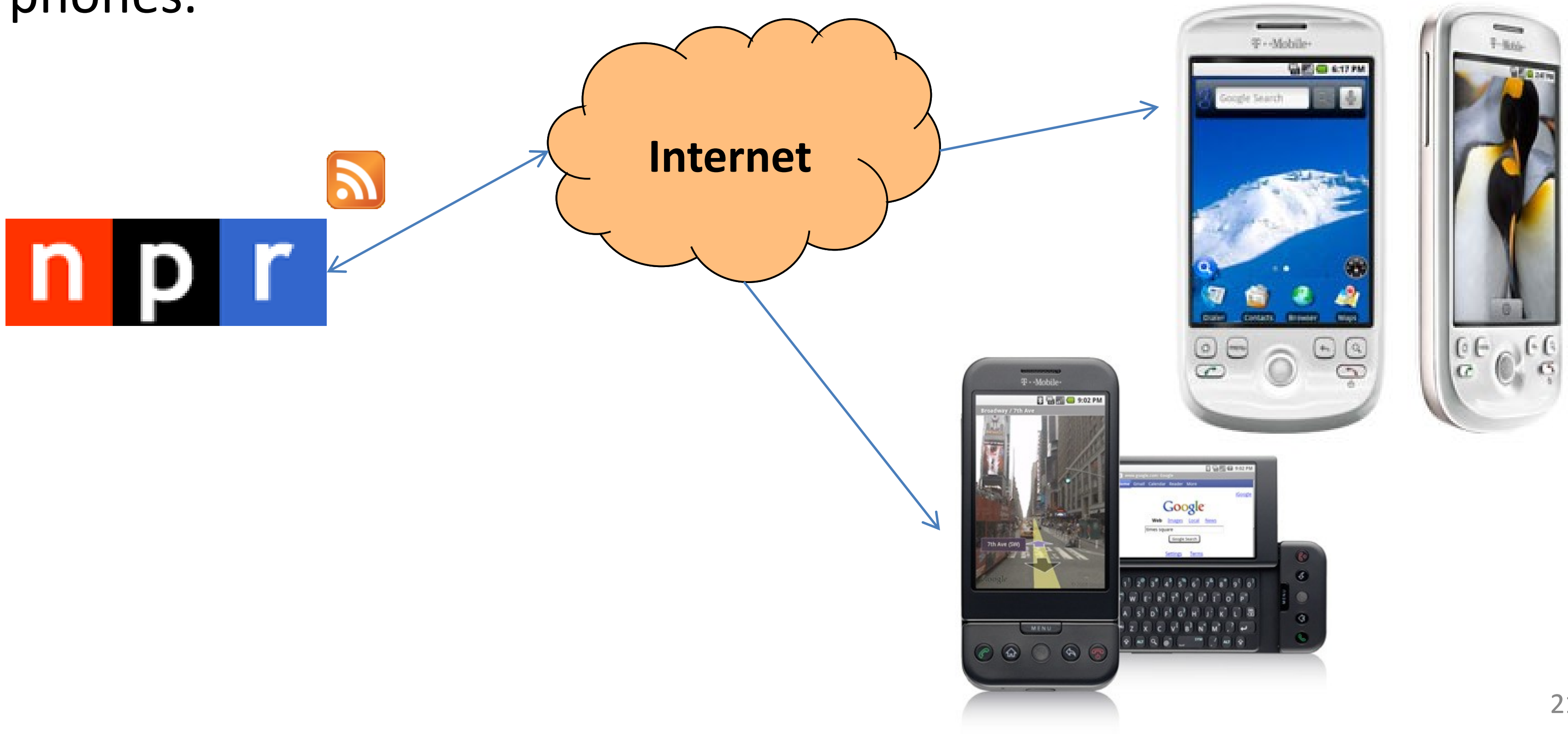
API	Java.net Library - Managed Abstractions	
Low Level	*Addresses*,	networking identifiers, like IP addresses.
	Sockets,	basic bidirectional data communication mechanisms.
	Interfaces,	which describe network interfaces.
High Level	*URIs*,	Universal Resource Identifiers.
	URLs,	Universal Resource Locators.
	Connections,	Connections to the resource pointed to by *URLs*.

References: http://docs.oracle.com/javase/6/docs/api/java/net/package-summary.html
http://hc.apache.org/httpcomponents-client-ga/
http://developer.android.com/reference/org/apache/http/impl/client/DefaultHttpClient.html

Internet

Putting all things together – An Example Application

In this project we will develop an application to expose the material typically broadcasted by **National Public Radio** (NPR) in Android phones.



Internet

NPR Project – Action Plan.

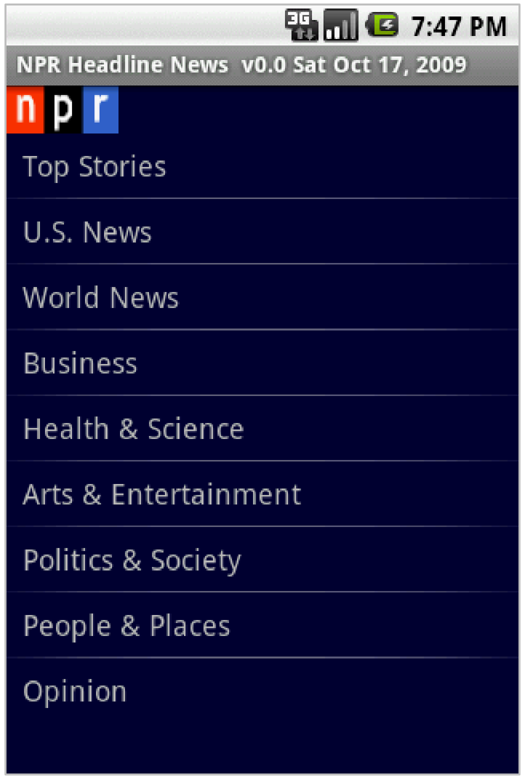
1. A little research indicates that NPR supports a number of web feeds, among them the following:

Topic	URL
Top Stories	http://www.npr.org/rss/rss.php?id=1001
U.S. News	http://www.npr.org/rss/rss.php?id=1003
World News	http://www.npr.org/rss/rss.php?id=1004
Business	http://www.npr.org/rss/rss.php?id=1006
Health & Science	http://www.npr.org/rss/rss.php?id=1007
Arts & Entertainment	http://www.npr.org/rss/rss.php?id=1008
Politics & Society	http://www.npr.org/rss/rss.php?id=1012
People & Places	http://www.npr.org/rss/rss.php?id=1021
Opinion	http://www.npr.org/rss/rss.php?id=1057

Internet

NPR Project – Action Plan.

2. We will display the main topics in a *ListView* widget from which the user will make a selection. We use the associated web-feed to access the current contents of the selected category.



7:47 PM

NPR Headline News v0.0 Sat Oct 17, 2009

Top Stories
U.S. News
World News
Business
Health & Science
Arts & Entertainment
Politics & Society
People & Places
Opinion

Choose
"Health & Science"

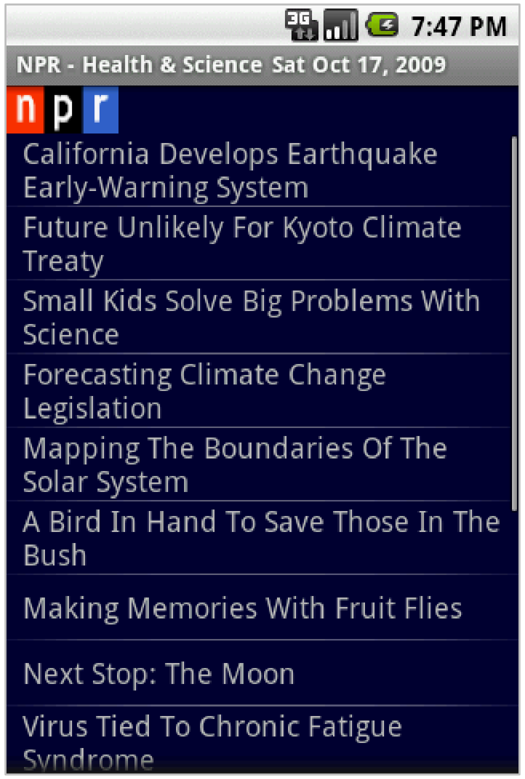
Internet

NPR Project – Action Plan.

3. The most current headlines of the selected category are displayed. The User can scroll the list and click on a particular subject.

Observe that individual lines correspond to the XML **<item>** entries discussed earlier.

In the example we are interested in the "Health & Science" subject. We want to know about the efforts of mapping the Solar System.



NPR - Health & Science Sat Oct 17, 2009

California Develops Earthquake Early-Warning System

Future Unlikely For Kyoto Climate Treaty

Small Kids Solve Big Problems With Science

Forecasting Climate Change Legislation

Mapping The Boundaries Of The Solar System

A Bird In Hand To Save Those In The Bush

Making Memories With Fruit Flies

Next Stop: The Moon

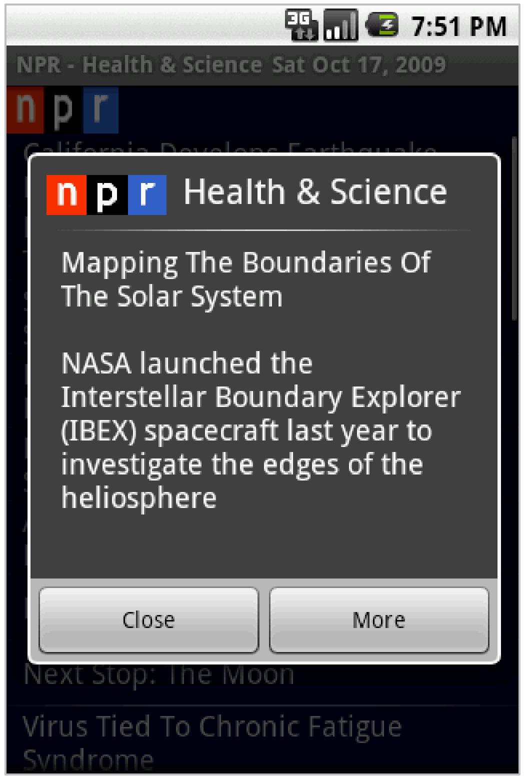
Virus Tied To Chronic Fatigue Syndrome

Internet

NPR Project – Action Plan.

4. A brief summary of the chosen topic is displayed inside a DialogBox. The user is given the option of *closing* the window or obtaining *more* information.

We want additional information, so we click the "More" button



7:51 PM

NPR - Health & Science Sat Oct 17, 2009

California Develops Earthquake

Health & Science

Mapping The Boundaries Of The Solar System

NASA launched the Interstellar Boundary Explorer (IBEX) spacecraft last year to investigate the edges of the heliosphere

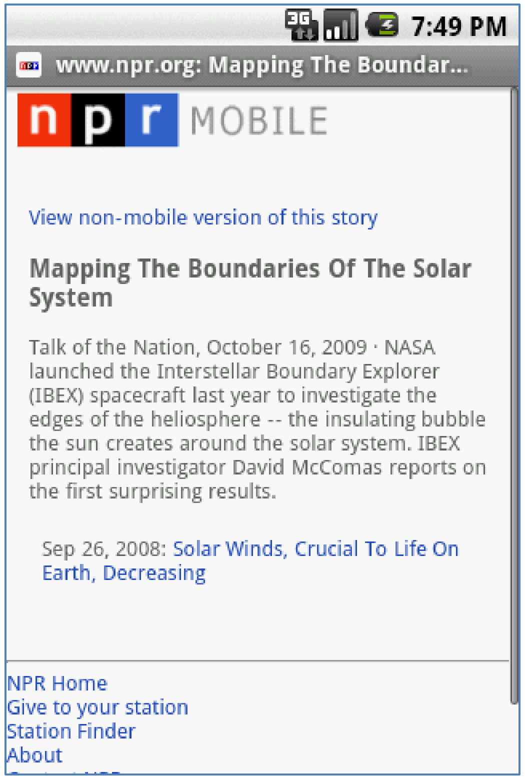
Next Stop: The Moon

Virus Tied To Chronic Fatigue Syndrome

Internet

NPR Project – Action Plan.

5. The link held in the XML **<item>** currently displayed is given to a WebKit based Activity. We use the Internet to access the page containing the detailed subject.


7:49 PM
www.npr.org: Mapping The Boundar...
npr MOBILE

View non-mobile version of this story

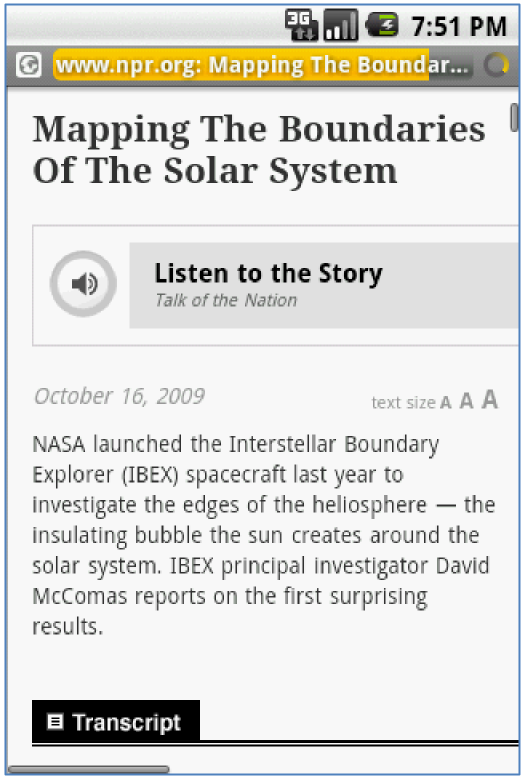
Mapping The Boundaries Of The Solar System

Talk of the Nation, October 16, 2009 · NASA launched the Interstellar Boundary Explorer (IBEX) spacecraft last year to investigate the edges of the heliosphere -- the insulating bubble the sun creates around the solar system. IBEX principal investigator David McComas reports on the first surprising results.

Sep 26, 2008: Solar Winds, Crucial To Life On Earth, Decreasing

NPR Home
Give to your station
Station Finder
About

We may opt for a non-mobile page version which may include a number of additional components such as audio, pictures, video, extensive text, etc.


7:51 PM
www.npr.org: Mapping The Boundar...

Mapping The Boundaries Of The Solar System

Listen to the Story
Talk of the Nation

October 16, 2009 text size A A A

NASA launched the Interstellar Boundary Explorer (IBEX) spacecraft last year to investigate the edges of the heliosphere — the insulating bubble the sun creates around the solar system. IBEX principal investigator David McComas reports on the first surprising results.

Transcript

Internet

Acquiring & Processing the NPR web-feed

1. Assume the RSS for “Health & Science” is http://www.npr.org/rss/rss.php?id=1007.

2. The Java fragment in the next page uses the **HttpComponents** API.

3. The goal of this code is to grab the feed, and create a document holding the tree parsed from the XML document.

4. The tree will be traversed looking for <item> elements similar to those discussed earlier.

5. Each item will be dissected and the pieces arranged into a manageable object form. Remember an <item> includes among other components <title>, <description>, <link>, <datepublication>, etc.

Internet

Acquiring & Processing the NPR web-feed

6. Acquiring data via HTTP is **slow**. This work should be done in a background worker thread (try an AsyncTask)
7. As of SDK 3.0 reading HTTP data in the main UI thread is considered an ERROR (`NetworkOnMainThreadException`).
8. To (temporarily) bypass the thread requirement restriction use **StrictMode** to alter the recommended 'good' policy. Add the following code:

```
StrictMode.ThreadPolicy badPolicy = new
   StrictMode. ThreadPolicy.Builder().permitAll().build();

StrictMode.setThreadPolicy(badPolicy);
```

Note:
`@SuppressLint({ "NewApi", "NewApi", "NewApi" });`
Clause is needed to allow `badPolicy` to operate.

Internet

Main Programming Idea: Acquiring & Processing the NPR web-feed

```
// TODO: This slow work should/must be done in a background
//       worker thread. We will bypass req. for now.
//       See previous note on StrictMode manipulation.
//
// setting & opening a web-connection using java.net API
// reach URL such as: http://www.npr.org/rss/rss.php?id=1001

URL url = new URL(urlAddress);
URLConnection connection = url.openConnection();

HttpURLConnection httpConnection = (HttpURLConnection) connection;

int responseCode = httpConnection.getResponseCode();

if (responseCode == HttpURLConnection.HTTP_OK) {
    // get RSS-XML and make a document representing
    // the parse tree constructed from the input
}
```

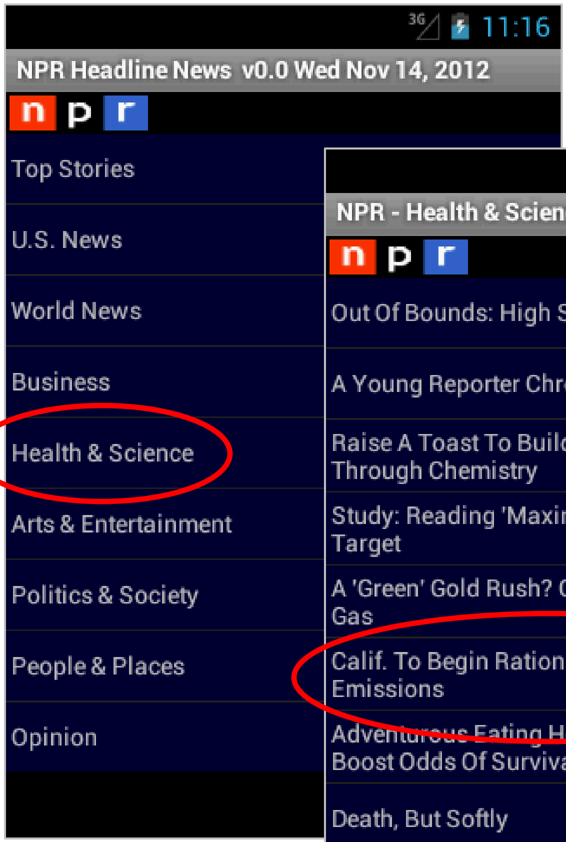
Internet

Main Programming Idea: Acquiring & Processing the NPR web-feed

```
// USE httpConnection to get XML and make a document
// holding the parse tree constructed from the input
InputStream in = httpConnection.getInputStream();

// define a document builder to act on incoming stream
DocumentBuilder db = DocumentBuilderFactory.newInstance()
                                             .newDocumentBuilder();
// make XML parse tree for incoming RSS stream
Document dom = db.parse(in);

// define access nodes in the parse tree
Element docEle = dom.getDocumentElement();

// look for individual news ("items" in this case)
// put items in a NodeList collection (nl)
NodeList nl = docEle.getElementsByTagName("item");

if ((nl != null) && (nl.getLength() > 0)) {
    for (int i = 0; i < nl.getLength(); i++) {
        dissectNode(nl, i);
    }// for
}// if
```

Internet

NPR Project



11:16

NPR Headline News v0.0 Wed Nov 14, 2012

Top Stories

U.S. News

World News

Business

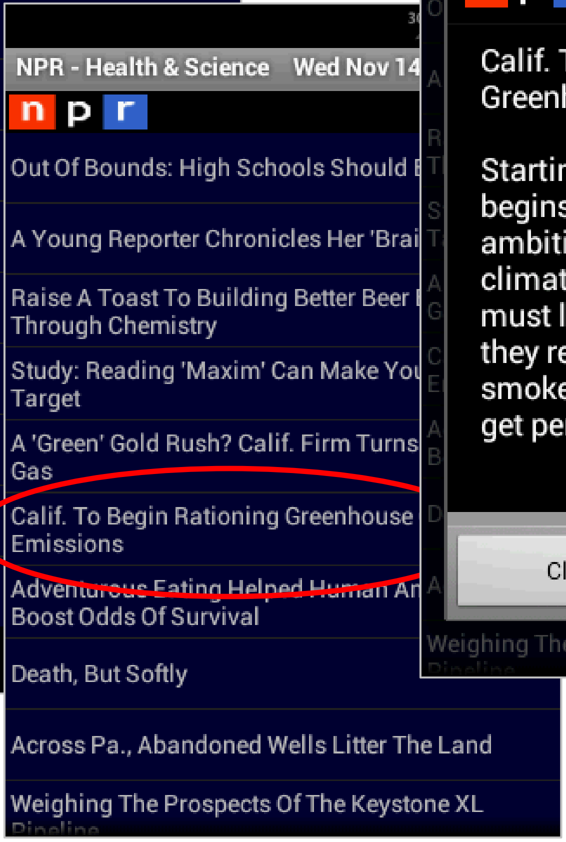
Health & Science

Arts & Entertainment

Politics & Society

People & Places

Opinion



NPR - Health & Science Wed Nov 14

Out Of Bounds: High Schools Should E

A Young Reporter Chronicles Her 'Brai

Raise A Toast To Building Better Beer Through Chemistry

Study: Reading 'Maxim' Can Make You Target

A 'Green' Gold Rush? Calif. Firm Turns Gas

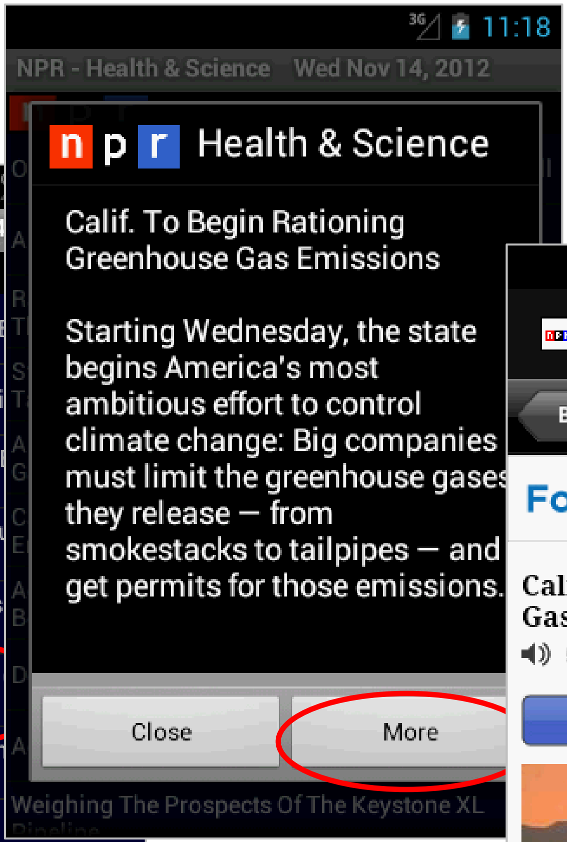
Calif. To Begin Rationing Greenhouse Emissions

Adventurous Eating Helped Human An Boost Odds Of Survival

Death, But Softly

Across Pa., Abandoned Wells Litter The Land

Weighing The Prospects Of The Keystone XL Pipeline



11:18

NPR - Health & Science Wed Nov 14, 2012

Health & Science

Calif. To Begin Rationing Greenhouse Gas Emissions

Starting Wednesday, the state begins America's most ambitious effort to control climate change: Big companies must limit the greenhouse gases they release — from smokestacks to tailpipes — and get permits for those emissions.

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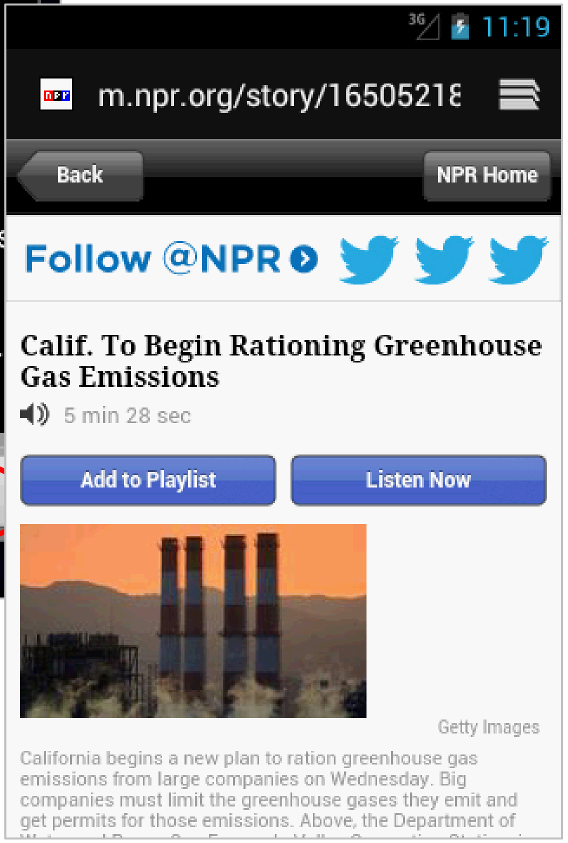
Weighing The Prospects Of The Keystone XL Pipeline



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m.npr.org/story/16505218

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Calif. To Begin Rationing Greenhouse Gas Emissions

5 min 28 sec

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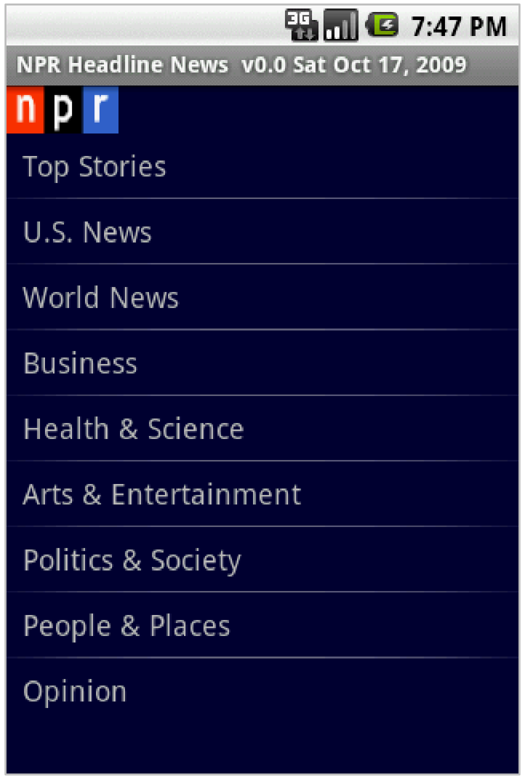
Getty Images

California begins a new plan to ration greenhouse gas emissions from large companies on Wednesday. Big companies must limit the greenhouse gases they emit and get permits for those emissions. Above, the Department of

Internet

NPR Project – Implementation

main.xml
(shows the main topics)



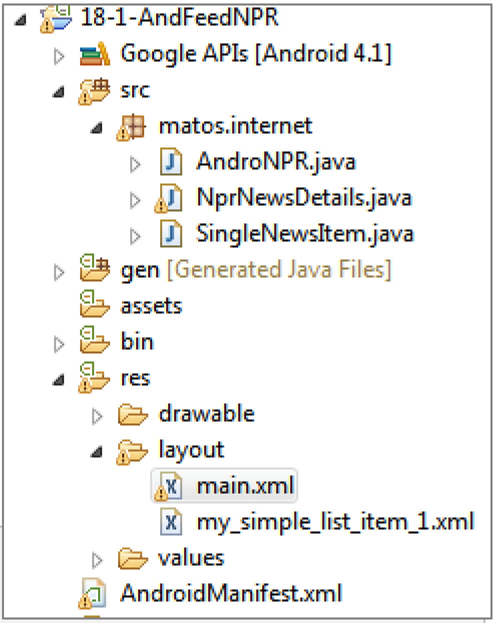
7:47 PM
NPR Headline News v0.0 Sat Oct 17, 2009
npr
Top Stories
U.S. News
World News
Business
Health & Science
Arts & Entertainment
Politics & Society
People & Places
Opinion

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:orientation="vertical" >

    <ImageView
        android:layout_width="80dp"
        android:layout_height="20dp"
        android:layout_margin="2dp"
        android:background="@drawable/logo_npr" />

    <ListView
        android:id="@+id/myListView"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content" />

</LinearLayout>
```



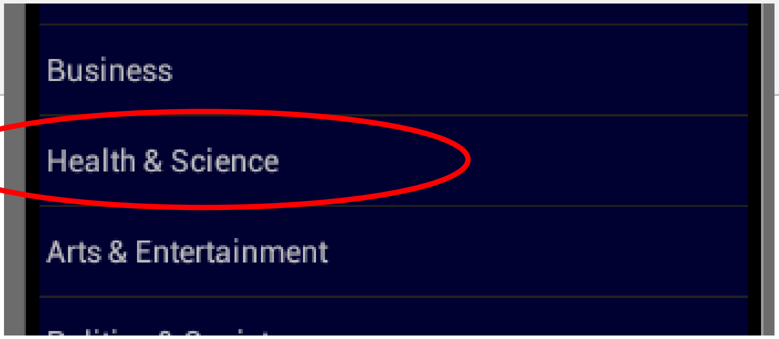
```
18-1-AndFeedNPR
    Google APIs [Android 4.1]
    src
        matos.internet
            AndroNPR.java
            NprNewsDetails.java
            SingleNewsItem.java
    gen [Generated Java Files]
    assets
    bin
    res
        drawable
        layout
            main.xml
            my_simple_list_item_1.xml
        values
    AndroidManifest.xml
```

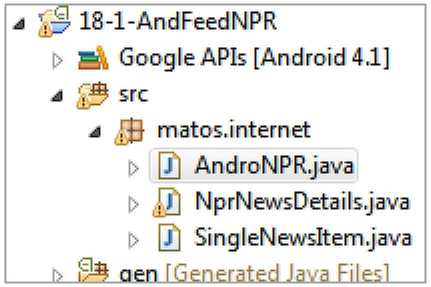
Internet

NPR Project – Implementation

my_simple_list_item_1.xml (shows individual rows of the ListView widget)

```
<?xml version="1.0" encoding="utf-8"?>
<TextView xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@android:id/text1"
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:gravity="center_vertical"
    android:minHeight="40sp"
    android:padding="3dip"
    android:textAppearance="@android:style/TextAppearance.DeviceDefault.Small"
    android:textSize="14sp"
     android:background="#ff000033" >
</TextView>
```





18-1-AndFeedNPR
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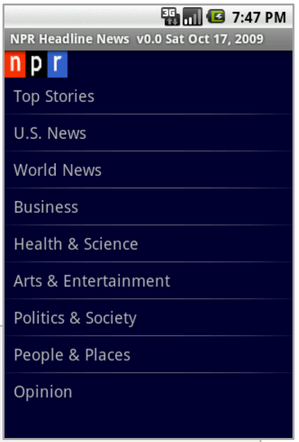

7:47 PM
NPR Headline News v0.0 Sat Oct 17, 2009
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Top Stories
U.S. News
World News
Business
Health & Science
Arts & Entertainment
Politics & Society
People & Places
Opinion

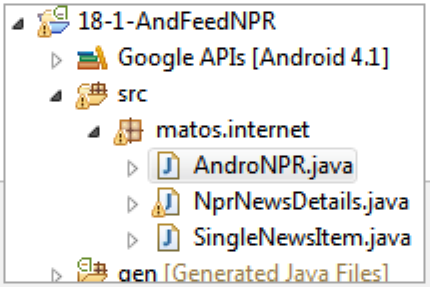
Activity1: AndroNPR.java 1

```
public class AndroNPR extends Activity {

  ArrayAdapter<String> aa;
   ListView myListView;
   Context  context;
   SingleNewsItem selectedNewsItem;

   String [][] myUrlAddressCaption = {
     {"http://www.npr.org/rss/rss.php?id=1001",   "Top Stories"},
     {"http://www.npr.org/rss/rss.php?id=1003",   "U.S. News"},
     {"http://www.npr.org/rss/rss.php?id=1004",   "World News"},
     {"http://www.npr.org/rss/rss.php?id=1006",    "Business"},
     {"http://www.npr.org/rss/rss.php?id=1007",   "Health & Science"},
     {"http://www.npr.org/rss/rss.php?id=1008",   "Arts & Entertainment"},
     {"http://www.npr.org/rss/rss.php?id=1012",    "Politics & Society"},
     {"http://www.npr.org/rss/rss.php?id=1021",   "People & Places"},
     {"http://www.npr.org/rss/rss.php?id=1057",   "Opinion"}
   };
```

Activity1: AndroNPR.java


18-1-AndFeedNPR
Google APIs [Android 4.1]
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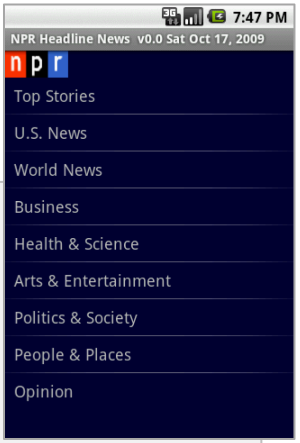
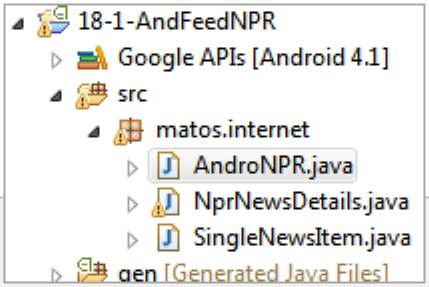
matos.internet
AndroNPR.java
NprNewsDetails.java
SingleNewsItem.java
gen [Generated Java Files]


7:47 PM
NPR Headline News v0.0 Sat Oct 17, 2009
npr
Top Stories
U.S. News
World News
Business
Health & Science
Arts & Entertainment
Politics & Society
People & Places
Opinion

```
String [] myUrlAddress = {
     "http://www.npr.org/rss/rss.php?id=1001",
     "http://www.npr.org/rss/rss.php?id=1003",
     "http://www.npr.org/rss/rss.php?id=1004",
     "http://www.npr.org/rss/rss.php?id=1006",
     "http://www.npr.org/rss/rss.php?id=1007",
     "http://www.npr.org/rss/rss.php?id=1008",
     "http://www.npr.org/rss/rss.php?id=1012",
     "http://www.npr.org/rss/rss.php?id=1021",
     "http://www.npr.org/rss/rss.php?id=1057"
    };
String [] myUrlCaption = {
     "Top Stories",
     "U.S. News",
     "World News",
     "Business",
     "Health & Science",
     "Arts & Entertainment",
     "Politics & Society",
     "People & Places",
     "Opinion"
    };

String [] myUrlAddress2 = new String[myUrlAddressCaption.length];
String [] myUrlCaption2 = new String[myUrlAddressCaption.length];
```

Activity1: AndroNPR.java 3


18-1-AndFeedNPR
Google APIs [Android 4.1]
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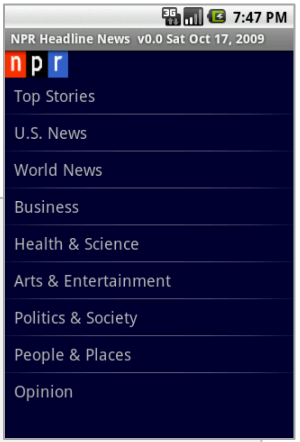
matos.internet
AndroNPR.java
NprNewsDetails.java
SingleNewsItem.java
gen [Generated Java Files]

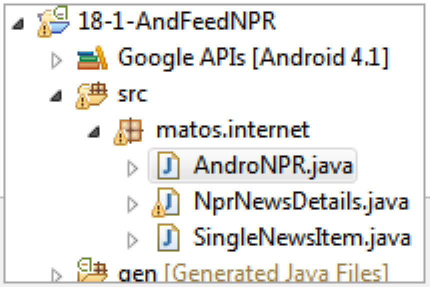

7:47 PM
NPR Headline News v0.0 Sat Oct 17, 2009
Top Stories
U.S. News
World News
Business
Health & Science
Arts & Entertainment
Politics & Society
People & Places
Opinion

```
@Override
 protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.main);
    context = getApplicationContext();

    this.setTitle("NPR Headline News  v0.0 " + niceDate() );

    myListView = (ListView)this.findViewById(R.id.myListView);
    myListView.setOnItemClickListener(new OnItemClickListener() {
          public void onItemClick(AdapterView<?> _av, View _v,
                                        int _index, long _id) {
            String urlAddress = myUrlAddress[_index];
            String urlCaption = myUrlCaption[_index];
            //create an Intent to talk to Activity2
            Intent NprNewsDetailsIntent = new Intent( AndroNPR.this,
                                                     NprNewsDetails.class );
            //prepare a Bundle and add the data pieces to be sent
            Bundle myData = new Bundle();
            myData.putString("urlAddress", urlAddress);
            myData.putString("urlCaption", urlCaption);
            NprNewsDetailsIntent.putExtras(myData);
            startActivity(NprNewsDetailsIntent);
          }
        });
```

Activity1: AndroNPR.java 4


18-1-AndFeedNPR
Google APIs [Android 4.1]
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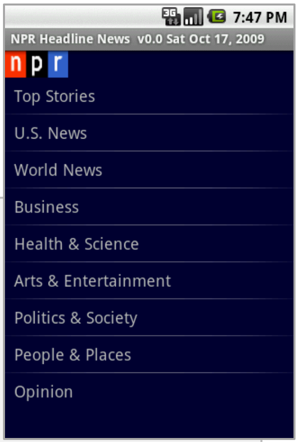
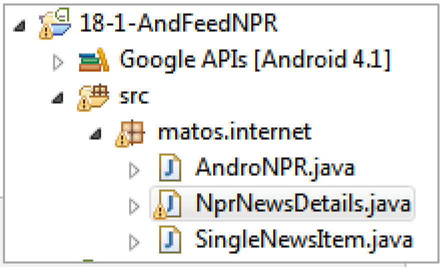
matos.internet
AndroNPR.java
NprNewsDetails.java
SingleNewsItem.java
gen [Generated Java Files]


7:47 PM
NPR Headline News v0.0 Sat Oct 17, 2009
npr
Top Stories
U.S. News
World News
Business
Health & Science
Arts & Entertainment
Politics & Society
People & Places
Opinion

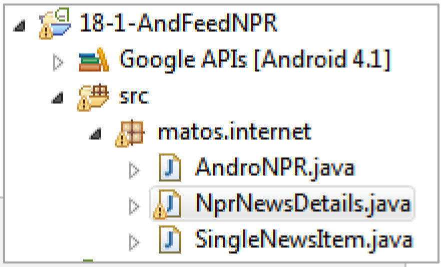
```
        //bind main category list (Top News, ...) to the the listView
        //show list and get ready for user to click on a category
        int layoutID = R.layout.my_simple_list_item_1;
        aa = new ArrayAdapter<String>(this, layoutID , myUrlCaption);
        myListView.setAdapter(aa);

}//onCreate

   public static String niceDate() {
      DateFormatSymbols dfs = new DateFormatSymbols();
      // to get short weekday-month_name String arrays
      String shortWeekdaysArray[] = dfs.getShortWeekdays();
      String shortMonthArray[] = dfs.getShortMonths();
      Calendar cal = Calendar.getInstance(Locale.US);
      int dd = cal.get(Calendar.DAY_OF_MONTH);
      int mm = cal.get(Calendar.MONTH);
      String mmText = shortMonthArray[mm];
      int yy = cal.get(Calendar.YEAR);
      int wd = cal.get(Calendar.DAY_OF_WEEK);
      String wdText = shortWeekdaysArray[wd];

      return ( wdText + " " + mmText + " " + dd + ", " + yy );
   }//niceDate

}//Activity
```

Activity2: NPRNewsDetails.java 1


18-1-AndFeedNPR
Google APIs [Android 4.1]
src
matos.internet
AndroNPR.java
NprNewsDetails.java
SingleNewsItem.java

```
public class NprNewsDetails extends Activity {
   //a main category subject has already been selected by the user
   //(data <"urlCaption", "urlAddress"> comes in a bundle sent
   // by main, access web-feed and show corresponding headlines

    ArrayList<SingleNewsItem> newsList = new ArrayList<SingleNewsItem>();
    ArrayAdapter<String> aa;
    ListView myListView;
    String urlAddress = "";
    String urlCaption = "";
    SingleNewsItem selectedNewsItem;
    Context context = getApplication();
    final boolean DEBUG_MODE = true;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);
        myListView = (ListView)this.findViewById(R.id.myListView);

        //create a local Intent handler (needed to process input parameters)
        Intent myLocalIntent = getIntent();

        //grab the data bundle with all the pieces sent to us
        //it contains 1. url-address and 2. caption-text
        Bundle myBundle = myLocalIntent.getExtras();
        urlAddress = myBundle.getString("urlAddress");
        urlCaption = myBundle.getString("urlCaption");
```

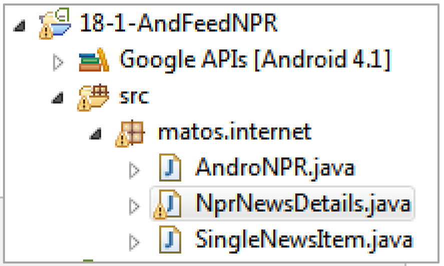
Activity2: NPRNewsDetails.java 2



```
        //top caption for this screen
        String todayStr = AndroNPR.niceDate();
        this.setTitle("NPR - " + urlCaption + " \t" + todayStr);

        //clicking a line shows more about selected news item
        myListView = (ListView)this.findViewById(R.id.myListView);
        myListView.setOnItemClickListener(new OnItemClickListener() {
            public void onItemClick(AdapterView<?> _av, View _v,
                                       int _index, long _id) {
              selectedNewsItem = newsList.get(_index);
              showNiceDialogBox(selectedNewsItem, context);
            }
          });
    }//onCreate


    @SuppressLint({ "NewApi", "NewApi", "NewApi" })
    @Override
   protected void onResume() {
      super.onResume();
      try {
         //explain the use of LogCat and printStackTrace (Log better!)
         if (DEBUG_MODE) Log.i("***connecting*** ", urlAddress.toString());

         // disable restriction to have HTTP access on a back thread instead of main UI
         StrictMode.ThreadPolicy badPolicy = new StrictMode.
                                               ThreadPolicy.Builder().permitAll().build();
         StrictMode.setThreadPolicy(badPolicy);
```

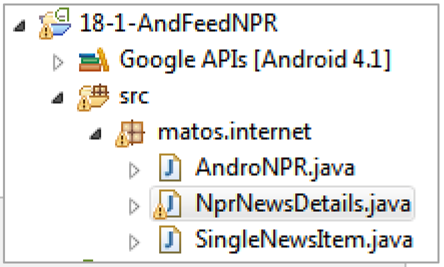
Internet

Activity2: NPRNewsDetails.java 3


18-1-AndFeedNPR
Google APIs [Android 4.1]
src
matos.internet
AndroNPR.java
NprNewsDetails.java
SingleNewsItem.java

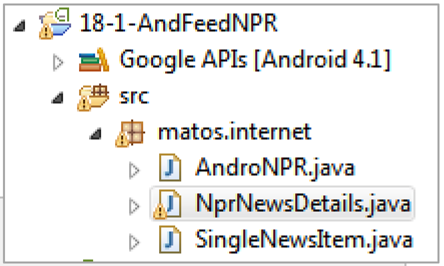
```
// setting / opening the connection using urlAddress which is
// a value such as: http://www.npr.org/rss/rss.php?id=1001
URL url = new URL(urlAddress);
URLConnection connection;
connection = url.openConnection();

HttpURLConnection httpConnection = (HttpURLConnection) connection;
int responseCode = httpConnection.getResponseCode();

if (responseCode == HttpURLConnection.HTTP_OK) {
   InputStream in = httpConnection.getInputStream();
   // define a document builder to act on incoming stream
   DocumentBuilderFactory dbf = DocumentBuilderFactory
         .newInstance();
   DocumentBuilder db = dbf.newDocumentBuilder();
   // make XML parse tree for incoming stream
   Document dom = db.parse(in);
   // define access nodes in the parse tree
   Element docEle = dom.getDocumentElement();

   // look for individual news ("items" in this case)
   // put items in a NodeList collection (nl)
   NodeList nl = docEle.getElementsByTagName("item");
   if ((nl != null) && (nl.getLength() > 0)) {
      for (int i = 0; i < nl.getLength(); i++) {
         dissectNode(nl, i);
      }// for
   }// if
}// if
```

Activity2: NPRNewsDetails.java 4


18-1-AndFeedNPR
Google APIs [Android 4.1]
src
matos.internet
AndroNPR.java
NprNewsDetails.java
SingleNewsItem.java

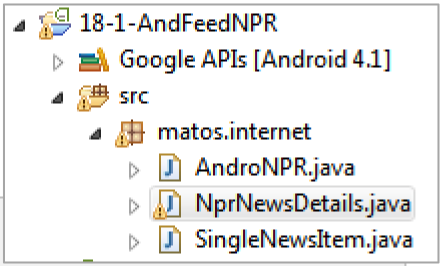
```
        // use your own (small font) layout to show a single row
        int layoutID = R.layout.my_simple_list_item_1;

        // show on a ListView news held in ArrayList just assembled
        ArrayAdapter<SingleNewsItem> aaNews = new ArrayAdapter<SingleNewsItem> (
                                                       this, layoutID, newsList );
        myListView.setAdapter(aaNews);

        //we don't need the connection anymore
        httpConnection.disconnect();


     } catch (MalformedURLException e) {
        e.printStackTrace();
     } catch (IOException e) {
        e.printStackTrace();
        Toast.makeText(context, "Trouble!!!", 1).show();
     } catch (ParserConfigurationException e) {
        e.printStackTrace();
     } catch (SAXException e) {
        e.printStackTrace();
     }

  }// onResume
```

Activity2: NPRNewsDetails.java 5



```java
   public void dissectNode(NodeList nl, int i){
      // examine input collection (NodeList) holding items,
      // get from each news item the first child of elements:
      // title, description, pubData, link. Put those pieces
      // together into a SingleNewsItem object and add it to
      // the ArrayList called: newsList
      try {
         Element entry =  (Element) nl.item(i);
         Element title = (Element) entry.getElementsByTagName("title").item(0);
         Element description = (Element) entry.getElementsByTagName("description").item(0);
         Element pubDate = (Element) entry.getElementsByTagName("pubDate").item(0);
         Element link = (Element) entry.getElementsByTagName("link").item(0);

         String titleValue = title.getFirstChild().getNodeValue();
         String descriptionValue =description.getFirstChild().getNodeValue();
         String dateValue = pubDate.getFirstChild().getNodeValue();
         String linkValue = link.getFirstChild().getNodeValue();

         SingleNewsItem singleItem = new SingleNewsItem ( dateValue,titleValue,
                                                         descriptionValue, linkValue);
         newsList.add(singleItem);

      } catch (DOMException e) {
         e.printStackTrace();
      }
    }//dissectNode
```

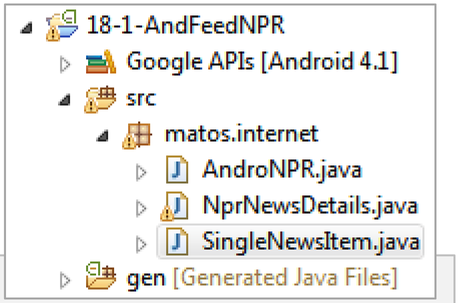
Activity2: NPRNewsDetails.java



```
   public void showNiceDialogBox(SingleNewsItem selectedNewsItem,
                                 Context context){
      //make a nice looking dialog box (news summary, btnClose, btnMore)
      try {
         final Uri myLink =  Uri.parse(selectedNewsItem.getLink());
         AlertDialog.Builder myBuilder = new AlertDialog.Builder(this);
         myBuilder
             .setIcon(R.drawable.logo_npr)
             .setTitle(urlCaption)
             .setMessage( selectedNewsItem.getTitle() + "\n\n"
                        + selectedNewsItem.getDescription() + "\n" )
             .setPositiveButton("Close", null)
             .setNegativeButton("More", new OnClickListener() {

          public void onClick(DialogInterface dialog, int whichOne) {

                Intent webIntent = new Intent( Intent.ACTION_VIEW, myLink );
                startActivity(webIntent);
          }

         })//setNegativeButton
              .show();
      } catch (Exception e) {
         e.printStackTrace();
      }
    }//showNiceDialogBox

}//NprNewsDetails
```

Internet

NPRNewsDetails.java 1



```
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  Google APIs [Android 4.1]
  src
    matos.internet
      AndroNPR.java
      NprNewsDetails.java
      SingleNewsItem.java
  gen [Generated Java Files]
```

```java
public class SingleNewsItem {
     private String pubDate;
     private String title;
     private String description;
     private String link;

     public String  getPubDate()     { return pubDate; }
     public String getTitle()        { return title;}
     public String getDescription() { return description; }
     public String getLink()         { return link; }

     public SingleNewsItem(String _pubDate,      String _title,
                           String _description,  String _link) {
       pubDate = _pubDate;
       description = _description;
       title = _title;
       link = _link;
     }

     @Override
     public String toString() {
       // return title + "\n\n" + description + "\n\n" + pubDate + "\n" + link;
      return title;
     }
}
```

Internet

Manifest

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="matos.internet"
    android:versionCode="1"
    android:versionName="1.0.0" >

    <uses-permission android:name="android.permission.INTERNET" />

    <uses-sdk android:minSdkVersion="10" />

    <application
        android:icon="@drawable/star_big_on"
        android:label="@string/app_name" >

        <activity
            android:name=".AndroNPR"
            android:label="@string/app_name" >
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>

        <activity android:name=".NprNewsDetails" >
        </activity>
    </application>

</manifest>
```

Internet

Questions