

User Interaction: Intro to Android

Assoc. Professor Donald J. Patterson
INF 133 Fall 2014



A brief history of Android

- Rumors of the “gPhone” started about the time the iPhone launched
- Google dropped the bomb on 11/5/2007
 - It wasn't working on a handset
 - It was working on an operating system
 - to compete with Microsoft, Symbian, telephone companies. Who else ?



A brief history of Android

- Why would Google do this?
 - It doesn't want to be locked out of mobile advertising
 - It's the same reason they supported Firefox
 - It's the same reason they built Chrome
 - It's the same reason they bought YouTube
 - It's about maintaining access to advertising channels today, and having access to tomorrow's innovations
 - Competitors don't need to let Google advertise



A brief history of Android

- Actually it wasn't just Google
- It was the Open Handset Alliance (OHA)
 - including HTC, LG, Samsung, T-Mobile and more
 - pushing
- Based on Linux
 - optimized for mobile devices

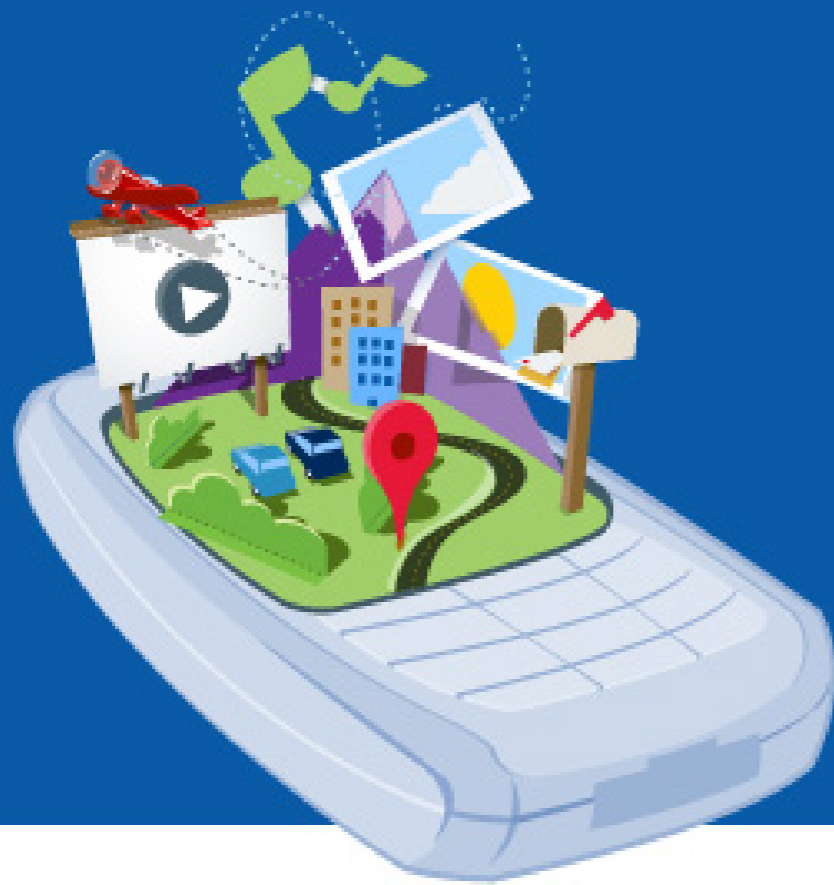


A brief history of Android

- The architecture is highly modular
 - “Location” can come from many places
 - Text messaging handling can be done by any software component
- It is predominantly open-source
- It is predominantly Java-based



A brief history of Android



What would it take to build a better mobile phone?

A commitment to openness, a shared vision for the future, and concrete plans to make the vision a reality.

Welcome to the Open Handset Alliance™, a group of 47 technology and mobile companies who have come together to accelerate innovation in mobile and offer consumers a richer, less expensive, and better mobile experience. Together we have developed Android™, the first complete, open, and free mobile platform.

We are committed to commercially deploy handsets and services using the Android Platform.

- **Develop Android applications:** [Get the SDK](#)
- **Contribute to the Android Open Source Project:** [Get the source code](#)

<http://www.openhandsetalliance.com>

- <http://www.youtube.com/watch?v=7Y4thikv-OM>



A brief history of Android

- First SDK was released on 11/12/2007
- Main conceptual competitor is LiMO
 - Linux for Mobile
 - Verizon and Mozilla key initial players
 - Many partners in both projects
 - Outside Asia, no one cared



A brief history of Android

- 6/24/2008 Nokia announces purchase of Symbian from Sony Ericsson in response
- starts the Symbian Foundation to open-source their main platform, gets released in 2011 as “shared-source”
- 10/21/2008, Google puts all of Android into open source using the Apache License
- 12/9/2008 Sony Ericsson joins the OHA
- Google denies rumors of the gPhone at the same time

A brief history of Android

- 8/12/2010 Oracle sues Google over intellectual property in Java
- 2/11/2011 Nokia announces it is abandoning Symbian for Windows 7
- 10/5/2011 Steve Jobs dies
- From 2011 - 2013 Nokia fell from the #1 smart phone maker to #10
- 5/2012 Google is initially freed from infringement claims
- 9/2/2013 Microsoft begins purchase of Nokia's phone business
- 5/2014 Google judgement on API is partially reversed case continues

<http://www.engadget.com/2008/06/24/nokia-buys-symbian/>

<http://www.gartner.com/newsroom/id/2482816>

Overview of Android

- Platforms running Android
 - in 2009
 - T-Mobile G1 phone
 - HTC developer phone
 - in 2011
 - Hundreds
 - in 2014
 - Silly



Overview of Android

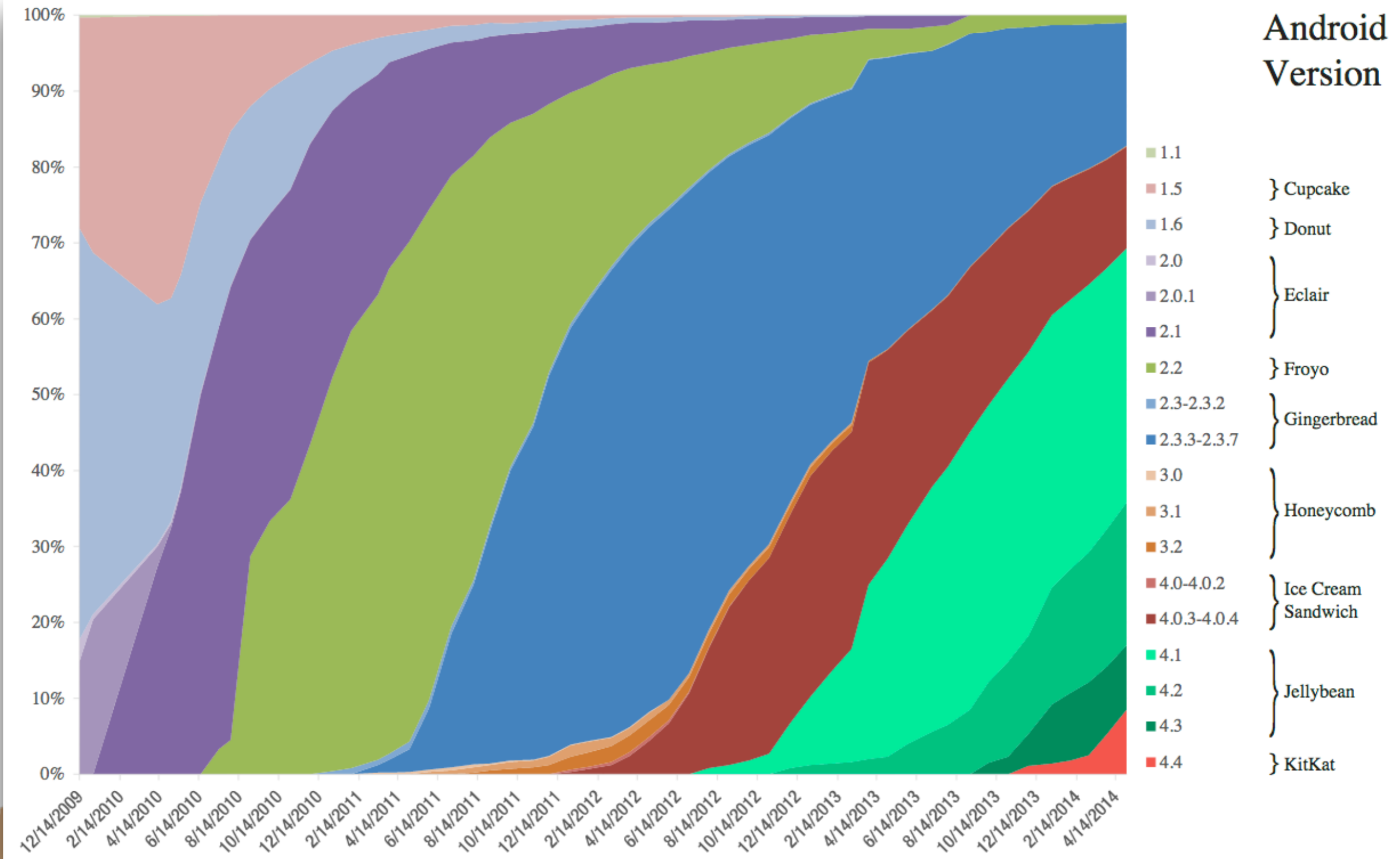
- Various code revisions are named after pastries (sort of)
 - Cupcake (released on 4/30/2009) v1.5
 - Donut (released on 9/15/2009) v1.6
 - Eclair (released on 10/26/2009) v2.1
 - Froyo (released on 5/20/2010) v2.2
 - Gingerbread (?) v2.3 (SIP, NFC)
 - Honeycomb (5/2011) v3.0 (tablet)
 - Ice Cream Sandwich (11/14/2011) v4.0 (face recognition)
 - Jelly Bean (11/13/2012) v4.2 (Google Now)
 - KitKat (9/3/13) v4.4 (experimental runtime "ART")

Overview of Android

- Various code revisions are named after pastries (sort of)
- Lollipop v5.0 released (11/12/2014) 64 bit CPUS, ART, battery



Intro to Android



Overview of Android

- Google play (née Android Marketplace)
- Place to get 3rd-party android apps
- Utilizes Google Checkout for payment
- Not exclusive source for applications
- Applications are not “blessed” at all by Google
 - It is merely a convenience for developers

Easy Tie

basesign



★★★★★ (98)

\$1.99 BUY

More from developer



Easy Tie Lite

BASESIGN

★★★★★ (557)

Free



Lesari - Meine FilmDatenba

BASESIGN

★★★★★ (42)

Free



Calc n Con

BASESIGN

★★★★★ (2)

\$1.40

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Tie Deluxe

JQ SOFT

★★★★★ (31)

\$0.99

Users who installed this also installed

OVERVIEW

USER REVIEWS

WHAT'S NEW

PERMISSIONS

Description

Don't know how to tie a tie?

Learn it with Easy Tie!

Easy Tie is an app that shows you step-by-step how to tie a necktie.

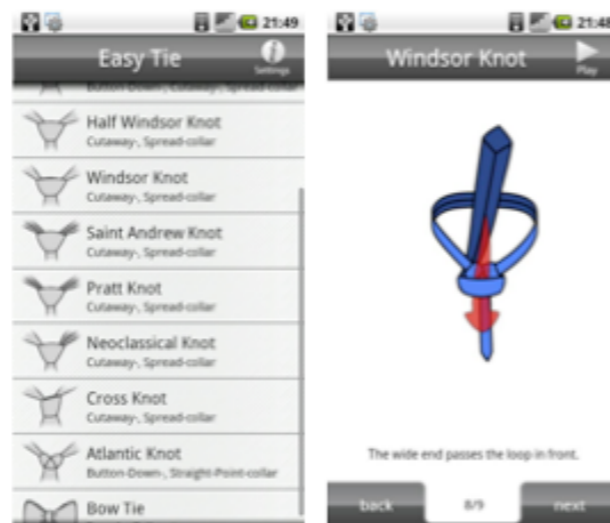
Knots included:

- Simple Knot
- Double K.
- Small K.
- Half Windsor K.
- Windsor K.

MORE

[Visit Developer's Website](#)

App Screenshots



User Reviews

5 star  71

4 star  19

Average rating:

+1 10

Tweet

ABOUT THIS APP

RATING:

★★★★★ (98)

UPDATED:

June 21, 2010

CURRENT VERSION:

1.6

REQUIRES ANDROID:

1.5 and up

CATEGORY:

Lifestyle

INSTALLS:

1,000 - 5,000



last 30 days

SIZE:

1.0M

PRICE:

\$1.99

CONTENT RATING:

Everyone

Easy Tie
basesign



★★★★★ (106)

\$1.99 BUY

⚠ You don't have any devices.

More from developer



Easy Tie Lite

BASESIGN

★★★★★ (589)

Free



Lesari - Meine FilmDatenbank

BASESIGN

★★★★★ (69)

Free



Calc n Con

BASESIGN

★★★★★ (2)

\$1.40

See more >

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How to knot a tie

MARC WEBER

★★★★★ (1,349)

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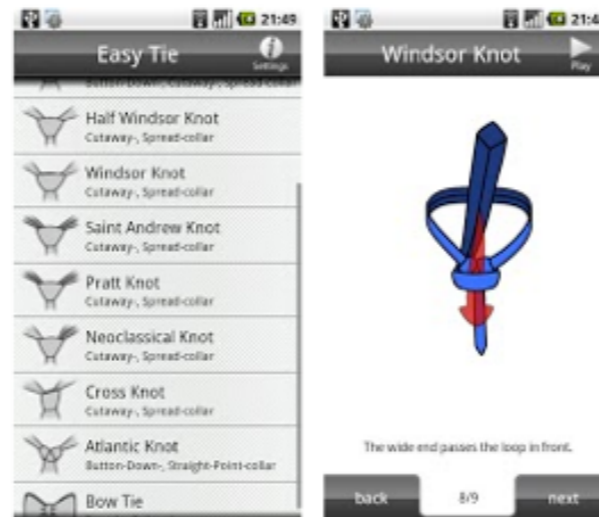
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- Saint Andrew K.

MORE

Visit Developer's Website > Email Developer >

App Screenshots



+1 36

Tweet

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User Reviews

Write a Review

5 star 79

Average rating



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Easy Tie

basesign - June 20, 2010

Lifestyle

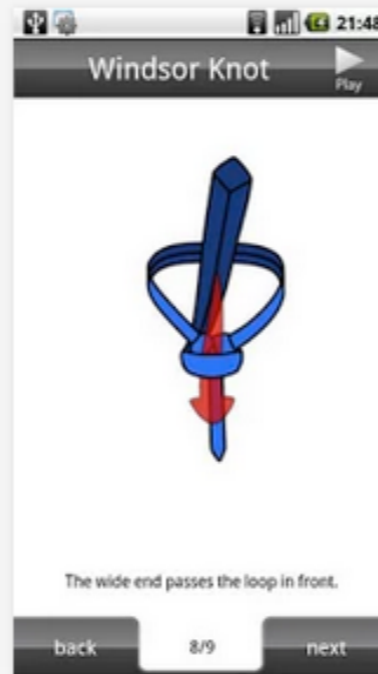
\$1.99 Buy

Add to Wishlist

This app is compatible with your device.

★★★★★ (108)

+53 Recommend this on Google



Description

Easy Tie is an app that shows you step-by-step how to tie a necktie.

Knots included:

-Simple Knot

Android Features (hardware dependent)

- Application Framework
 - enabling reuse and replacement of components
- Dalvik virtual machine (now ART)
 - optimized for mobile devices
- Integrated browser
 - based on the open source WebKit engine
- Optimized graphics
 - powered by a custom 2D graphics library; 3D graphics based on the OpenGL ES 1.0 specification

Android Features (hardware dependent)

- SQLite
 - for structured data storage
- Media support
 - (MPEG4, H.264, MP3, AAC, AMR, JPG, PNG, GIF)
- GSM Telephony
- Bluetooth, EDGE, 3G, and WiFi
- Camera, GPS, compass, and accelerometer
 - Some more advanced context in Lollipop

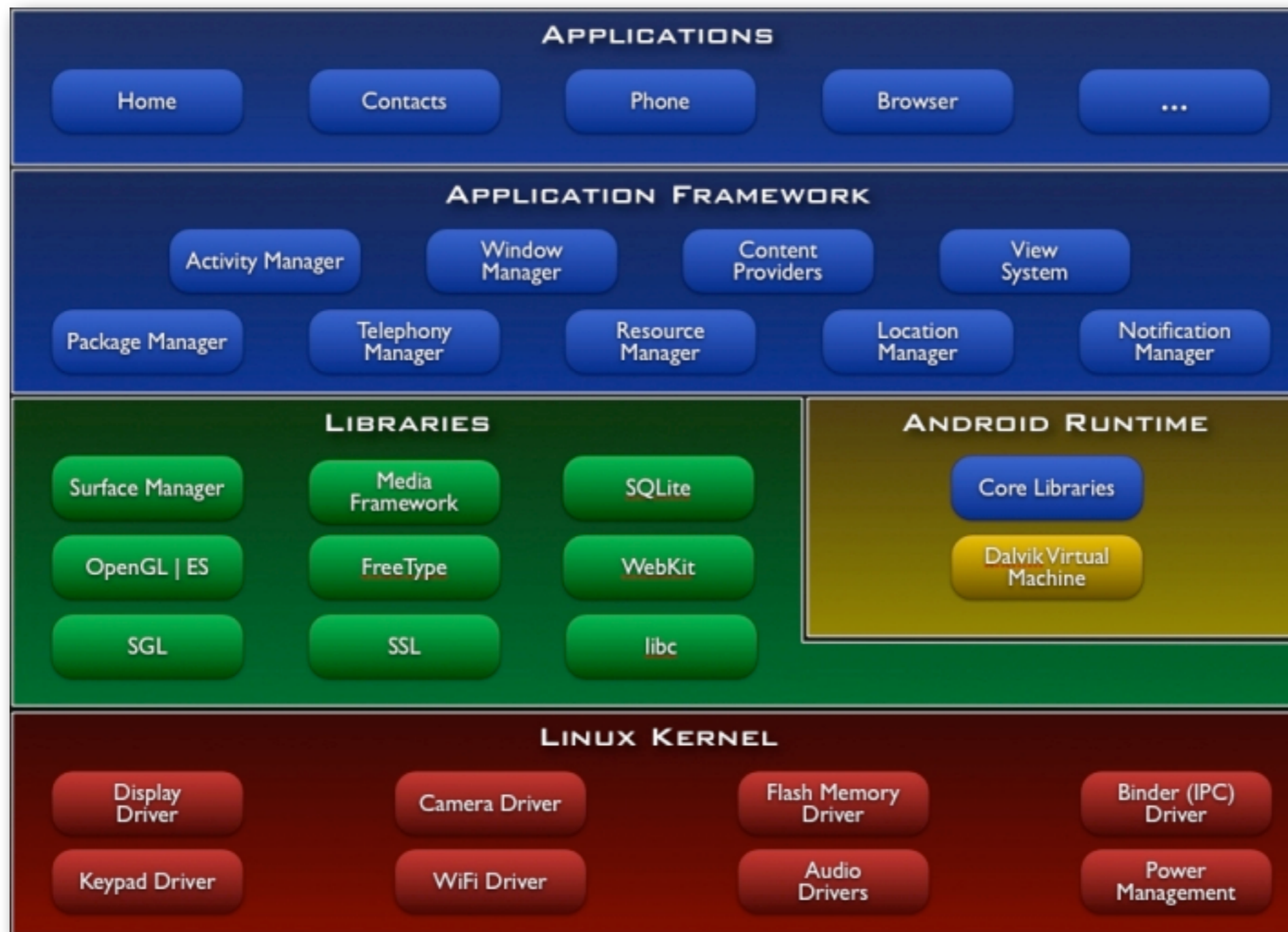
Android Features (hardware dependent)

- Multi-touch
 - brief concern about patent infringement with Apple
- Multi-tasking support
- Tethering
 - What is this?
- NFC / Android Beam

Android Features (hardware dependent)

- Rich development environment
 - a device emulator
 - tools for debugging
 - tools for memory profiling
 - tools for performance profiling
- Special version of Eclipse IDE
 - New Android Studio in Beta

Android Features (hardware dependent)



Application Fundamentals

- By default:
 - Each application is run in its own process
 - Each process has its own virtual machine
 - Each process has its own user that runs it

Application Fundamentals

- Code reuse is central to Android
- Applications can be started from several points
 - not just “main()”
- Four components that can be run:
 - Activities
 - Services
 - Broadcast receivers
 - Content providers

Application Fundamentals

- Activities
 - a user interface for doing a task
 - e.g, a photo browser, a “send-mail” interface
 - subclass of “Activity” base class
 - an application is a collection of activities that call each other (or activities in other applications)

Application Fundamentals

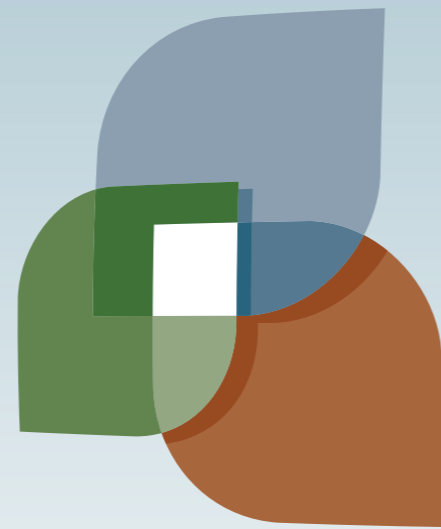
- Services
 - a task that is typically run in the background
 - e.g, a music player
 - subclass of “Service” base class

Application Fundamentals

- Broadcast receivers
 - receives broadcast announcements
 - signals from the os and other applications
 - e.g., “user has entered a new location”
 - “user has taken a photo”
 - subclass from “BroadcastReceiver”

Application Fundamentals

- Content provider
 - provides data
 - extends the “ContentProvider” class



L U C I

