Talk About Android

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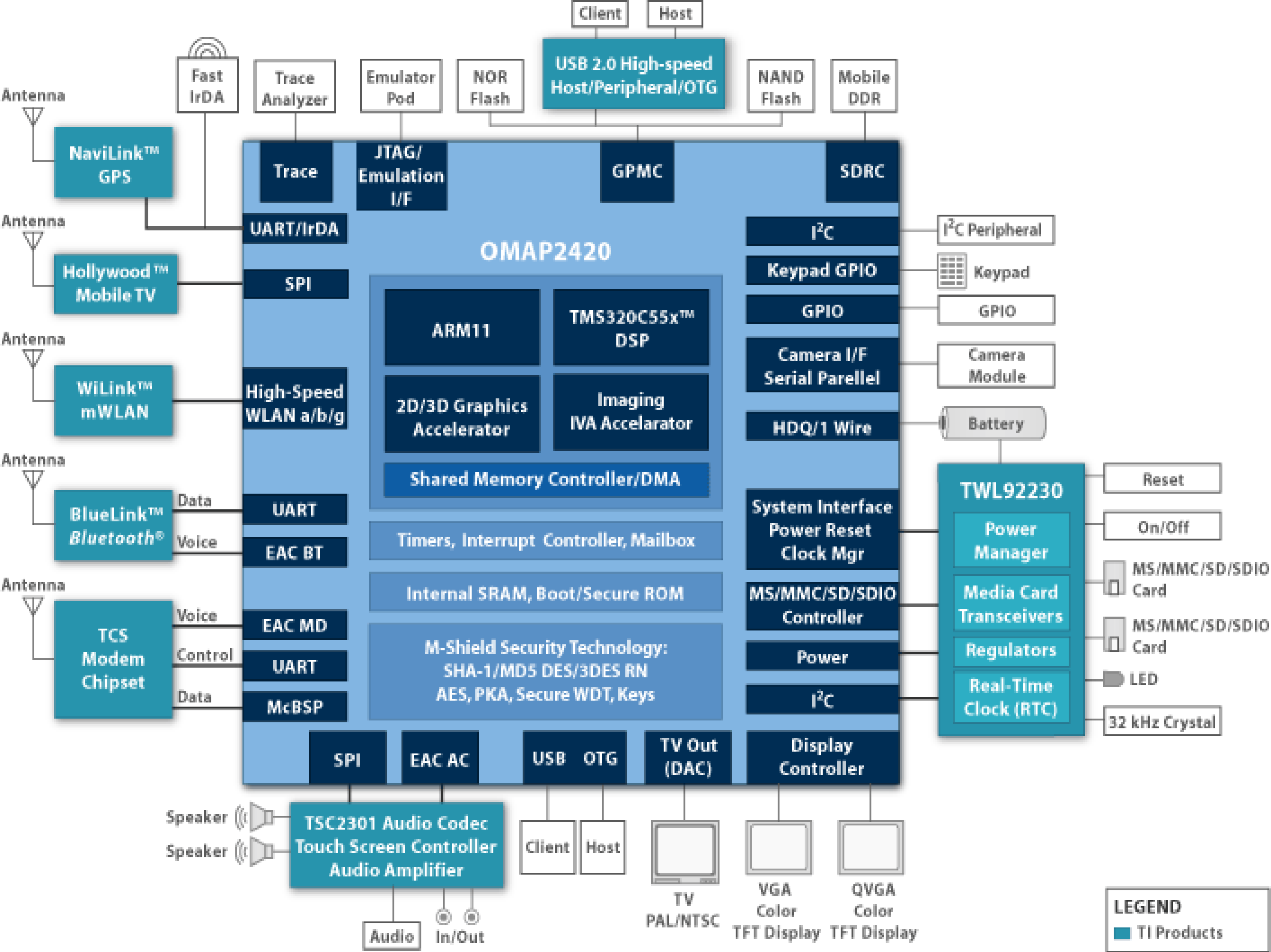
ANDROID

open source project

How will you shape it?

Get the source code »

What is Android

- The first complete, open, and free mobile platform
  - the Open Handset Alliance
  - Open Source
    - http://source.android.com/
    - http://code.google.com/p/android/downloads/list
- Platform
  - ... means it involves much things

Hardware Dependent

- Features
  - GSM Telephony
  - Bluetooth, EDGE, 3G, and WiFi
  - Camera, GPS, compass, and accelerometer

Client | **Host**

USB 2.0 High-speed Host/Peripheral/OTG

Antenna

NaviLink™ GPS

Antenna

Hollywood™ Mobile TV

Antenna

WiLink™ mWLAN

Antenna

BlueLink™ Bluetooth®
Data
Voice

Antenna

TCS Modem Chipset
Voice
Control
Data

Fast IrDA | Trace Analyzer | Emulator Pod | NOR Flash | NAND Flash | Mobile DDR

Trace | **JTAG/Emulation I/F** | **GPMC** | **SDRC**

UART/IrDA

SPI

High-Speed WLAN a/b/g

UART

EAC BT

EAC MD

UART

McBSP

OMAP2420

ARM11 | TMS320C55x™ DSP

2D/3D Graphics Accelerator | Imaging IVA Accelarator

Shared Memory Controller/DMA

Timers, Interrupt Controller, Mailbox

Internal SRAM, Boot/Secure ROM

M-Shield Security Technology:
SHA-1/MD5 DES/3DES RN
AES, PKA, Secure WDT, Keys

I²C — I²C Peripheral

Keypad GPIO — Keypad

GPIO — GPIO

Camera I/F Serial Parellel — Camera Module

HDQ/1 Wire — Battery

System Interface Power Reset Clock Mgr

MS/MMC/SD/SDIO Controller

Power

I²C

TWL92230

Power Manager — Reset, On/Off

Media Card Transceivers — MS/MMC/SD/SDIO Card, MS/MMC/SD/SDIO Card

Regulators — LED

Real-Time Clock (RTC) — 32 kHz Crystal

SPI | **EAC AC** | **USB** | **OTG** | **TV Out (DAC)** | **Display Controller**

Speaker
Speaker

TSC2301 Audio Codec Touch Screen Controller Audio Amplifier

Audio | In/Out

Client | Host

TV PAL/NTSC | VGA Color TFT Display | QVGA Color TFT Display

LEGEND
■ TI Products

Simplified Hardware Layer Model

Embedded Computer

GSM Telephony

Bluetooth
3G
WiFi

Camera
GPS

etc
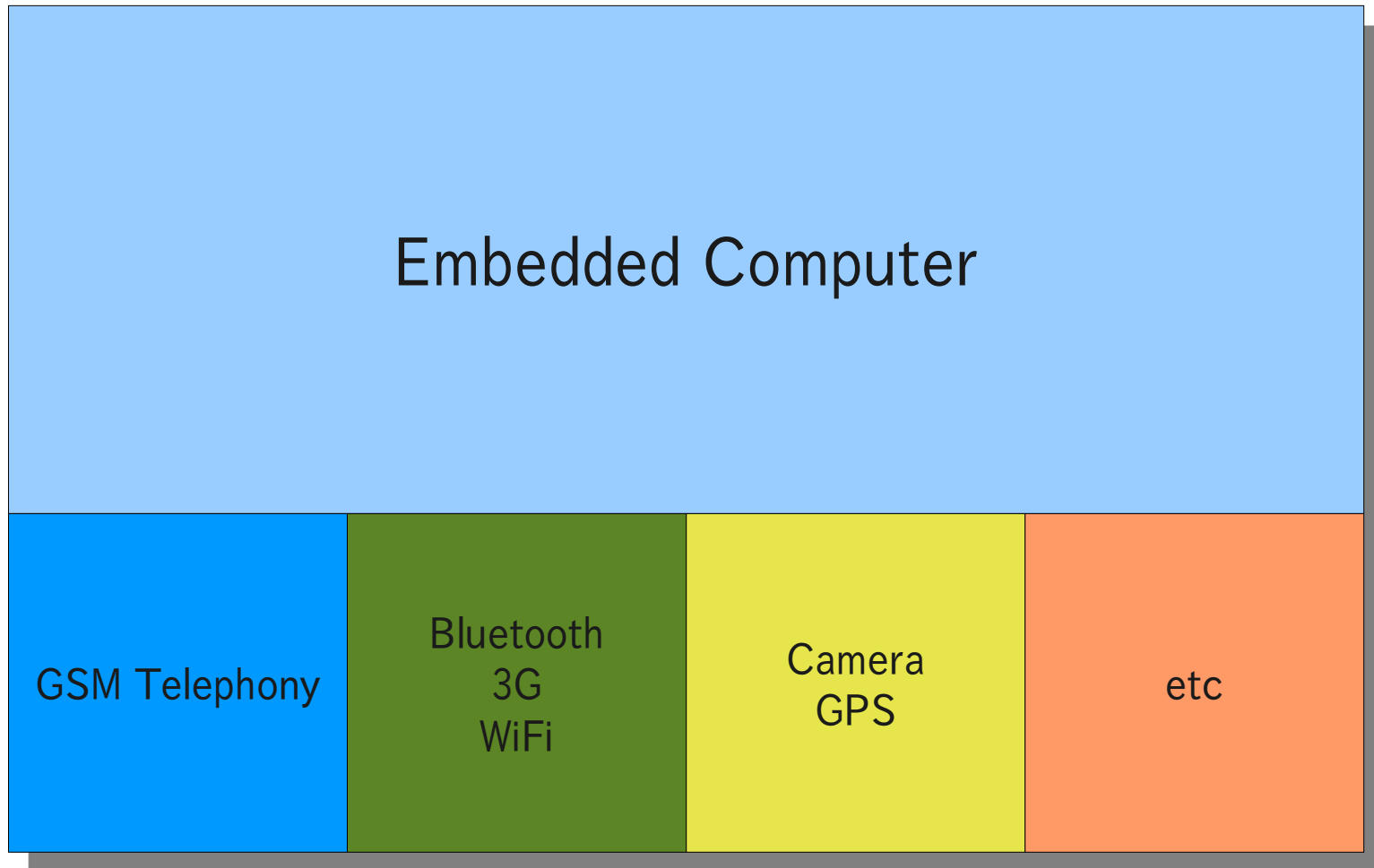
OMAP2420 (TI)

- 330MHz ARM11 core

- 90nm CMOS

- MPEG4 VGA 30fps

- 4M-pixel camera

- 512Mb, 768Mb mobile DDR memory

- 14x14 (12x12) mm package size

Hardware Independent

- Features
  - Application framework
  - Dalvik virtual machine
  - Integrated browser
  - Optimized graphics
  - SQLite
  - Media support
  - Rich development environment

Linux system based

APPLICATIONS

- Home
- Contacts
- Phone
- Browser
- ...

APPLICATION FRAMEWORK

- Activity Manager
- Window Manager
- Content Providers
- View System
- Package Manager
- Telephony Manager
- Resource Manager
- Location Manager
- Notification Manager

LIBRARIES

- Surface Manager
- Media Framework
- SQLite
- OpenGL | ES
- FreeType
- WebKit
- SGL
- SSL
- libc

ANDROID RUNTIME

- Core Libraries
- Dalvik Virtual Machine

LINUX KERNEL

- Display Driver
- Camera Driver
- Flash Memory Driver
- Binder (IPC) Driver
- Keypad Driver
- WiFi Driver
- Audio Drivers
- Power Management

Embedded Linux System

- Embedded Linux System
  - Task Schedule
    - Select schedule type for embedded
  - File System
    - Yaffs2
  - I/O Scheduler
    - Deadline & NOOP
  - IPC
    - Binder with new anonymous shared memory

linux/drivers/android directory

- alarm.c

- logger.c

- ram_console.c

- binder.c

- power.c

- timed_gpio.c

- Alarm time and clock things

- Quick and during I/O operation

- New IPC

- Less power

- Timed GPIO driver

Java VM

- Dalvik virtual machine
  - register-based architecture
    - Slim
    - No JIT complier
    - 32-bit (simplified)
      - cf. parrot VM
  - Named by Dan Bornstein
    - Village in Iceland

Libraries

- SQLite
  - SQL for store and retrieve
- SSL
  - Connection using secure channels
- Webkit
  - Http protocol connections
- OpenGL
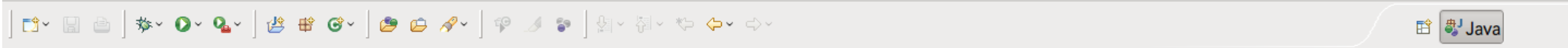 - Serious graphics

Application Frame Work

- Android Java SDK

  – Forest of classes

- A user application is running under Java VM

  – One application, one VM

Developer's Environment

- Android Emulator

- Eclipse plug-in Android SDK

    - Eclipse : GANYMEDE

11:45 AM

uc.h2np.net: システム環境を考えてみ...

UNIX

本文 | ノート | 編集 | 履歴

システム環境を考えてみる

（ 第三章 から転送 ）

目次 [非表示]

1 環境を考えてみる
2 携帯からスーパーコンピューターまで
3 GNU/Linuxの何を学ぶべきなのか
   3.1 ざっくりリストアップしてみる
4 ログイン
   4.1 新たなユーザアカウントを加える場合
5 コマンドを動かす
6 ファイルを参照する
7 グラフィカルなデスクトップ環境
8 脚注

ナビゲーション

- メインページ
- 最近の出来事
- 最近更新したページ
- おまかせ表示
- ヘルプ

検索

[表示] [検索]

ツールボックス

- リンク元
- リンク先の更新状況
- アップロード
- 特別ページ
- 印刷用バージョン
- この版への固定リンク

環境を考えてみる

もしubuntu、Fedora、 KNOPPIX、あるいはVine L
トップ向けGNU/Linuxを使っているのでしたら、
パソコンと変わらないでしょう。Webブラウザ、
プレゼンテーション、あるいはメールを出すにし
MacOS Xの上で提供されているのと同じようなア
イート(Application suite) OpenOffice がありま

「オペレーティングシステムとは
何か」のページで説明した通り、
カーネルと、その上にあるミドル
ウェア、そしてアプリケーション
は独立した存在です。ミドルウェ

MENU

File   Edit   Source   Refactor   Navigate   Search   Project   Run   Window   Help

Java

Package   Hierarchy

My First Lesson
  src
    com.example.android.notepa
      NoteEditor.java
      NotePad.java
      NotePadProvider.java
      NotesList.java
      R.java
      TitleEditor.java
    Android Library
    assets
    res
    AndroidManifest.xml
    sample_note.png
    sample_notepad.png
  Snake

NoteEditor.java

```java
 * Copyright (C) 2007 Google Inc.

package com.example.android.notepad;

import com.example.android.notepad.NotePad.Notes;

/**
 * A generic activity for editing a note in a database.  This can be used
 * either to simply view a note {@link Intent#ACTION_VIEW}, view and edit a note
 * {@link Intent#ACTION_EDIT}, or create a new note {@link Intent#ACTION_INSERT}.
 */
public class NoteEditor extends Activity {
    private static final String TAG = "Notes";

    /**
     * Standard projection for the interesting columns of a normal note.
     */
    private static final String[] PROJECTION = new String[] {
            Notes._ID, // 0
            Notes.NOTE, // 1
    };
    /** The index of the note column */
    private static final int COLUMN_INDEX_NOTE = 1;

    // This is our state data that is stored when freezing.
    private static final String ORIGINAL_CONTENT = "origContent";

    // Identifiers for our menu items.
    private static final int REVERT_ID = Menu.FIRST;
```

Task List

Find: A

Uncategorized

Out   Pro

Property   Value
Info
  deri false
  edit true
  last 2008年10月
  link false
  loca /home/hiro

Console

Android

com.example.android.notepad - My First Lesson/src

Why Java

- Original idea
  - By James Gosling
  - For Embedded system
 - Write one, run anywhere

Why Linux + Java

- Java for mobile had already done
  - To much dependency for cellphone environment
  - Write once, run not so anywhere
- Rich platform
  - Blackberry is not enough
  - Beyond Windows Mobile, Symbian
  - Serious computer, serious use

Why Google

- Google knows everything

  - the giant company of search market

- Google Desktop Gadget and Tools

  - Desktop connect to Google's servers

- Handset is new frontier for Google

  - Handset means small mobile computer on your hand, not cellphone

  - Connect to Google's servers

- Go west!!

Why Handset

- Handset is the terminal of cloud computing

handset

Internet

Server Cluster
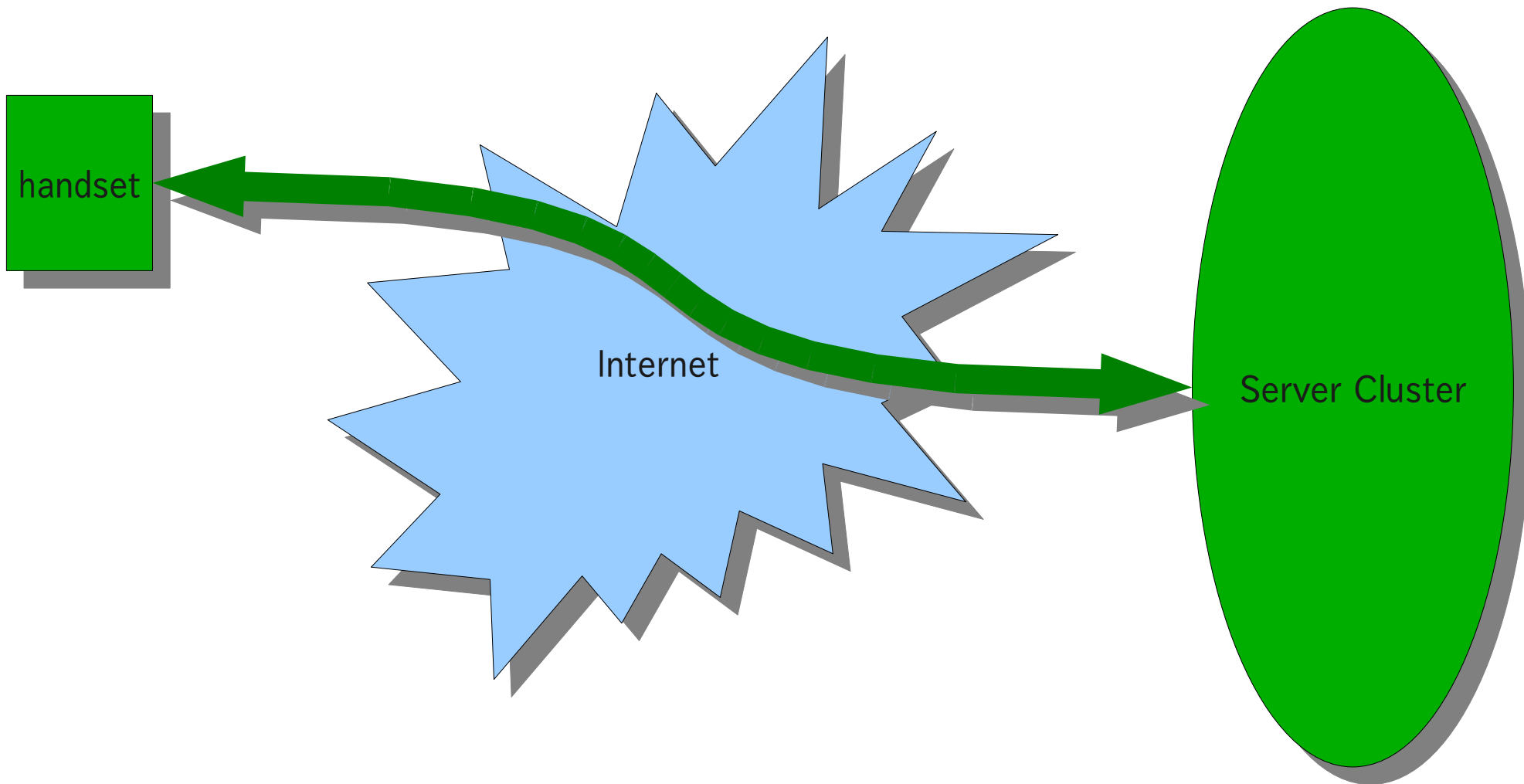
Why Open Source

- Google is NOT
  - a mobile phone vendor
  - a vendor of consumer product
- Google is
  - a cloud computing service provider
  - the world biggest server farm company
  - making money by user's referring under Internet connections
- much connections, much money
  - much terminals, much connections

Android is

- New interface of cloud computing system

  – A part of definitely huge computer system

- Open Source

  – You can make your applications

  – You can make your own cloud computing system

  – You can do what you want to do

Questions?

Acknowledgment

- Some materials came from
  - Google, Inc.
  - TI, Inc.