- # Android OS

- ## Gingerbread & Honeycomb

고강태/010-8269-3535

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고포릿 http://gtko.springnote.com

- **VERSION 1.0**
- Release Date : 2011.9.22

강사 약력

- **경력: 1994년 이후 개발 / 16년 ~**
  - LG전자 가전연구소 중형유닉스 Admin/Network Admin / Java app.개발
  - 미주제강 전산팀장: ERP / Groupware / Android freelancer
- **주요강의**
  - 인하대학교 / 안양지식산업진흥원 / 원광대학교 / 대구대학교 / 청강대

- **대외 활동**
  - 경희대 bada 교재 감수 / 구글코리아 2011 개발자랩 튜터 참여 / NIPA 한국소프트웨어진흥원 멘토

- **개발경력**
  - Android: 신한카드 / KT향 앱 등…
  - Web App: 웹 메일 서버, 그룹웨어, 도서/자산/바코드 관리, 유니텔채팅, 8좌화상회의용 메시지 서버

강의 내용

- Android Gingerbread 와 HoneyComb 소개

- New Android Market

Android phones

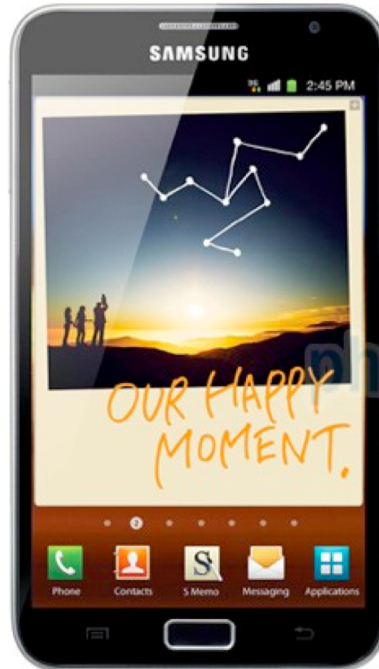| OS		주요단말			특징
1.0 SDK		HTC G1　　　　　　　HTC Magic			첫번째 개발자용 안드로이드 폰 쿼티 키보드 지원
1.5 Cupcake		HTC Hero	Motorola Cliq	Samsung Galaxy	라이브폴더 홈스크린 위젯
1.6 Donuts		Motorola Devour	LG-LU-2300	SonyEricsson X10	TTS(Text to Speech) 지원 Quick Search Box 지원 애플리케이션별 배터리 소모량 측정 가능
2.0 / 2.1 Éclair					멀티 계정 & 통합 이메일 SMS, MMS 검색 멀티 터치 블루투스 2.1

Android phones

2.2 Froyo		HTC Desire	HTC Desire HD	Exchange 지원 강화 외장메모리에 앱 설치 테터링 지원 마켓 자동 업데이트 Chrome v8 JS engine
2.3 Gingerbread		`Nexus S	Samsung Gallaxy S2	Text Copy&Paste, Selection 강화 NFC 지원
3.0 Honeycomb		Motorola Xoom	Samsung Galaxy Tab 10.1	Android 의 첫번째 Tablet 기반 OS
4.0 Icecream Sandwitch		Samsung Droid Prime		미 버라이즌, 최초의 4.0 폰. 1.5Ghz, 4.5 S-Amored

Android phones

갤럭시 노트 - S2 - iPhone

http://www.phonearena.com/news/Samsung-Galaxy-Note-who-is-it-for-size-comparison_id21746

Android phones

갤럭스 노트

갤럭스 Tab 7.7 /8G/16G/32G/64G

OS	2.3
LCD	800x1280/AMORED 285ppi
CPU	1.4Ghz/Dual
GPU	Mali-400MP
Video	1080p recording
Camera	8MP rear/2MP front
	178g, 147x83x9.6mm
Memory	1024MB ram microSD max 32GB internal 32GB
Battery	2500mAh

OS	3.2
LCD	1280x800/SAMORED
CPU	1.4Ghz/Dual
GPU	Mali-400MP
Video	1080p recording
Camera	3MP rear/2MP front
	335g, 197x133x7.8mm
Memory	1024MB ram microSD max 32GB internal 65GB
Battery	5100mAh
Sensor	Accel. Gyroscope
BT	BT3.0,

http://www.phonearena.com/phones/Samsung-GALAXY-Note_id6116

Gingerbread

- 달라진 점
- New User Features
- New Developer Features
- New Platform Technologies

달라진 점

인터넷전화 (mVoIP)
근거리 무선 통신 (NFC)
게임 개발 기능 강화
전면 카메라 지원
새로운 스크린 크기와 밀도 지원
향상된 멀티미디어
UI의 개선
빠른 텍스트 입력
간편해진 선택, 복사, 붙여넣기 기능
향상된 배터리 관리 기능
애플리케이션 관리
Performance (Concurrent GC, ext4 …)
Audio Effects
SIP
NFC
StrictMode
NDK revamped

http://developer.android.com/sdk/
android-2.3-highlights.html

UI 개선

UI는 전체 시스템에 걸쳐 쉽고 빠르게 배울수 있도록 개선되었습니다. 검은색을 채택하여 알림바와 메뉴가 좀더 선명하게 드러날 수 있도록 했으며 배터리 효율성을 강화하였습니다.
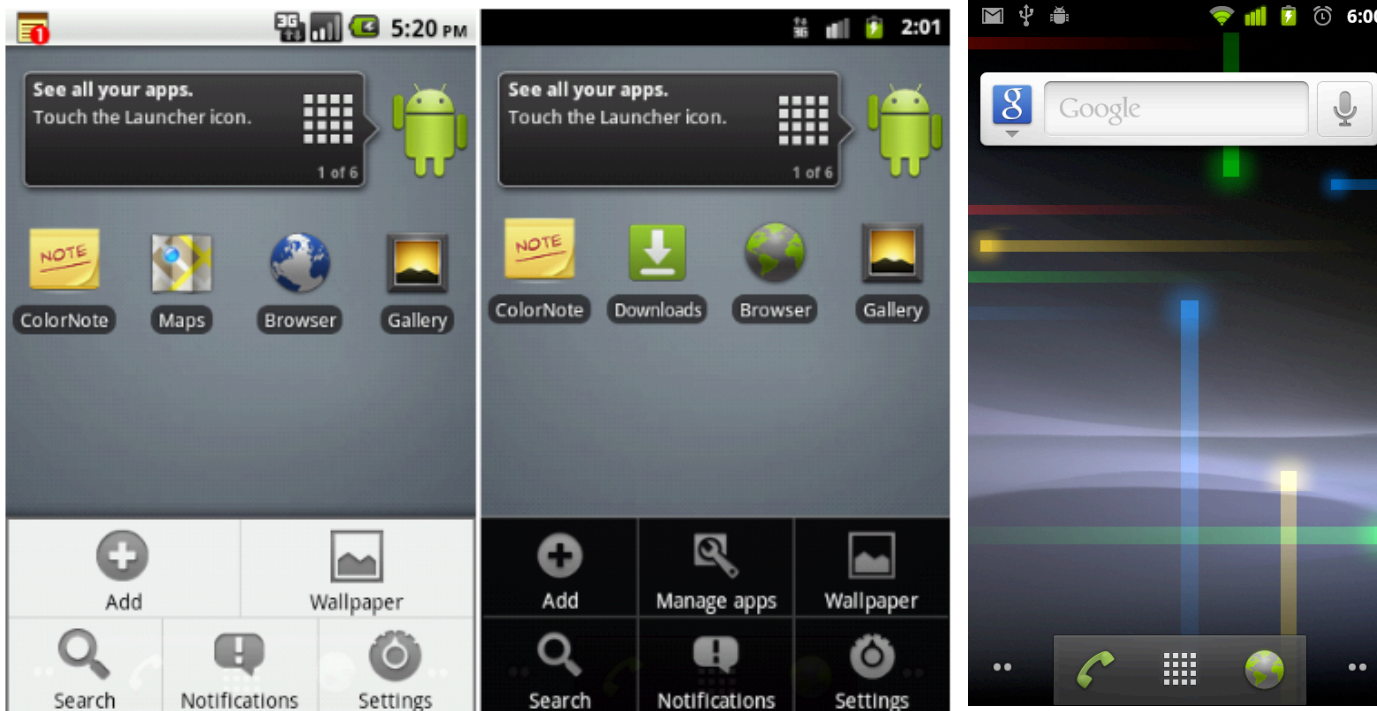
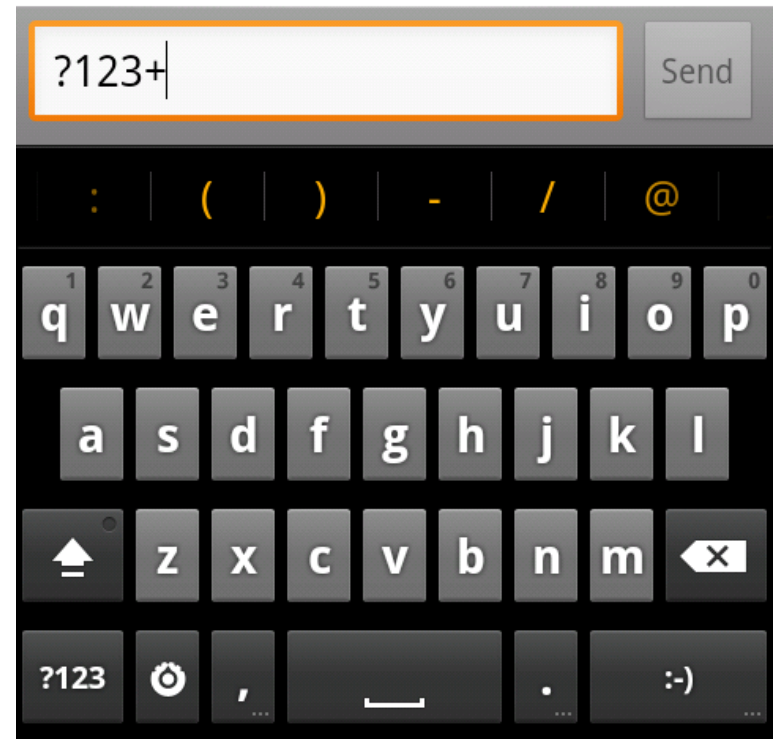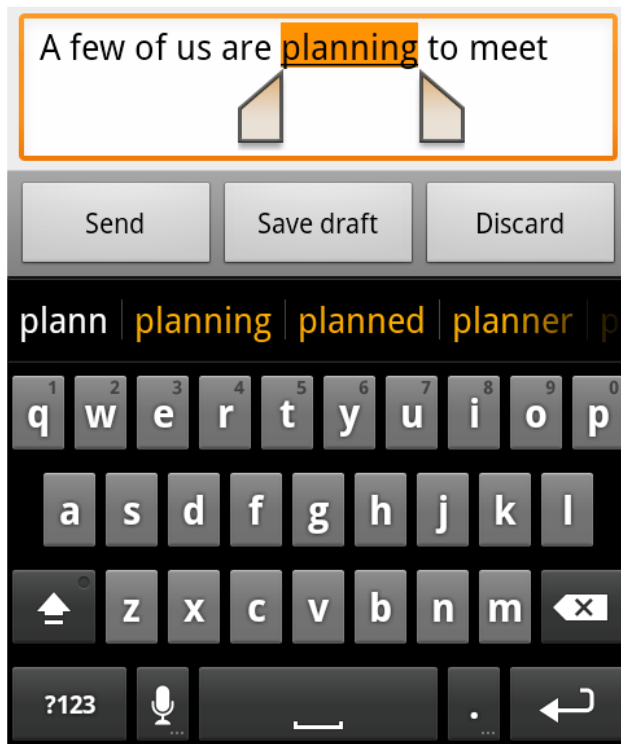메뉴와 설정도 좀더 쉽게 장치를 다룰수 있게 변경이 되었습니다. 기존 안드로이드는 왼쪽과 같이 밝은 회색이 기본 색상이었는데 진저브레드에서는 검은색을 채택하고 전체적으로 명도를 낮춰 어두운 색상에서 전력을 적게 소모하는 AMOLED에도 적합하게 변경되었습니다.

텍스트 입력 개선

소프트 키보드는 더 빠른 입력과 편집을 할 수 있도록 다시 설계
빠른 속도로 정확하게 입력할수 있도록 모양과 위치를 변경
자동 완성을위한 글자도 더 커지고 선명하게 바뀌어
멀티 터치를 지원해 Shift+*<letter>*로 바로 숫자와 ?123+*<symbol>*로 심볼 입력
가능

간편해진 선택, 복사, 붙여넣기

문자의 입력이나 웹브라우징시에 한번에 선택, 복사, 붙여넣기가 가능

관리 강화

밧데리 관리 강화와 어플리케이션 관리 기능 강화

홈의 옵션메뉴에
어플리케이션 관리 들어감
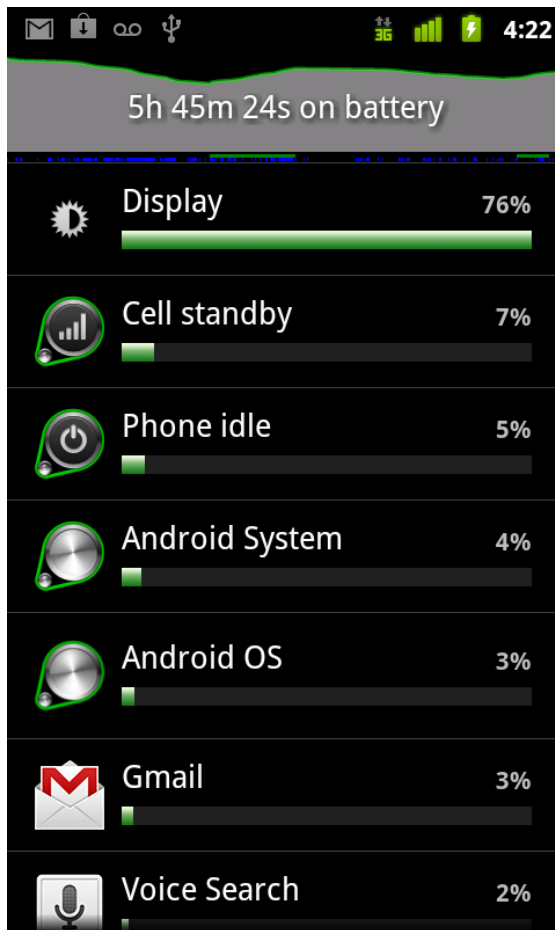
각 앱에 대한 자세한 정보
실행을 중지가능
개발자에게 피드백 가능
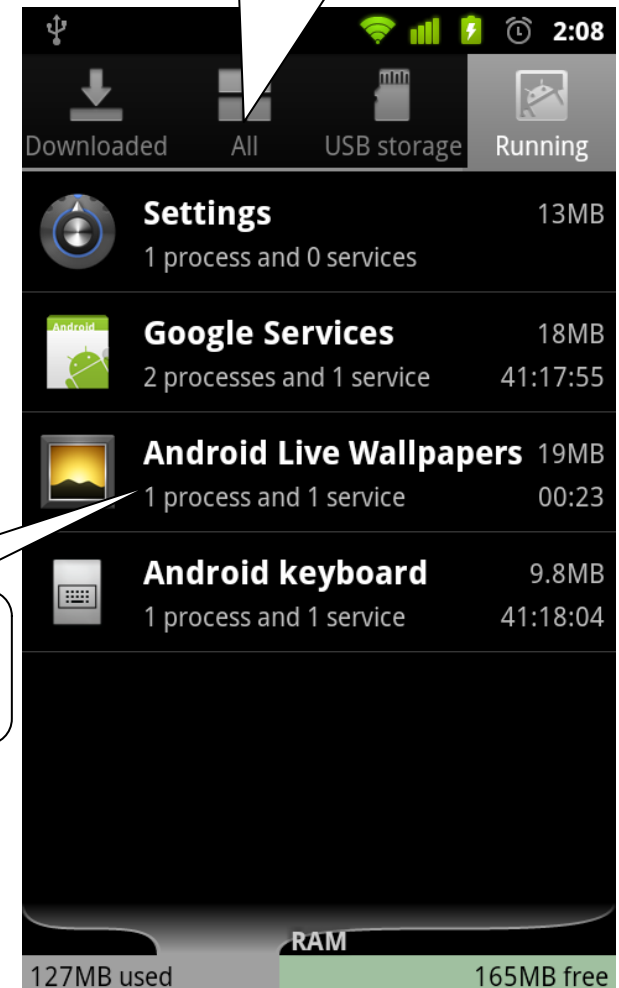
인터넷전화 SIP

진저브레드부터 안드로이드에 인터넷 전화 프로토콜이 기본으로 탑재
사용자는 전화번호부에서 바로 SIP 계정으로 전화 가능
인터넷 전화를 걸기 위해서는 SIP 계정을 따로 만들어야 하며 SIP 계정을 만드는 기능은 포함되지 않음.
기존 전화번호부에 통합되어, 인터넷 전화로 전화 걸기가 일반 전화를 거는 것과 동일한 사용자 경험을 제공
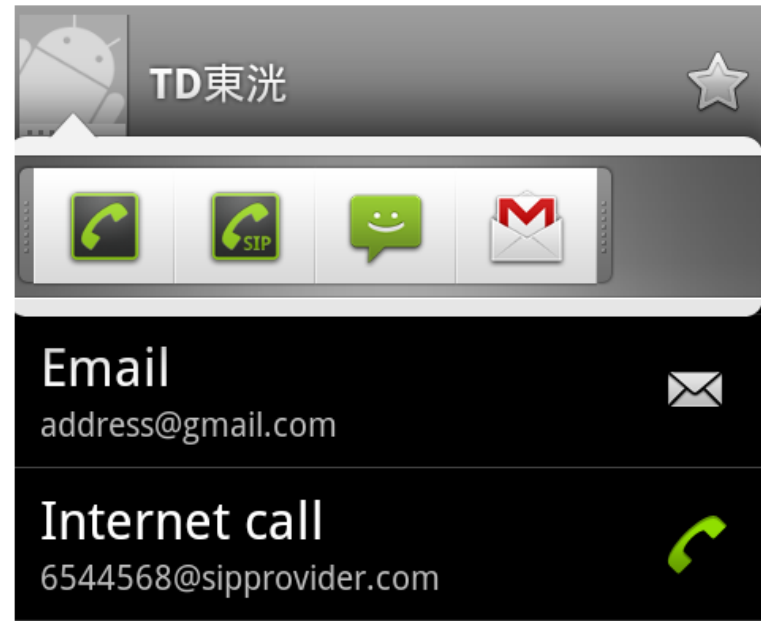
코드 참조
Android 2.3 Sample → SipDemo 참조
http://developer.android.com/reference/android/net/sip/package-descr.html

인터넷전화 SIP (2)

Popular for voice and video calls over IP
- General purpose IM, games, etc.
- REGISTER
- INVITE
- BYE
- Media separate
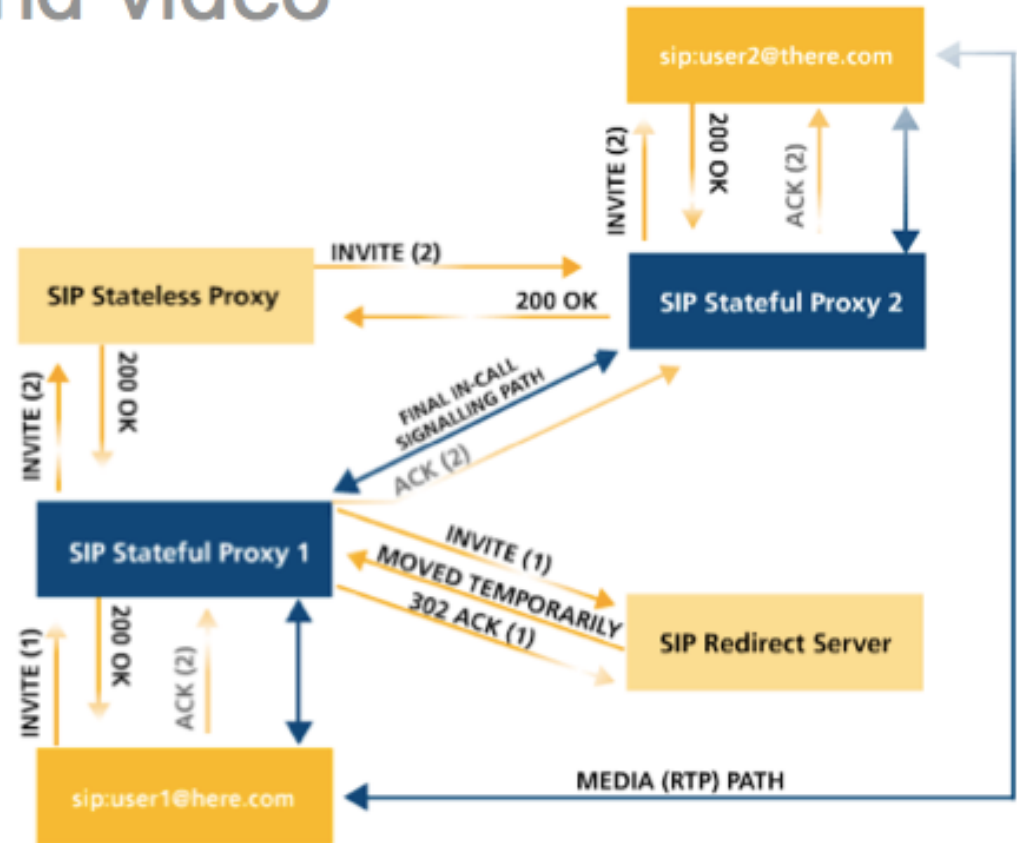
인터넷전화 SIP (2)

- SipManager: central for SIP functionality
- SipProfile: user account data
- SipSession: session
- SipAudioCall: convenience for voice calls

Basic Steps: SIP
- Get a SipManager
- Create a "me" and "you" SipProfile
- Use SipManager establish a call
- Once established, start audio

인터넷전화 SIP (2)

- **Setup**

```
manager = SipManager.newInstance(ctx)
builder = new SipProfile.Builder(username,
domain)
me = builder.setPassword(password) me =
builder.build()
manager.open(me)
you = SipProfile.Builder(uri).build()
// URI Example: "+49891234@sipgate.de"
```

Making a call

call = manager.makeAudioCall(me, you, listener, timeoutInSeconds)

SipAudioCall.Listener
 – onCallEstablished(SipAudioCall call)
 – call.startAudio()
 – call.setSpeakerMode(true)
 – call.toggleMute()

인터넷전화 SIP (3)

Gingerbread

- Available & permission

Check if SIP is available on device isApiSupported, isVoipSupported

- Basic permissions

– INTERNET, USE_SIP

- Audio call permissions

– RECORD_AUDIO, ACCESS_WIFI_STATE, WAKE_LOCK, MODIFY_AUDIO_SETTINGS

Audio Effects

MediaPlayer & AudioTrack
android.media.audiofx.Equalizer

Available Effects
 - Equalizer
 - Bass boost
 - Environment reverb
 - Virtualizer
 - Visualizer

```
aid = getAudioSessionId() // or 0
effect = new BassBoost(0, aid)
effect.setStrength(1000)
effect.setEnable(true)
…
effect.release()
```
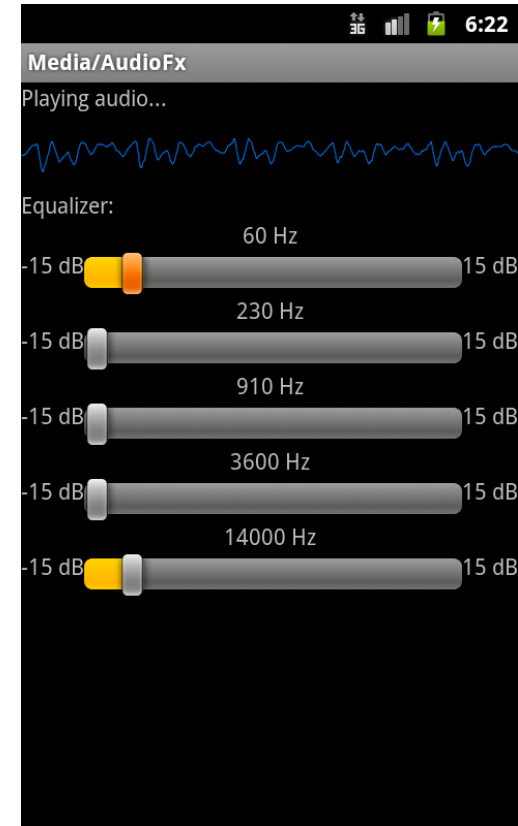
근거리무선통신 NFC

NFC를 지원하여 해당 하드웨어가 탭재된 단말에서는 모바일 결제, RFID 태그 정보 습득이 가능, wireless communication within ~4cm, 13 – 106 Kbyte/s
스마트폰이 기존 신용 카드, 교통 카드의 역할을 대체할 수 있으며
양방향 통신으로 결제도 가능
RFID 태그를 읽을 수 있어 상점들의 포스터, 스티커, 광고에 붙어
있는 이벤트 관련 태그 정보를 읽어 해당 이벤트를 웹브라우저로
열수 있게 됩니다.
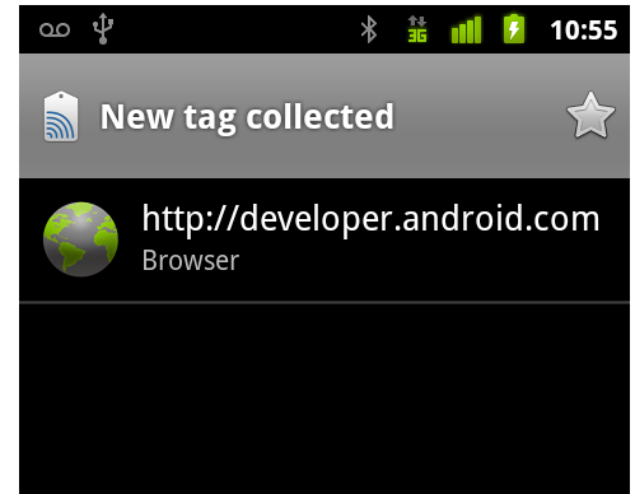
코드 참조
Android 2.3 Sample → NFCDemo

NFC - Notify

Permission: android.permission.NFC
<intent-filter>
 <action android:name = "android.nfc.action.TAG_DISCOVERED" / >
</intent-filter>

android.nfc.extra.NDEF_MESSAGES
    Array of NdefMessage object

코드 참조
Android 2.3 Sample → NFCDemo

NFC – NfcAdapter

- API Level 9
  – static getDefaultAdapter() (deprecated in 10)
  – isEnabled: NFC disabled in system settings?
- ▪ API Level 10
 - NfcAdapter.getDefaultAdapter(Context)
 - Methods for foreground tag discovery/push

Foreground actions
- Multiple apps can register for NFC tags ▪ Foreground NFC: Activity is running
→ has priority over other NFC apps
- ·enableForegroundDispatch: fires Intent (PendingIntent) when NFC tag is read
- ·enableForegroundNdefPush: makes a NDEF tag available

코드 참조
Android 2.3 Sample → NFCDemo

NFC - NfcAdapter

- ▪ API Level 10: more tag technologies
- – Mifare, A, B, F, V, ISO-DEP
- – Filters defined in meta-data XML file
- ▪ Filtering by MIME type (e.g. text/plain)
- ▪ Working with tags is pretty low level
- → bits & bytes
- ▪ Nexus S must be really close to tag (<4cm)

코드 참조
Android 2.3 Sample → NFCDemo

Downloads management

Downloads Manager를 사용하여 편리하게 접근 가능.
사용자는 브라우저, 이메일 및 앱에서 downloads manager에 접근 가능

API:
 - android.app.DownloadManager

Code:
 - getSystemService(Context.DOWNLOAD_SERVICE)

코드 참조
http://www.dev-articles.com/article/Android-2.3-Gingerbread-DownloadProvider-361001

전면 카메라

단말에 장착된 다중 카메라에 접근 가능
비디오 채팅을 포함한 다양한 비디오 활용 앱과 서비스가 등장 가능.

코드 참조
http://developer.android.com/reference/android/hardware/
Camera.html

New Developer Features

- 개발자 기능 강화
- Gaming
- Strict mode

게임 개발 기능 강화

게임 중 소스 화면의 많은 리서을 어요ㄹ는 라바라 라랙시에

HTC Flyer (AKA Evo View 4G)

HTC Flyer (AKA Evo View 4G)

SPECS:
Screen size, resolution: 7", 1024 by 600
Processor: Qualcomm, 1.5GHz
Memory: 1GB
Built-in memory storage: 32GB
Networking: WiFi, 3G/4G (on the Sprint network)
Cameras: 5-megapixel camera, 1.3-megapixel front-facing camera
Weight: 0.93 pounds
Thickness: 0.52"
Prices: $499
Availability: Presently available for pre-sale

SCOOP:
The Flyer is expect to ship with Android 2.4, but HTC tweeted that its OS would be upgraded to Honeycomb as a download update in the second quarter. This would turn it into one of the few Honeycomb tablets with a 7-inch screen, when the minimum size to run this version of the Android OS is regarded to be 8.9 inches. The Flyer will be known as the Evo View 4G on the Sprint network. It is unknown if its OS will be upgraded to Honeycomb, too.

OpenGL ES, OpenMAX IL 및 PG4 OpenSE ES, EGL 등의 Khronos의 오픈 스탠다드를 추가적으로 Native 영역에서 채택

새로운 스크린 크기

x-larget 스크린 지원 : 태블릿등 화면이 큰 장치를 지원.
extra high density : 아이폰4 레티나 같은 수준의 높은 밀
도의 스크린 장치를 지원.

향상된 멀티미디어

구글이 공개한 로열티없는 미디어 포맷인 WebM과 VP8 비디오 코덱이 안드로이드
에 탑재

AAC와 AMR WB로의 음성 인코딩을 지원

Strict mode

개발자를 위한 helper classes

Detect performance violations in threads – Network operations
– Disk reads/writes
- Detect leaks (VM wide)
- Activities
- Closeable
- SQLite objects

Ways to react to violations (penalties) – Log, drop box, dialog, or crash
- Strict mode activated & configured in code
- android.os.StrictMode and inner classes
  - Policies
  - Builders

Strict mode – thread policy

p= Builder().detectAll().penaltyLog().build()
StrictMode.setThreadPolicy(p)

Example log with stack trace
03-19 20:21:44.292: DEBUG/StrictMode(32242):
StrictMode policy violation; ~duration=336 ms:
android.os.StrictMode
$StrictModeDiskReadViolation: policy=279
violation=203-19

Note: MapActivity triggers violations

NDK r5

GCC 4.4.3, ./configure && make
C++ STL (Standard template library)
Native Activities
Less Java wrappers nessesary
- Input and sensor access
- Audio (OpenSL)
- Windows management / pixel buffers
- Direct access to assets in APK

참조

커니 블로그
- http://androidhuman.tistory.com/428

Gingerbread & honeycomb
-

http://www.slideshare.net/droidcon/droidcon-2011-gingerbread-and-honeycomb-markus-junginger-greenrobot

Android OS 3.0

- Honeycomb란?
- UI Improvements
- Developer Improvements

Honeycomb란?

- Tablet != Phone
- Screen size
- Input
- More memory, faster CPU, multi-core
- But more pixels…
- GPU!

Honeycomb 단말

Motorola XOOM

SPECS:
Screen size, resolution: 10.1", 1280 by 800
Processor: Nvidia Tegra 2 dual core, 1.0GHz
Memory: 1GB
Built-in memory storage: 32GB
Networking: WiFi, 3G (on the Verizon network)
Cameras: 5-megapixel camera, 2-megapixel front-facing camera
Weight: 1.6 pounds
Thickness: 0.5"
Prices: $600 (WiFi version), $800 (WiFi + 3G version)
Availability: Now

SCOOP:
As the first to hit the market, the specs of the XOOM are generally regarded as the "reference hardware" that Honeycomb needs in order to run at its best. Too bad that the XOOM is expensive. It has so far sold 100,000 units in its first month of release, which industry analysts have pegged as a disappointing start for the Honeycomb tablet market.

http://www.pcworld.com/article/227863/6_best_android_honeycomb_tablets_you_can_buy_now.html

Honeycomb 단말

Honycomb

Samsung Galaxy Tab

Samsung Galaxy Tab 8.9 and 10.1

Samsung Galaxy Tab 8.9 and 10.1

SPECS:
Screen size, resolution: 8.9", 1280 by 800 or 10.1", 1280 by 800
Processor: Dual core, 1GHz
Memory: Unlisted
Built-in memory storage: 16GB, 32GB
Networking: WiFi, 3G
Cameras: 3-megapixel camera, 2-megapixel front-facing camera
Weight: 1.03 pounds (8.9 version), 1.31 pounds (10.1 version)
Thickness: 0.33"
Prices: WiFi-only 8.9 model: $469 (16GB version), $569 (32GB); WiFi-only 10.1 model: $499 (16GB), $599 (32GB)
Availability: June 8 (for the WiFi-only models)

SCOOP:
If there's one company that has been doing a pretty darn good job of aping the design style of Apple's products, it's Samsung. So after knocking off the iPhone and MacBook Air, Samsung's two Honeycomb tablets will not only feature similar slick form factors but will actually be thinner than the iPad 2 (by 0.01") and more competitive in price.

http://www.pcworld.com/article/227863/6_best_android_honeycomb_tablets_you_can_buy_now.html

Honeycomb 단말

LG G-Slate

LG G-Slate

SPECS:
Screen size, resolution: 8.9", 1280 by 768
Processor: Nvidia Tegra dual core, 1.0GHz
Memory: Unlisted
Built-in memory storage: 32GB
Networking: WiFi and 4G (on the T-Mobile network)
Cameras: Two 5-megapixel cameras for 3D video capture, 2-megapixel front-facing camera
Weight: 1.39 pounds
Thickness: 0.50"
Prices: $530 (after $100 rebate with 2-year T-Mobile contract), $750 (no contract)
Availability: Now

SCOOP:
At first glance, the G-Slate doesn't appear to be anything special, compared to other Honeycomb tablets with an 8.9-inch display, and its prices are not as low. But, hold on a sec – this is a tablet that shoots HD video in 3D? Really? Yep, the G-Slate will have two cameras side-by-side so you can shoot video in 3D (the red-blue kind), which you, wearing 3D glasses, can watch on this Honeycomb tablet's screen.

http://www.pcworld.com/article/227863/6_best_android_honeycomb_tablets_you_can_buy_now.html

Honeycomb 단말

ASUS Eee Pad Transformer TF101

ASUS Eee Pad Transformer

ASUS Eee Pad Transformer TF101

SPECS:
Screen size, resolution: 10.1", 1280 by 800
Processor: Nvidia Tegra 2 dual core, 1.0GHz
Memory: 1GB
Built-in memory storage: 16GB, 32GB
Networking: WiFi
Cameras: 5-megapixel camera, 1.2-megapixel front-facing camera
Weight: 1.49 pounds
Thickness: 0.51"
Prices: $399 (16GB version), $499 (32GB)
Availability: Now

SCOOP:
The company that launched the netbook market wants to get in on the tablet craze by selling the entry level model of their Honeycomb offering for real cheap. As its name suggests, the Transformer can also be used like a netbook by docking it onto a keyboard cradle that will be sold separately.

http://www.pcworld.com/article/227863/6_best_android_honeycomb_tablets_you_can_buy_now.html

Honeycomb 단말

HTC Flyer

HTC Flyer (AKA Evo View 4G)

HTC Flyer (AKA Evo View 4G)

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Thickness: 0.52"
Prices: $499
Availability: Presently available for pre-sale

SCOOP:
The Flyer is expect to ship with Android 2.4, but HTC tweeted that its OS would be upgraded to Honeycomb as a download update in the second quarter. This would turn it into one of the few Honeycomb tablets with a 7-inch screen, when the minimum size to run this version of the Android OS is regarded to be 8.9 inches. The Flyer will be known as the Evo View 4G on the Sprint network. It is unknown if its OS will be upgraded to Honeycomb, too.

http://www.pcworld.com/article/227863/6_best_android_honeycomb_tablets_you_can_buy_now.html

Honeycomb 특징

- Home screen, new 'Holo' theme
- Keyboard
- Text selection
- USB device connectivity
- Action Bar, System Bar
- Recent Apps
- Hardware accelerated UI
- Asyncronouse Loading: Loader
Property Animations
RenderScript
- Multiple Pane -> Fragment

Action bar

기존 Options 메뉴를 이용해 프레임워크
 차원에서 지원 -> Theme.Holo.Light 테마

<item android:showAsAction="ifRoom" ...
 ▪No room left: overflow menu

Action bar (2)

세 가지 영역으로 구분

action icon
- brand, logo
- User sense
- upward navigation

action button
- more important/frequntly
- accessed action

icon, text, icon-text
overflow menu

view details
- simple
- richer: tabs, drop-down menus, breadcumbs

Action bar (3)

Action icon은 Home으로

action icon

- App icon (by default)
  - when onOptionsItemSelected() is called
  - Check for android.R.id.home
  - Go to „home" activity
    (Intent.FLAG_ACTIVITY_CLEAR_TOP)

Action bar (4)

Action bar에 custom layout
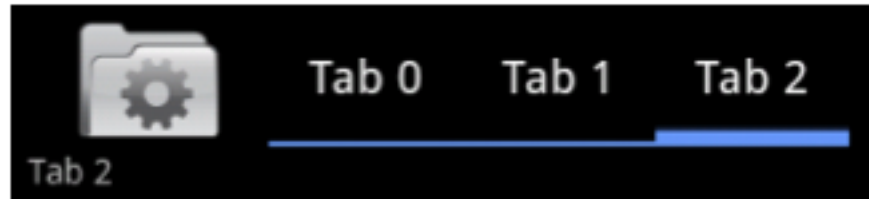
- Place custom layouts in the action bar
  <item android:actionLayout="..." ... />
- And views (use fully qualified class name)
  <item android:actionViewClass="..." ... />
- Tabs use Fragments
- ActionBar: newTab(), addTab()
- TabListener adds/removes Fragements

Hardware acceleration

Hardware accelerated UI

- Graphics library Skia: CPU based
  - SW rendering, sometimes slow
- GPU based rendering
  - fast mostly
  - off by default
  - Manifest for application & activity
    android:hardwareAccelerated="true"
  - Control for windows and views in code:
    view.setLayerType(View.LAYER_TYPE_SOFTWARE, null)

Hard to test
- Android 3.0 device
- Emulator falls back to software rendering (which is really slow)
- Not all operations are supported
- Some operations render differently
- Bitmaps must be uploaded as textures

Loader

Loader는 AsyncTask의 문제를 해소한다.
- Don't restart after configuration changes
- Ability to monitor data changes

AsyncTaskLoader http://code.google.com/p/android/issues/detail?id=14944

CursorLoader for ContentProviders
LoaderManager from activity or fragment

CursorLoader

- getLoaderManager().initLoader(0, null, l)
- Implement LoaderCallbacks
  - onCreateLoader: create loader here
  - onLoadFinished: receive the result
  - onLoaderReset: clear the result

- Creating the CursorLoader: like
ContentResolver.query(URI, projection, selection, sort order)

Property Animation

- ValueAnimator: changes value over time
- ObjectAnimator: applies value to an object
- Animation Hello World:

```
View text = findViewById(R.id.text);
ObjectAnimator anim = ObjectAnimator
    .ofFloat(text, "alpha", 0f, 1f);
 anim.setDuration(2000);
 anim.start();
```

- Much more: sets, listeners, interpolators,…

Honeycomb APIDemos: Animations 참조

RenderScript

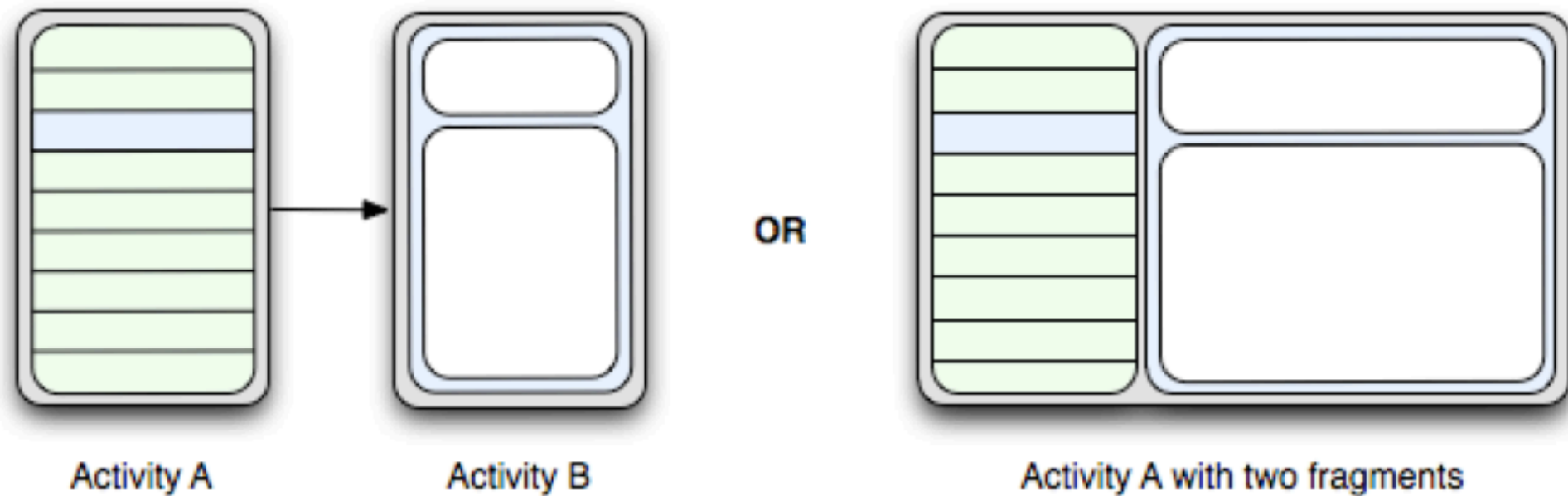- Portable high performance (vs. NDK)
- Intermediate LLVM byte code
- Written in C (C99 standard)
- Compiled and cached on the device
- May use CPU or GPU (or even a DSP)
- Native Renderscript APIs
  - Logging, Graphics, Memory
- Doesn't run on emulator, hard to debug

Fragments

- UI를 모듈화 -> 액티비티를 재사용
- 기존 액티비티를 re-factoring

Activity A   Activity B   OR   Activity A with two fragments

Fragment 생명주기

- Activities are not trivial Lifecycle & process
- Fragments have a lifecycle, too
- Interaction with activities
- Fragment transactions
- Android just got more complicated powerful

Honeycomb

Fragment is added

onAttach()

onCreate()

onCreateView()

onActivityCreated()

onStart()

onResume()

Fragment is active

User navigates backward or fragment is removed/replaced

Fragment is added to the back stack, then removed/replaced

onPause()

onStop()

onDestroyView()

The fragment returns to the layout from the back stack

onDestroy()

onDetach()

Fragment is destroyed
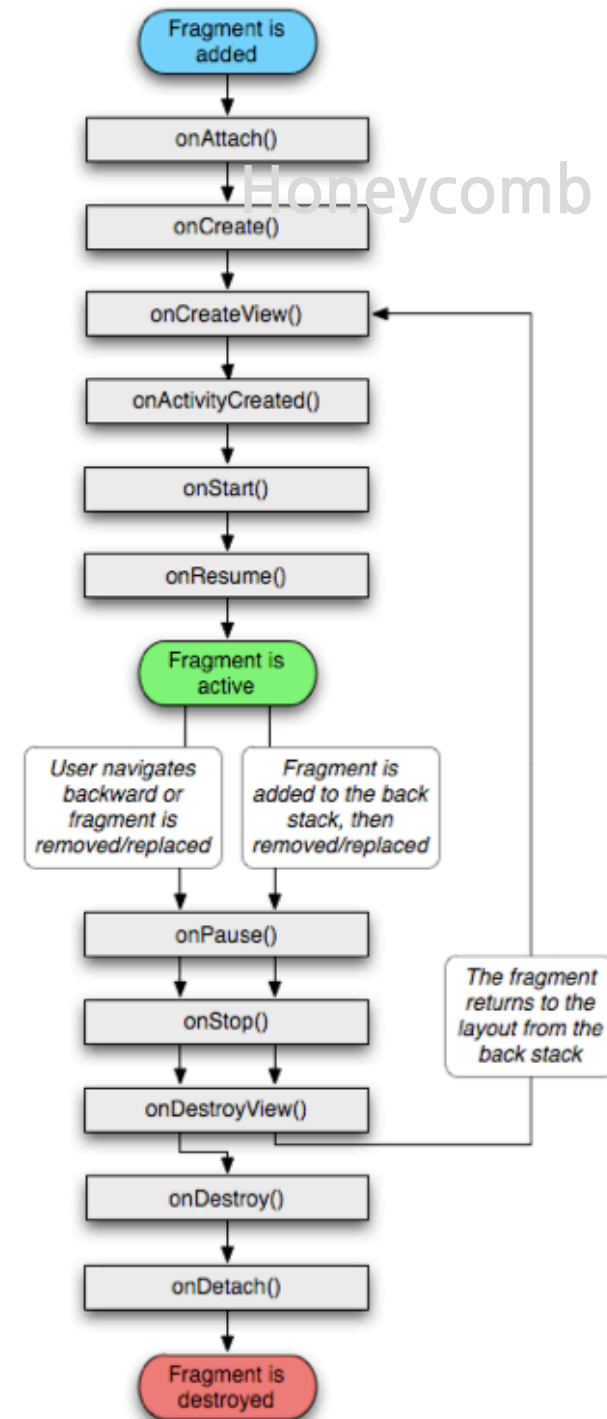
Compatable package

- SDK Manager 에서 다운로드
    - {SDK}/extra/android/compatibility …
- Some of 3.0 APIs for Android 1.6+
    - Fragments
    - Loader
    - Utils
- Include as jar/source (~100k)
- Package android.support.v4

more

- Clipboard

- Drag and Drop

- HTTP Live Streaming

- Pluggable DRM framework • Encrypted storage

- New/improved components

  - DatePicker, NumberPicker, StackView, CalendarView, …

- Tools

  - UI Builder, code completion, …

Why Honeycomb!!!

Platform Versions on August, 2011
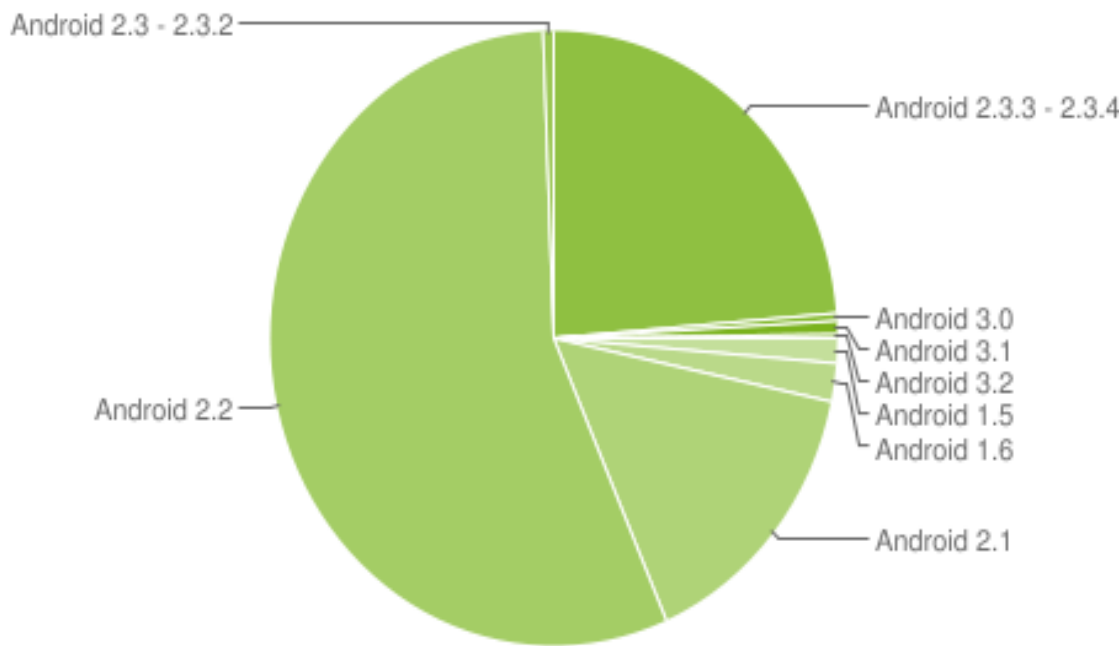
Platform	API Level	Distribution
Android 1.5	3	1.3%
Android 1.6	4	2.0%
Android 2.1	7	15.2%
Android 2.2	8	55.9%
Android 2.3 - Android 2.3.2	9	0.6%
Android 2.3.3 - Android 2.3.4	10	23.7%
Android 3.0	11	0.4%
Android 3.1	12	0.7%
Android 3.2	13	0.2%

Android 2.3 - 2.3.2
Android 2.3.3 - 2.3.4
Android 3.0
Android 3.1
Android 3.2
Android 1.5
Android 1.6
Android 2.2
Android 2.1

http://developer.android.com/resources/dashboard/platform-versions.html

Why Honeycomb!!!

Platform Versions on September, 2011
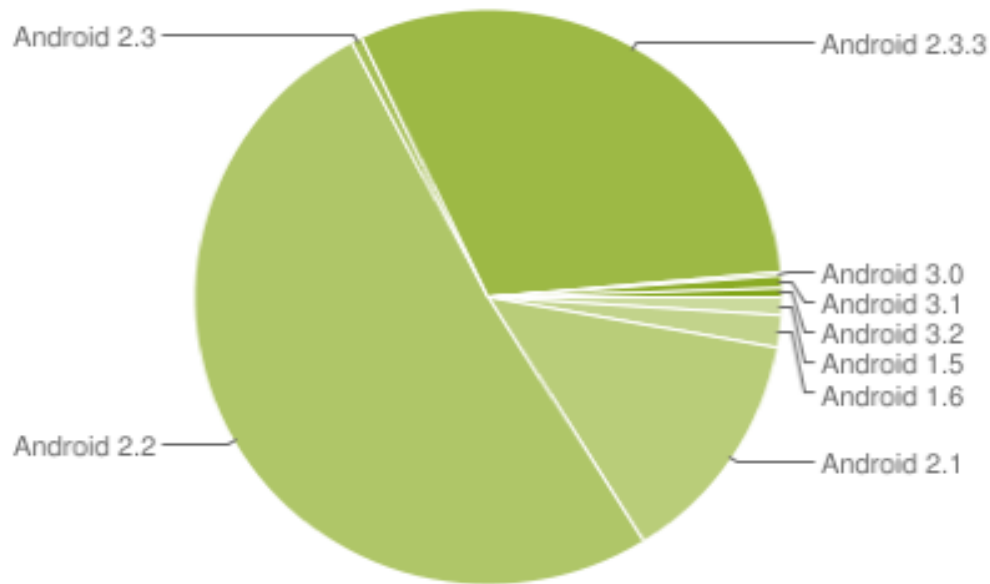
Platform	Codename	API Level	Distribution
Android 1.5	Cupcake	3	1.0%
Android 1.6	Donut	4	1.8%
Android 2.1	Eclair	7	13.3%
Android 2.2	Froyo	8	51.2%
Android 2.3 - Android 2.3.2	Gingerbread	9	0.6%
Android 2.3.3 - Android 2.3.4		10	30.7%
Android 3.0	Honeycomb	11	0.2%
Android 3.1		12	0.7%
Android 3.2		13	0.5%

Data collected during a 14-day period ending on September 2, 2011

http://developer.android.com/resources/dashboard/platform-versions.html

참조

http://www.slideshare.net/droidcon/droidcon-2011-gingerbread-and-honeycomb-markus-junginger-greenrobot

참조- HoneyComb

3.0 Fragments API 번역
http://atg.or.kr/blog/tag/fragment

프레그먼트 소개
 - http://androidhuman.tistory.com/470

모토로라 프레그먼트 소개
 - http://www.slideshare.net/motodev/introducing-fragments-8306530

리스트 프레그먼트
 - http://tutorial.vn/android-compatibility-working-with-fragments.html

http://androidcommunity.com/ice-cream-sandwich-full-google-io-details-20110510/
http://www.pcmag.com/article2/0,2817,2385142,00.asp

Android OS 4.0

- Icecream Sandwich란?

Icecream Sandwich

아이스크림 샌드위치는 Android 3.0 Honeycomb와 2.3 Gingerbread의 통합된 버전으로 모든 안드로이드 기기(스마트폰, 타블릿 및 ?)에서 동작한다.
즉, 이전 버전 (1.5, 2.0, 2.2)등과도 그리고 single core/multi core등과도 호환 된다.

at the Dreamforce conference, Schmidt said, "We have a new operating system, internally known as Ice Cream Sandwich for some reason, which is being released in October, November."

New 안드로이드 마켓

- Android device 증가
- App 증가 속도
- Checkout 소개

device shipments

48% vs iOS 19% global

APAC: 85% in Korea, 70% in Tiwan

2011 구글코드랩 발표 참조

market 확장 추세

250K + apps, 6B + downloads

1B + 20month

   -> 2B+5month

   -> 3B+3month

   …

   -> 6B+1month

2011 구글코드랩 발표 참조

global expansions in activations

11Q1, ROW 4times 증가

Paid app installation
   honeycomb 4times 많다.

2011 구글코드랩 발표 참조

Market features

29개국 checkout merchant 등록 가능
　에러리포트, 다운로드 리포트
리뷰 절차 없지만, safeguard 진행중.
131개국 유료 앱
앱 라이센싱
웹에서 폰으로 설치
in-app billing, carrier billing
　14개국(AUD, CAD, CHF, DKK, EUR, GPB, HKD, JPY, KRW, NOK, NZD, SEK, SGD, USD)
montly sales reporting

2011 구글코드랩 발표 참조

Receive payouts in KRW with checkout

Market account: email, pay registration fee, login and accept DDA(국내 계좌 가능) (기존 개발자 면제?)

New google checkout account

   select korea as locale

기존 앱은 새로운 계정으로 통합

2011 구글코드랩 발표 참조

in-app billing

sell digital contents

API level 4+, market client 2.3.4+ phone, 5.0.12 tablet)

Up to 25x revenue boost for some apps.

things to watch out

 release signing key

 google checkout APIs are disabled for in-app orders (cancel, refund)

 Google check out API Callback URL will not work

 Order notifications need to be confirmed once they arrive.

2011 구글코드랩 발표 참조

What's new

Multiple APK support

filterred by specific segments

 pltform version

 screen size&densities

 texture compression formats

App available as ONE product listing

USER ratings, comments and billing are aggregated

Device availability

show all supported devices for published or draft apps

filter unsupported devices

what's new (cont)

New localized listings

trending, top new free, top new paid, top grossing

New recommendations

User who viewed this also viewed

user who installed this also installed

Badges

Editor's choice, top developer

2011 구글코드랩 발표 참조

What's coming?

Large app support

up to 4GB (50MB app package + two 2GB archives)

Market pro tips

Use the "Recent changes" field to inform your app users all the changes introduced in a version

Think twice before you make your app FREE! You can't make it a paid app again.

Localize your Listing Details

Spend some errorts on the graphic assets for your app.

2011 구글코드랩 발표 참조

Market pro tips-2

Provide a short video (30 sec ~ 2min) highlighting the top featurew of your app

Make sure filters in your app manifest are set properly

Filter problematic or non-compatible devices

Explain required permissions in 'Description'

Price your app right, relative to your category

Monitor user comments and error reports

2011 구글코드랩 발표 참조

how to make sucessful

First of all – buidl a high quality app
Provide support through email or forum
Provide timely, useful updates
Market your apps
> Price promotion
> Cross promtion
> Advertise your apps in Ads Network
> Affiliation

Use analitics to understand how your app is used