

IEEE  computer society

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**An Overview of
The Android Ecosystem**

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DIGDIA

Overview of The Android Ecosystem

- Origins

Google buys Android

- Founded by Andy Rubin, now Google VP Engineering

Open Handset Alliance formed

- Announcing the development of Android OS
- Originally 34 members: Semis, H/W, S/W, Operators
- Including Motorola, HTC, TI, Intel, Sprint, T-Mobile
- Now 65 members – including ARM, MIPS

Google announces
Android Open Source
Project source.android.com

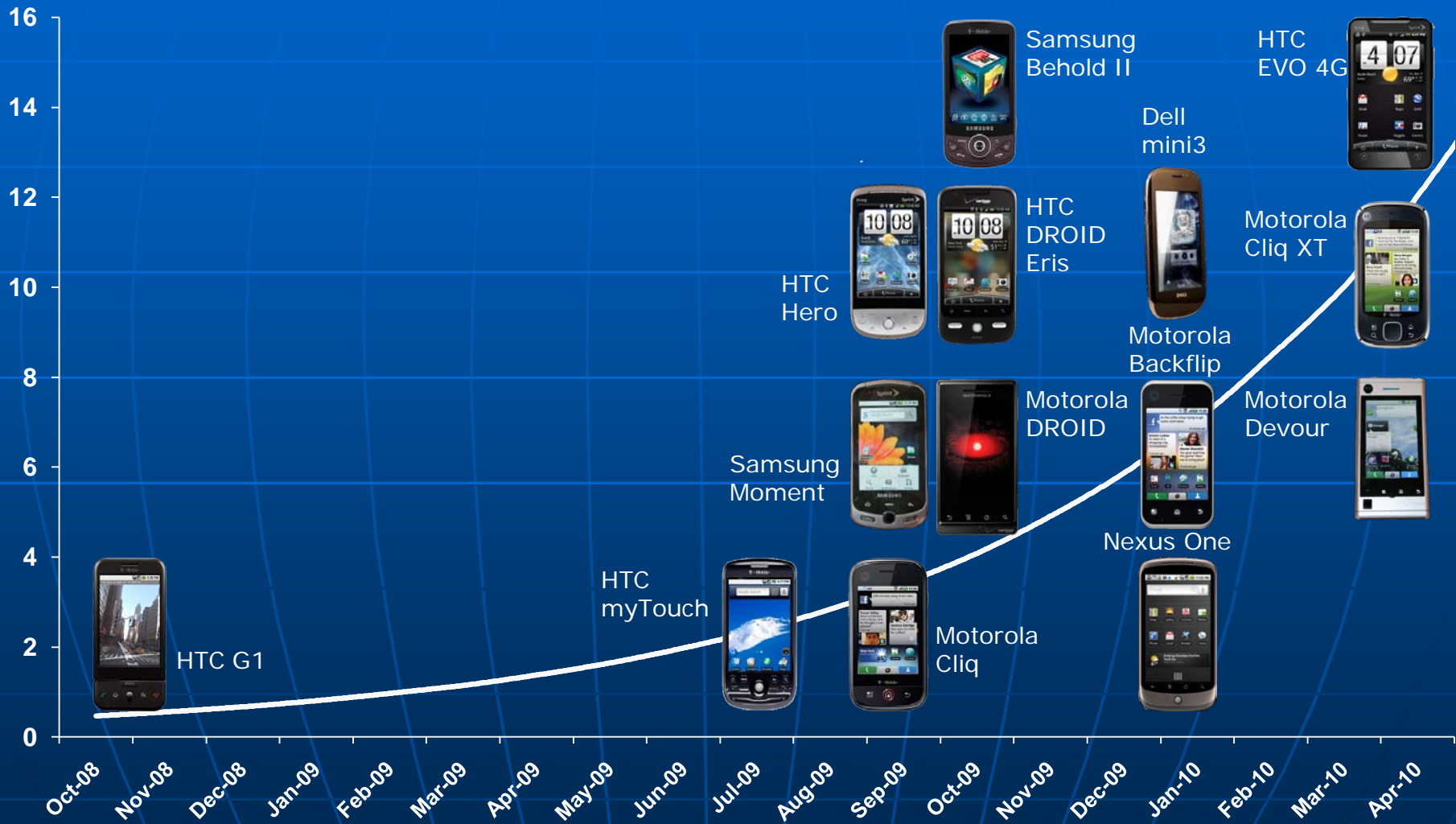
Aug-05 Nov-05 Feb-06 May-06 Aug-06 Nov-06 Feb-07 May-07 Aug-07 Nov-07 Feb-08 May-08 Aug-08 Nov-08

Overview of The Android Ecosystem

- Semiconductor Companies

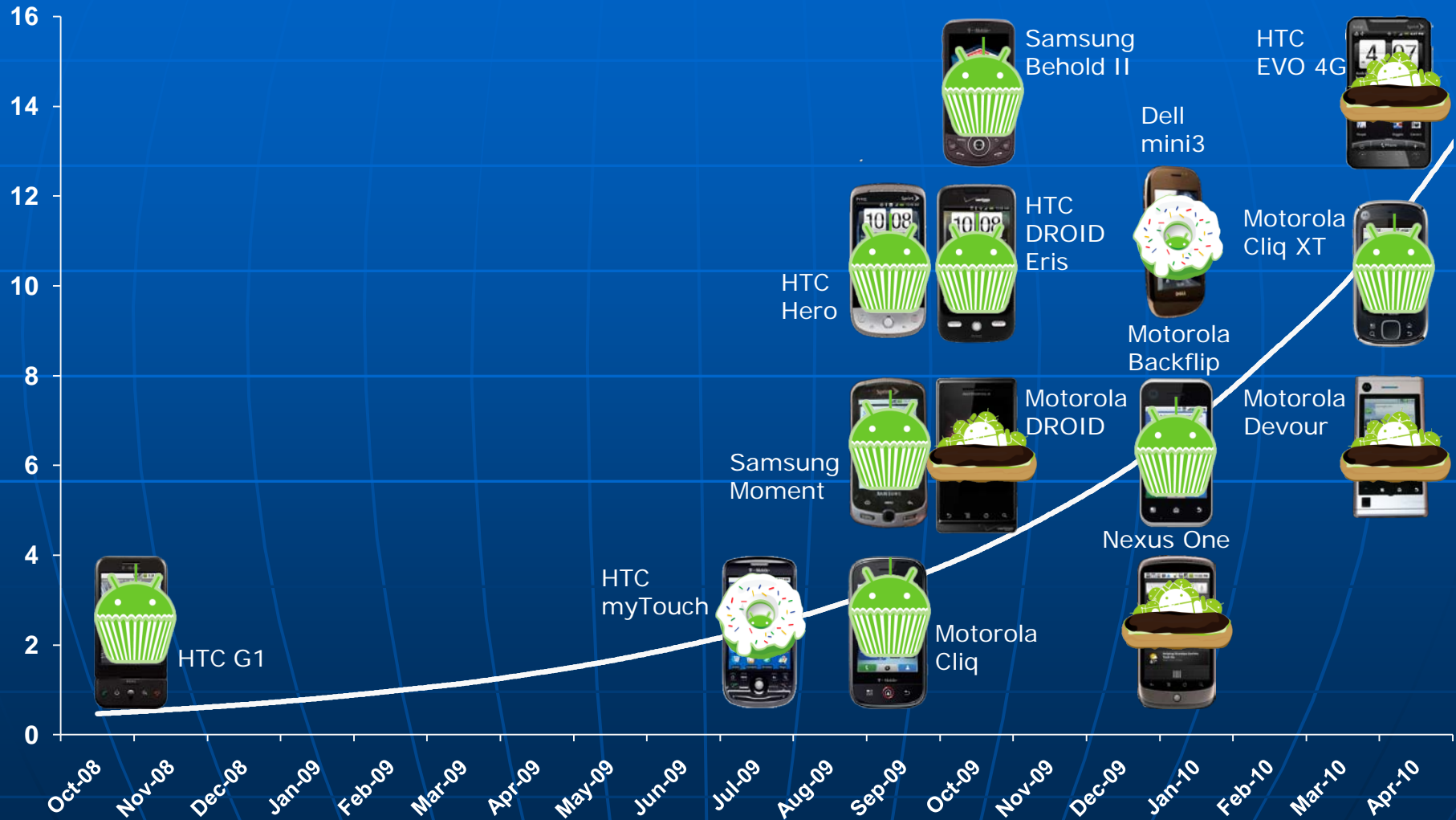
- Processor cores for running Android
 - ARM: Solution Center for Android - [SCA](#)
 - MIPS: [MIPSandroid.org](#)
- Integrated Application Processors
 - Qualcomm Snapdragon, Samsung, TI OMAP
 - Nvidia Tegra
 - DSP Group XpandR™
 - Marvell Armada
 - Sigma Designs
 - Intel Atom?

Overview of The Android Ecosystem - The Smartphones



Overview of The Android Ecosystem

- The Smartphones: OS Fragmentation



Overview of The Android Ecosystem

- Smartphone Mfrs Customize Android UI

- Motorola introduces MOTOBLUR™
 - Differentiate by a tight integration of social networking applications Facebook, MySpace and Twitter.
- HTC introduces Sense™ UI
 - Customize home screens with apps for different purposes, such as personal or business use.
 - Integrates updates from Facebook status, Flickr photo streams and email into the "People" address book.



Overview of The Android Ecosystem

- Google enters the phone business

The screenshot shows the Nexus One product page. At the top, the 'nexus one' logo is displayed. Below it, the text 'What would you like to buy?' is visible. The page is divided into sections: 'Phones', 'Accessories', and 'Coming Soon'. Under 'Phones', there are two options: 'Nexus One Phone' for \$529.00 and 'Nexus One Phone with T-Mobile' for \$179.00. The 'Accessories' section lists three items: 'Nexus One Desktop Dock' for \$46.00, 'Nexus One Spare Battery' for \$25.00, and 'Nexus One Car Dock' for \$65.00. At the bottom, the 'Coming Soon' section features the Verizon Wireless logo and the text 'Spring 2010'.

nexus one™

What would you like to buy?

Phones

Nexus One Phone \$529.00
Buy the phone without service and insert your own SIM card. Includes a Nexus One phone case, wall charger, and USB cable. Free shipping in the continental US.

Compatible with 3G on T-Mobile (U.S.)
Supports three 3G/UMTS bands (900/1900/2100 MHz) and four GSM radio frequencies (850/900/1800/1900 MHz)

Compatible with 3G on AT&T (U.S.) and these wireless providers in Canada.
Supports three 3G/UMTS bands (850/1900/2100 MHz) and four GSM radio frequencies (850/900/1800/1900 MHz)
[Which phone will work best with my mobile service provider and why?](#)

T-Mobile \$179.00
The Nexus One Phone with T-Mobile Even More individual 500 Plan. You must be eligible for service and accept a new two year contract to qualify for this pricing. Existing T-Mobile customers may qualify for upgrade pricing. [Show more.](#)
[Check for coverage in your area](#)

Accessories


Nexus One Desktop Dock \$46.00
The Nexus One Desktop Dock is an elegant place to charge your phone, on your desk or nightstand.
[Learn more.](#)

Nexus One Spare Battery \$25.00
Carry a fully charged battery and easily replace your Nexus One battery on the go.
[Learn more.](#)

Nexus One Car Dock \$65.00
Changes your phone's battery, has built-in speaker and Bluetooth, and provides quick access to voice commands & Google Maps Navigation.
[Learn more.](#)

[Continue »](#)

Coming Soon

 Spring 2010

The Nexus One Phone with Verizon Wireless service. Coming soon in the United States.
Can't wait for your Verizon Nexus One? [Click here](#)

ANDROID DOES

■ Nexus One

- Attempt to distinguish Android on a "super phone"
- Inexperience in consumer channel and lack of support
- Announced on all 4 major U.S. wireless networks

Overview of The Android Ecosystem

- (U.S.) Wireless network operators

■ T-Mobile

- 1st with the G-1 and the Nexus One
- Now carrying 6 Android smartphones

■ Sprint

- 1st with a 4G (WiMAX) phone: the HTC EVO
- Will total 5 Android handsets

■ Verizon

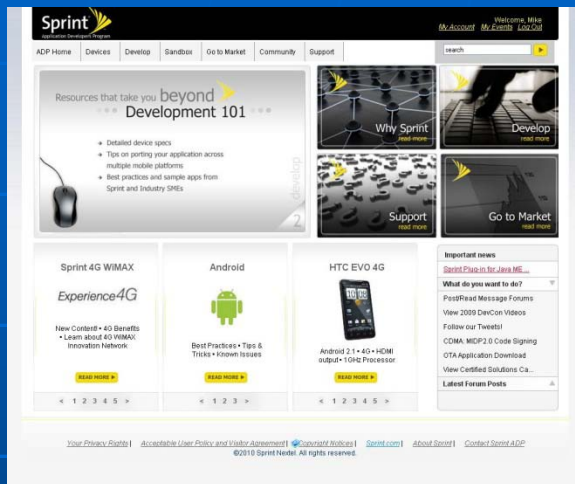
- The Droid + 3 more

■ AT&T

- Motorola Backflip + 2 more announced

Overview of The Android Ecosystem

- Operator-sponsored Developer Programs



- Sprint Developer Program
 - Developer sandbox
 - Access to network APIs for LBS, messaging, user management, etc.
 - Virtual Developer Lab
 - Powered by DeviceAnywhere

- Total of 5 Android Handsets announced
 - 1st 4G (WiMAX) phone: HTC EVO 4G
 - Samsung Moment
 - HTC Hero
 - Motorola i1
 - Google (HTC) Nexus One

Overview of The Android Ecosystem - Operator-sponsored Developer Programs



- AT&T Developer Program
 - 1st Android devices announced at CES
 - Developer tools on MotoDev
 - Offering 5 free hours DeviceAnywhere

- Total of 2 Android Handsets currently
 - Motorola Backflip
 - Google (HTC) Nexus One
 - Dell mini3 (1H – 2010) and forthcoming HTC device
 - Also support the Barnes & Noble nook eReader

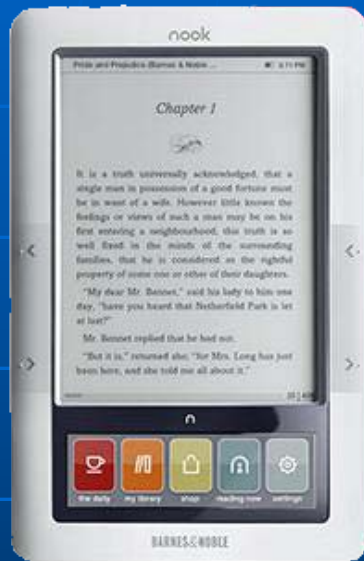
Overview of The Android Ecosystem

- Branching off to other CE devices

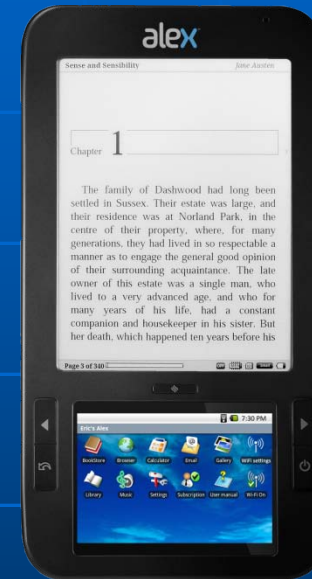
- Moving toward the "internet of things"
 - Cisco predicts 1T connected devices in 2013
 - CE manufacturers need inexpensive (i.e. free) OS
 - Google's focus is now "mobile first"
- From Open Handsets to Open Embedded
 - OESF established in Japan
 - 40+ members, including ARM, MIPS
 - Focus on embedded systems other than mobile phones

Overview of The Android Ecosystem - Beyond Smartphones... eReaders

- Barnes & Noble nook



- Spring Design 'Alex'



- Partners: Google, Marvell, Adobe, PVI (ePaper)

Overview of The Android Ecosystem

- Beyond Smartphones... Netbooks

■ HP/Compaq Airlife



- Qualcomm Snapdragon
- Modified Android for larger screen

■ Acer Aspire One



- Intel Atom processor
- Dual-boot with Windows-XP

Overview of The Android Ecosystem

- Beyond Smartphones... Tablets

■ ICD Ultra



- Nvidia Tegra
- 7" Touchscreen
- HD video
- HDMI, DLNA output

■ Archos 5



- ARM Cortex
- Android v1.6

Overview of The Android Ecosystem

- Beyond Smartphones... Set-top Boxes



- Western MediaBridge
 - MIPS-Based SMP8654 media processor from Sigma Designs.
- Also KDDI R&D Labs (Japan)
- Rumors of Google Android STBs
 - WSJ: testing a new television-programming search service with Dish Network.
 - NYT: teaming with Intel, Sony and Logitech on to "Google TV".

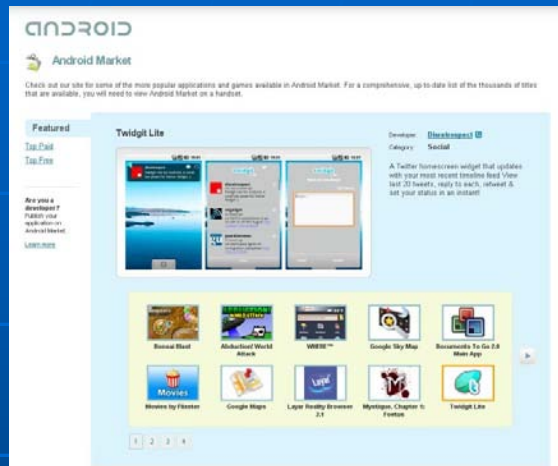
Overview of The Android Ecosystem - Beyond Smartphones... Televisions

■ 'People of Lava' – Sweden



Overview of The Android Ecosystem

- The app stores



- Google's Android Market
 - 70/30 revenue split for developers
 - "need to view Android Market on a handset."
 - Apps must pass the "Compatibility Test Suite"

- Fragmentation in the apps stores
 - 24 operators form Wholesale App Community
 - 3rd party app sites
 - GetJar
 - Andappstores.com

Overview of The Android Ecosystem

- Summary

- Google has successfully disrupted the smartphone market and wireless landscape.
- Support across all network operators puts Android in a position to surpass iPhone's market share.
- Fragmentation needs to be reduced.
- A consumer channel needs to be created that supports all devices and applications.
 - Amazon?

For More Information

- See my report:
 - "The Android Invasion"
 - New Devices & Technology from CTIA Wireless
 - Discount to tonight's attendees
 - Email me at mike.demler@digdia.com
 - Also see my blog:
 - [The World is Analog](#)
 - Follow me on Twitter
 - MikeDemler