Technology Overview

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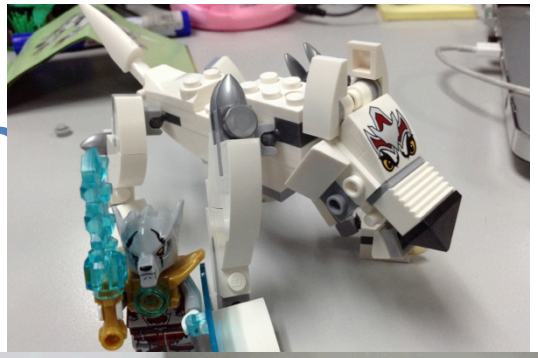
- http://mobiledev.ronaldramos.info/schooltalks/

Ronald L. Ramos



Description

- This talk aims to present an overview of technologies that are in the horizon for the telecommunications industry.

Topics

- Convergence/Smart's Changing Landscape
- LTE
- The Internet of Things
- Big Data
- Android

Why do we need more Bandwidth?

Convergence

- Telecommunications convergence, network convergence or simply convergence are broad terms used to describe emerging telecommunications technologies, and network architecture used to migrate multiple communications services into a single network.
- Specifically this involves the converging of previously distinct media such as telephony and data communications into common interfaces on single devices
- Convergence services, such as VoIP, IPTV, Mobile TV, etc., will replace the old technologies and is a threat to the current service providers. IP-based convergence is inevitable and will result in new service and new demand in the market

LTE Overview

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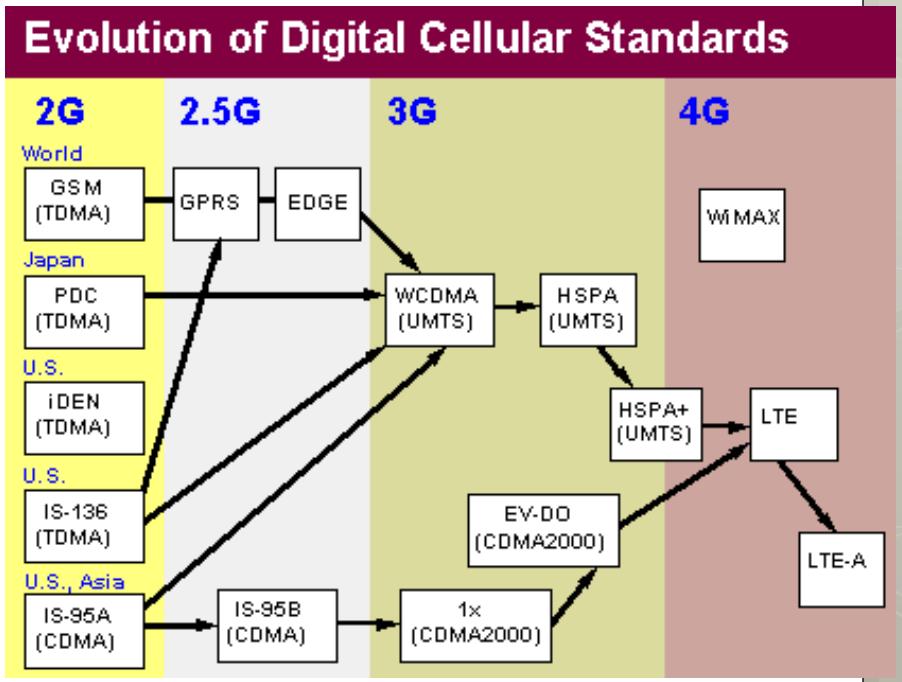
Cellular Generations

- The "G" stands for a generation of mobile technology, installed in phones and on cellular networks.
- Each "G" generally requires you to get a new phone, and for networks to make expensive upgrades. The first two were analog cell phones (1G) and digital phones (2G).
- We are currently in the fourth generation (4G).



Cellular Generations (Expanded)

- **4G – LTE**

  Starting in the 2011 time frame, GSM and CDMA carriers embraced LTE, which offers higher speeds than 3G networks. LTE embodies the design goals of the IP Multimedia Subsystem (IMS), which integrates all communications using the IP protocol (voice, video, e-mail, Web, messaging, etc.). See LTE and IP Multimedia Subsystem.

- **4G – WiMAX**

  Sprint was the first carrier to offer a 4G cellular network in the U.S. Using the WiMAX technology, 4G service was rolled out to major cities in 2009, providing faster downloads than Sprint's 3G service. See WiMAX.

- **4G - HSPA+**

  In late 2010, the ITU officially designated HSPA+ as a 4G technology, having previously defined it as 3G. See HSPA.

- 3G - WCDMA/HSDPA and CDMA2000

  Launched after the turn of the century, the third generation features faster access to the Internet with downstream speeds up to 1 Mbps and more depending on the 3G version. The predominant 3G technologies on the GSM side are WCDMA and HSDPA with CDMA2000 on the CDMA side (see WCDMA, HSPA and CDMA2000). 3G also embraces worldwide roaming for global travelers (see GAN).

- 2G/2.5G - GSM/CDMA, GPRS/EDGE/IS95-B

  The second generation refers to the digital voice systems of the 1990s, replacing analog phones and based on the TDMA and CDMA air interfaces. First deployed in Europe, GSM became the predominant TDMA-based cellular system worldwide. Data networks (GPRS, EDGE, IS-95B) were added and commonly called 2.5G technologies, enabling Internet access and e-mail with slow downstream speeds up to approximately 200 Kbps. See GSM, CDMA, GPRS, EDGE and IS-95.

- 1G - Analog Voice

  Introduced in the late 1970s, the first cellular systems were analog voice. Years later, some 1G cellphones occasionally provided wireless data service to a laptop by connecting them to the laptop's dial-up modem, but hookups were precarious, and when it worked, the data transfer rate was minuscule. See AMPS, TACS and NMT.

Long Term Evolution

- Long Term Evolution is the latest high-speed cellular data transmission network. LTE is a 4G technology, surpassing the speeds of the widely used 3G networks. Apple aficionados eagerly awaited the iPhone 5 because it was the first iPhone to support LTE.

- Available for the two major cellphone systems worldwide (GSM and CDMA), LTE is envisioned to provide global interoperability. However, LTE operates in more than three dozen frequency bands, making it difficult to build a phone that can tune in that many channels.

- Approved in 2008 with download speeds up to 173 Mbps, LTE uses a different air interface and packet structure than 3G. See cellular generations and 3G.

- LTE - From 3G to 4G Officially
- The ITU previously designated LTE-Advanced (LTE-A) as the true 4G evolution. However, in late 2010, it widened its definition to include regular LTE, along with WiMAX and HSPA+, as bona fide 4G technologies since they are faster than 3G.

From 3G to 4G

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3G Versus 4G	3G	4G
Data Throughput:	Up to 3.1Mbps with an average speed range between 0.5 to 1.5 Mbps	Practically speaking, 2 to 12 Mbps (Telstra in Australia claims up to 40 Mbps) but potential estimated at a range of 100 to 300 Mbps.
Peak Upload Rate:	5 Mbps	500 Mbps
Peak Download Rate:	100 Mbps	1 Gbps
Switching Technique:	packet switching	packet switching, message switching
Network Architecture:	Wide Area Cell Based	Integration of wireless LAN and Wide area.
Services And Applications:	CDMA 2000, UMTS, EDGE etc	Wimax2 and LTE-Advance
Forward error correction (FEC):	3G uses Turbo codes for error correction.	Concatenated codes are used for error corrections in

FOR EX

ONS

Smart LTE

Smart's Changing Landscape

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Smart's History

REINVENTION MILESTONES

PREPAID SERVICE > ANALOG TO GSM > ELECTRONIC LOAD > MOBILE COMMERCE > INTERNET FOR ALL > MULTIMEDIA

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The Internet of Things

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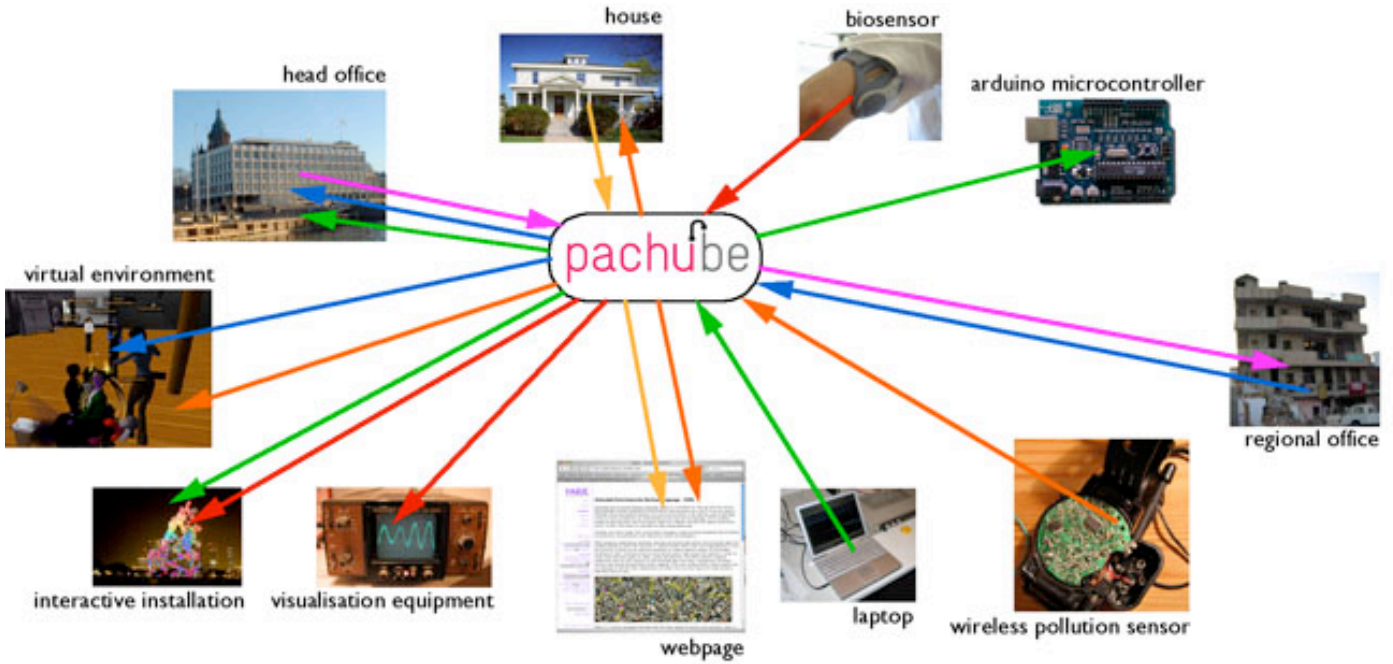
Internet of Things

- ***Equipping all objects in the world with minuscule identifying devices could be transformative of daily life. For instance, business may no longer run out of stock or generate waste products, as involved parties would know which products are required and consumed.***
- ***We have a clear vision – to create a world where every object - from jumbo jets to sewing needles – is linked to the Internet.***
- ***According to ABI Research more than 30 billion devices will be wirelessly connected to the Internet of Things (Internet of Everything) by 2020.***

McKinsey Quarterly

"More objects are becoming embedded with sensors and gaining the ability to communicate. The resulting information networks promise to create new business models, improve business processes, and reduce costs and risks."

An example



one-to-one
webpage responds to house

one-to-many
laptop ambient light level and accelerometer sensor readings shared with public

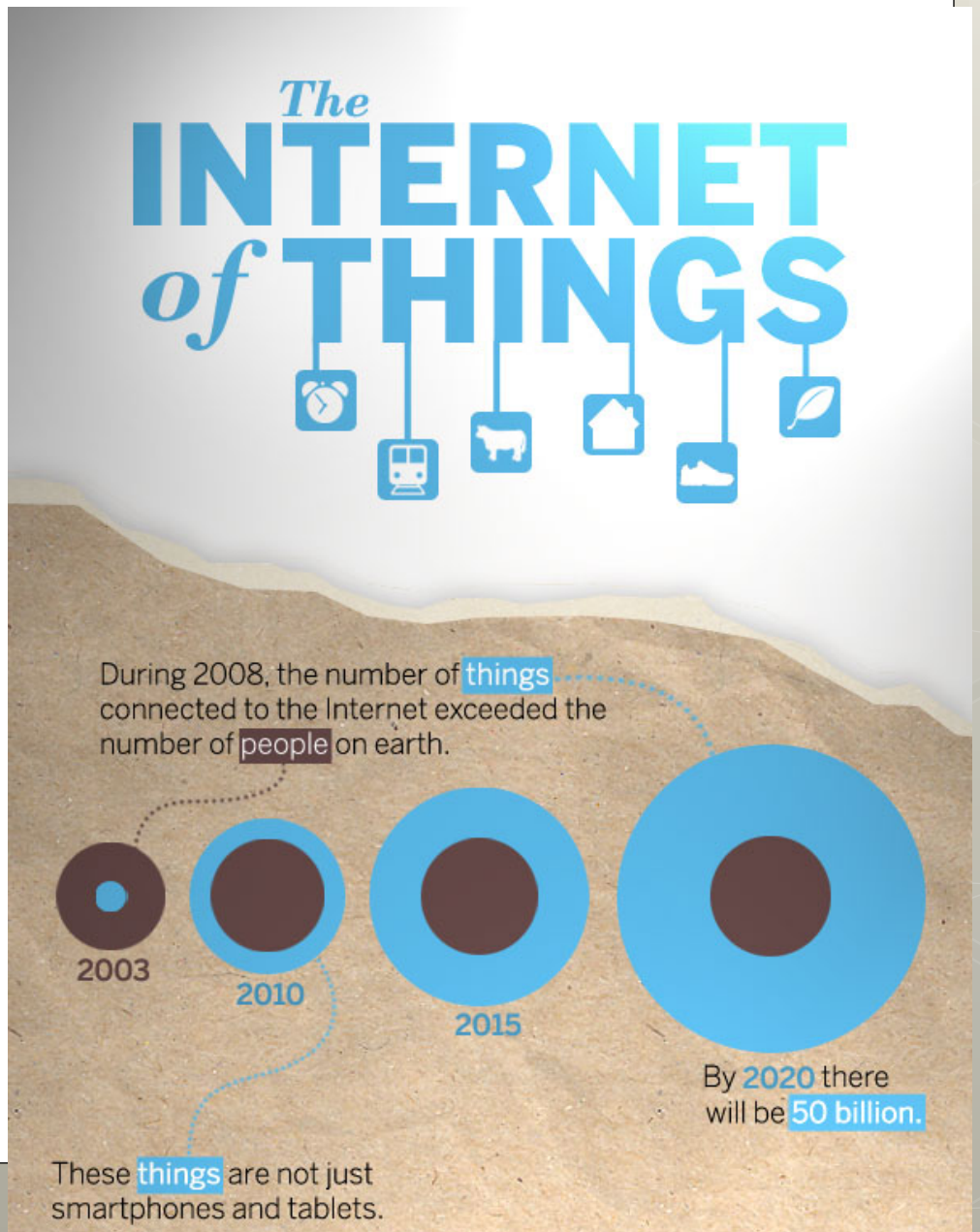
one-to-one
head and regional office share sensor data

many-to-one
virtual environment responds to regional office and wireless pollution sensor

one-to-many
wireless biosensor connects to interactive installation and visualisation equipment

one-to-many
webpage, house and virtual environment respond to wireless pollution sensor

Cisco's view



Big Data

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What is big data?

- Every day, we create 2.5 quintillion bytes of data — so much that 90% of the data in the world today has been created in the last two years alone.
- This data comes from everywhere: sensors used to gather climate information, posts to social media sites, digital pictures and videos, purchase transaction records, and cell phone GPS signals to name a few. This data is **big data.**

Four Dimensions of Big Data

- Volume – high data traffic
- Velocity – data is used the moment it streams in
- Variety – it is any type of data
- Veracity – how can your data be trusted

Big data = Big Return on Investment (ROI)

- **Healthcare:** 20% decrease in patient mortality by analyzing streaming patient data
- **Telco:** 92% decrease in processing time by analyzing networking and call data
- **Utilities:** 99% improved accuracy in placing power generation resources by analyzing 2.8 petabytes of untapped data

- Big data is more than simply a matter of size; it is an opportunity to find insights in new and emerging types of data and content, to make your business more agile, and to answer questions that were previously considered beyond your reach.

Uses of Big Data

- **Financial Services**
  - Risk and fraud management
  - Customer analytics
- **Transportation**
  - Logistics optimization
  - Traffic congestion
- **Healthcare/Life Sciences**
  - Medical record text analytics
  - Genomic analytics
- **Telecommunications**
  - Call detail record processing
  - Customer profile monetization
- **Energy and Utilities**
  - Smart meter analytics
  - Asset management
- **Digital Media**
  - Real-time ad targeting
  - Website analysis
- **Retail**
  - Omni-channel marketing
  - Click-stream analysis
- **Law Enforcement**
  - Real-time multimodal surveillance
  - Cyber security detection

Windows Phone

Smart Phones

Android

- The version history of the Android mobile operating system began with the release of the Android beta in November 2007. The first commercial version, Android 1.0, was released in September 2008.
- Android is under ongoing development by Google and the Open Handset Alliance, and has seen a number of updates to its base operating system since its original release. These updates typically fix bugs and add new features.
- Since April 2009, Android versions have been developed under a codename and released in alphabetical order: Cupcake, Donut, Eclair, Froyo, Gingerbread, Honeycomb, Ice Cream Sandwich (ICS), and Jelly Bean. As of 2013, over 500 million active devices use the Android OS worldwide. The most recent major Android update was Jelly Bean 4.2, which was released on commercial devices in November 2012.

Open Handset Alliance

- The Open Handset Alliance (OHA) is a consortium of 84 firms to develop open standards for mobile devices. Member firms include Google, HTC, Sony, Dell, Intel, Motorola, Qualcomm, Texas Instruments, Samsung Electronics, LG Electronics, T-Mobile, Sprint Nextel, Nvidia, and Wind River Systems.
- The OHA was established on 6 November 2007, led by Google with 34 members including mobile handset makers, application developers, some mobile carriers and chip makers.[3] Android, the flagship software of the alliance, is based on an open source license and competes against mobile platforms from Apple, Microsoft, Nokia (Symbian), HP (formerly Palm), and Samsung Electronics (bada).
- Members of OHA are not allowed to produce phones that run incompatible versions of Android.

tandardtoday.com/2012/09/06/smartphone-use-to-grow-faster-than-expected/

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PREVIOUS ARTICLE NEXT ARTICLE

Smartphone use to grow faster than expected

By Manila Standard Today | Posted on September 06, 2012 | 6:02pm | View comments 439 views

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Smartphones are expected to rise to account for the majority of global cellphone shipments in 2013, two years earlier than previously predicted.

According to research firm IHS, smartphones will become the dominant mobile devices in terms of unit shipments. Smartphone shipments in 2013 are forecast to account for 54 percent of the total cellphone market, up from 46 percent in 2012 and 35 percent in 2011, according to an IHS market tracker report. The year 2013 will mark the first time that smartphones will make up more than half of all cellphone shipments.

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www.interaksyon.com/infotech/the-smartphone-numbers-global-market-share-q2-2012

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The smartphone numbers: Global market share Q2 2012

teki · Thursday, September 13, 2012 · 4:29 am

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According to industry research firm IDC, the combined worldwide market for smartphones is ruled by two dominant players, namely Google's Android and Apple's iPhone iOS. Both have a total of 85 percent market share while the rest – RIM's BlackBerry, Microsoft Windows Phone, Nokia's Symbian OS and others – splits the remaining 15 percent.

Android has the largest percentage of the smartphone pie at 68.1 percent. However, this is shared by different companies such as Samsung, HTC, Motorola, and Sony among others, which ride on the Android OS platform for their mobile phone devices. But for the iPhone iOS, the large 16.9 percent market share is occupied by Apple alone.

As for the BlackBerry, Windows Phone, and former market leader Nokia, their current share marks at less than 5 percent each.

The list below is IDC's figures for worldwide smartphone unit sales and market share in the second quarter of 2012, by operating system:

Android (Google) — 104.8 million units, 68.1 percent share

iOS (Apple 's iPhone) — 26.0 million units, 16.9 percent share

BlackBerry (Research in Motion) — 7.4 million units, 4.8 percent share

Symbian (Nokia) — 6.8 million units, 4.4 percent share

Windows (Microsoft) — 5.4 million units, 3.5 percent share

Source: IDC

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YUGATECH @INFOTEK

Sony Xperia Ion: In need of an LTE network

12-Jul-12, 4:43 pm | YUGATECH @Infotek

Sony's latest flagship handset, the Xperia Ion, was launched this week. This Android smartphone with a 4.6-inch display is among the few handsets out there that has a variant that supports the much faster LTE network. Obviously, the Xperia Ion ...

TECHIE SPEAK

Velvet Rope Architect by Janette Toral

The art of designing communities, one day at a time

The Occasional Techie by Al Dimalanta

On the Net, Google is god; but is SEO really dying?

Euro Connection by Maricel Estavillo

Sotto and a thing or two about

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Top Five Smartphone Vendors, Shipments, and Market Share, 2012 Q3 (Units in Millions)

Vendor	3Q12 Unit Shipments	3Q12 Market Share	3Q11 Unit Shipments	3Q11 Market Share	Year-over-year Change
Samsung	56.3	31.3%	28.1	22.7%	100.4%
Apple	26.9	15.0%	17.1	13.8%	57.3%
Research In Motion	7.7	4.3%	11.8	9.6%	-34.7%
ZTE	7.5	4.2%	4.1	3.3%	82.9%
HTC	7.3	4.0%	12.7	10.3%	-42.5%
Others	74.0	41.2%	49.9	40.3%	48.3%
Total	179.7	100.0%	123.7	100.0%	45.3%

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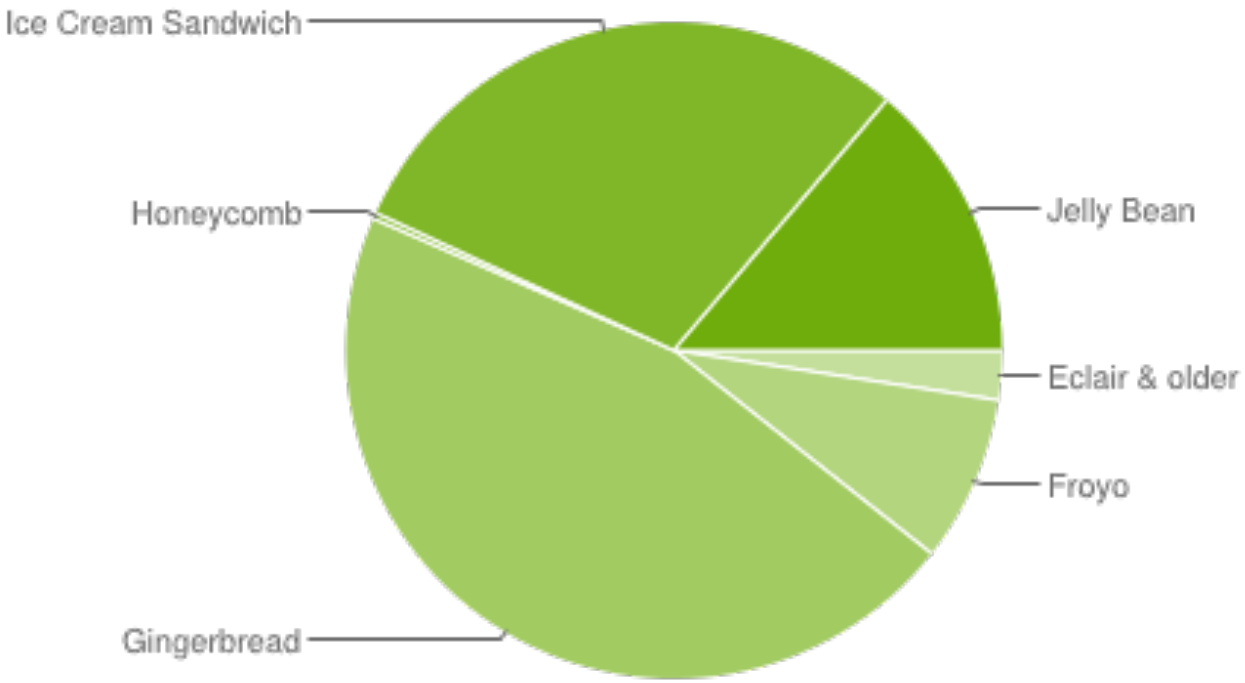
Top Six Smartphone Mobile Operating Systems, Shipments, and Market Share, Q3 2012 (Preliminary) (Units in Millions)

Operating System	3Q12 Shipment Volumes	3Q12 Market Share	3Q11 Shipment Volumes	3Q11 Market Share	Year-Over-Year Change
Android	136.0	75.0%	71.0	57.5%	91.5%
iOS	26.9	14.9%	17.1	13.8%	57.3%
BlackBerry	7.7	4.3%	11.8	9.5%	-34.7%
Symbian	4.1	2.3%	18.1	14.6%	-77.3%
Windows Phone 7/ Windows Mobile	3.6	2.0%	1.5	1.2%	140.0%
Linux	2.8	1.5%	4.1	3.3%	-31.7%
Others	0.0	0.0%	0.1	0.1%	-100.0%
Totals	181.1	100.0%	123.7	100.0%	46.4%

There are now more Android-enabled phones out there than iPhones. 400,000 new Android devices are activated each day.

Android Statistics



Data collected during a 14-day period ending on February 4, 2013

Android Statistics

Version	Codename	API	Distribution
1.6	Donut	4	0.2%
2.1	Eclair	7	2.2%
2.2	Froyo	8	8.1%
2.3 - 2.3.2	Gingerbread	9	0.2%
2.3.3 - 2.3.7		10	45.4%
3.1	Honeycomb	12	0.3%
3.2		13	1.0%
4.0.3 - 4.0.4	Ice Cream Sandwich	15	29.0%
4.1	Jelly Bean	16	12.2%
4.2		17	1.4%

Data collected during a 14-day period ending on February 4, 2013

Android for the Masses: Smart's Netphone

I am also known as the ZTE Blade

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Smart's Vision

- Android phones for the masses
- An appstore where Filipinos can sell their apps
- A strong community of Filipino Application Developers

Android is adaptable to PREPAID

- Lower handset prices
- Flexible Market
- It is possible to use prepaid load as payment for apps

App development is not rocket science

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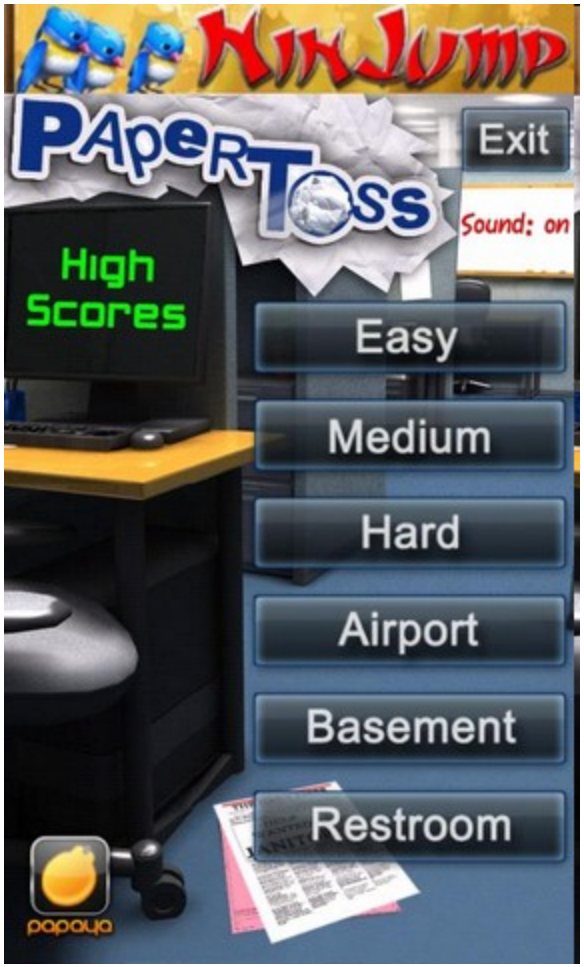
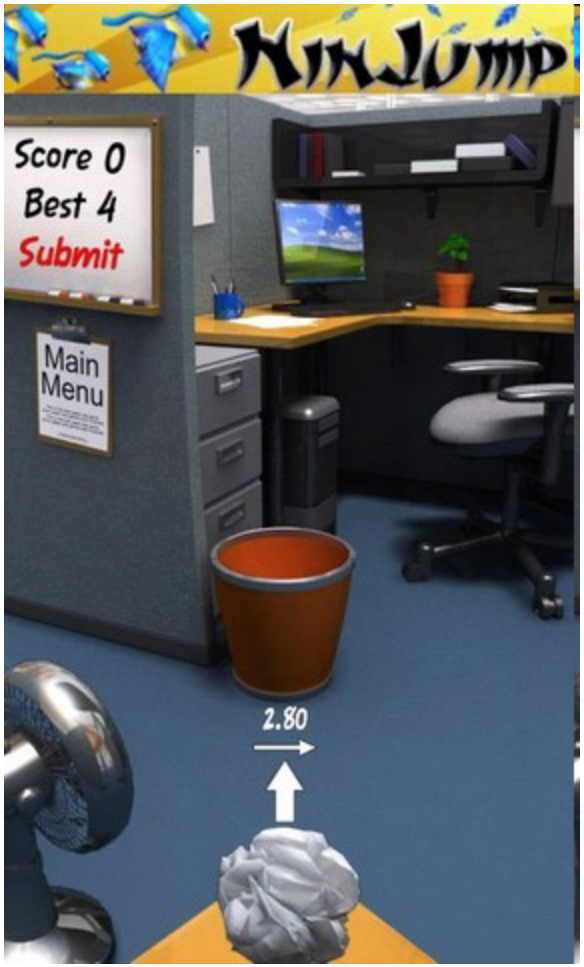

KirJump
PaperToss
Exit
Sound: on
High Scores
Easy
Medium
Hard
Airport
Basement
Restroom
papaya


KirJump
Score 0
Best 4
Submit
Main Menu
2.80

Paper Toss


49°
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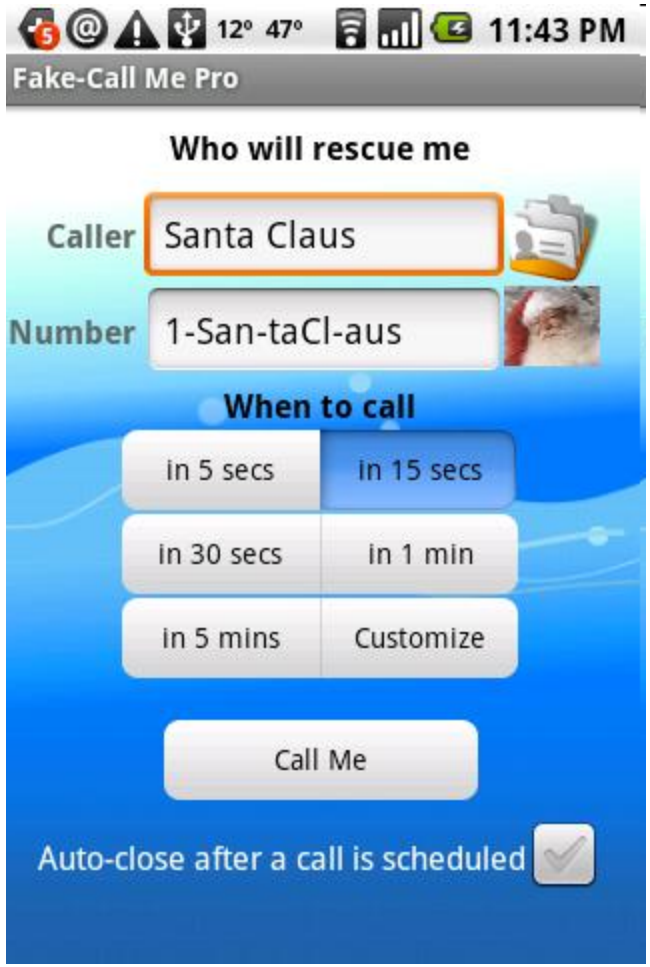
Incoming call
Santa Claus
Work 1-San-taCl-aus


12° 47°
11:43 PM
Fake-Call Me Pro
Who will rescue me
Caller
Santa Claus
Number
1-San-taCl-aus
When to call
in 5 secs
in 15 secs
in 30 secs
in 1 min
in 5 mins
Customize
Call Me
Auto-close after a call is scheduled

Fake Caller

Flashlight

Mobile development can rival Desktop Applications

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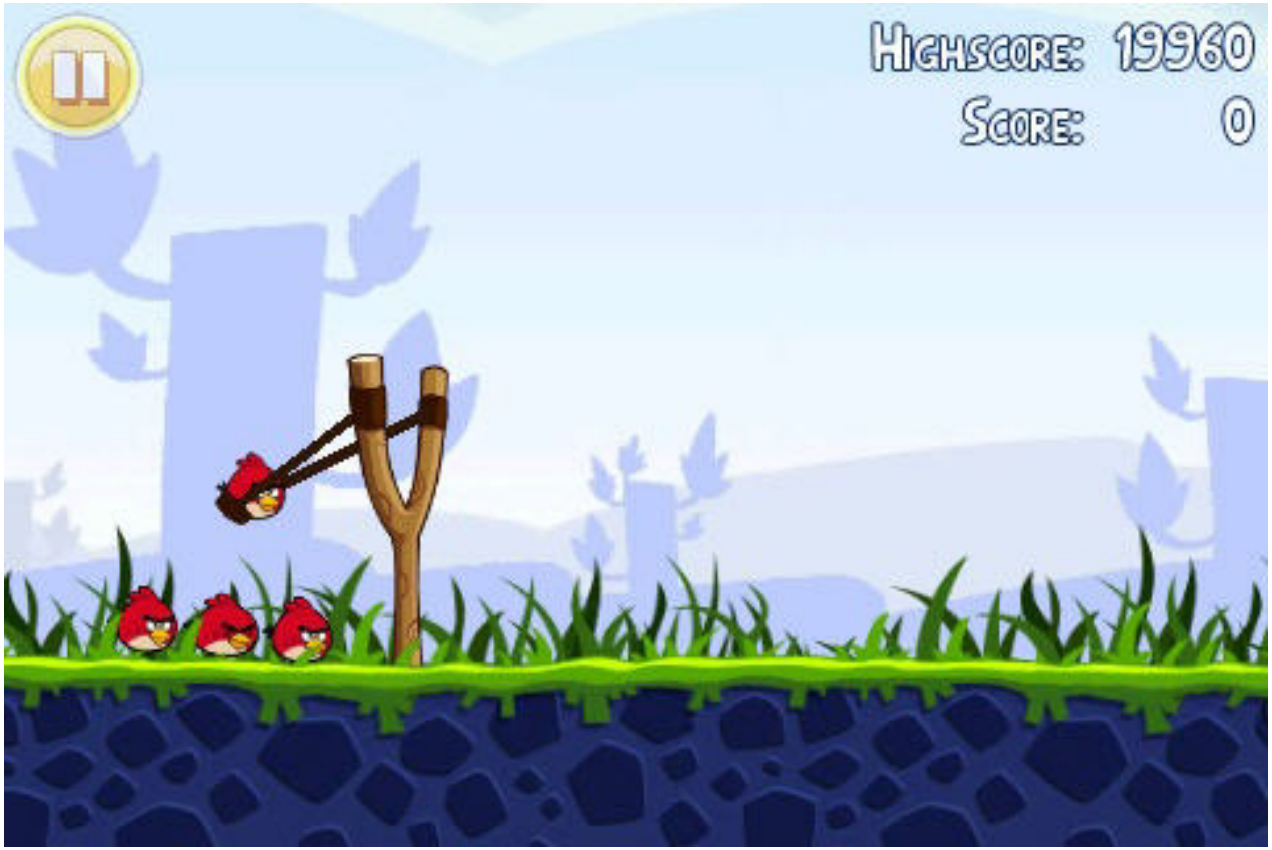

Angry Birds

Mass Effect Infiltrator

Smart Dev Net

Palay Checker App

Bataan students develop mobile app for 'palay' farmers

Posted at 11:03 pm March 29, 2012

Tags: Agribusiness, Technology Industry

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By Anna Valmero

SHARE YOUR STORIES

- Got a similar Story? Share it here
- Got a similar business? Tell everyone about it
- See list of businesses related to Agribusiness
- See list of businesses related to Technology Industry

SHARE

LOS BANOS, LAGUNA— A group of students from the Bataan State Peninsula University has developed a mobile application that aims to help rice farmers increase their harvest.

The application uses a leaf color chart index that **measures the nutrients status and quality of palay crops**. It helps determine the required quantity of nitrogen to be applied in the rice field for maximum

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Smart believes that…

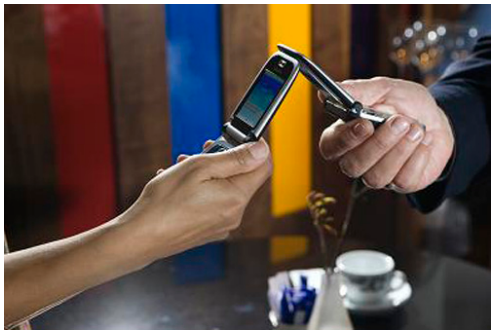
- Teachers and students can provide a strong App development community

Smart's Support

- Android Development Training for Teachers
- Android Seminars for School Orgs/Events
- App Development Competitions
- Android Phones for School Partners (Under discussion)

Near Field Communication

- Near field communication (NFC) is a set of standards for smartphones and similar devices to establish radio communication with each other by touching them together or bringing them into close proximity, usually no more than a few centimetres.
- Present and anticipated applications include contactless transactions, data exchange, and simplified setup of more complex communications such as Wi-Fi. Communication is also possible between an NFC device and an unpowered NFC chip, called a "tag".



Sample NFC Workflow

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Smart Careers

Be one of the best!

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Smart Careers

- Website
  - Smart.com.ph/careers
- Twitter
  - @workatsmart

- Job roles
  - Electronics Engineer
  - Application Developer
  - Testers
  - Business Analysts
  - Other technical roles

Some advice…

- Get a job you are passionate about (as much as possible)
- Money isn't everything
- Never stop learning

Summary

The future will have

1. Convergence – Our devices will play multiple roles in our lives. The phone is predicted to become the number one channel for internet access
2. Internet of Things – our devices will be connected to each other and will lead us to better lives.
3. LTE is the means by which we can get the bandwidth needed to make the first two come true
4. Big Data - We will use DATA to make all our lives better

Do you have any questions?

- This is the end of the presentation.
- Thank you for attending!

- For questions or inquiries :
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