

Mobile Technology Overview

Lecture 1
GSL Peru 2014

**How many of you have
cell phones?**



9 May 2013 Last updated at 15:59



Mobiles 'to outnumber people next year', says UN agency

There will be more mobile subscriptions than people in the world by the end of next year, according to a UN agency report.

The International Telecoms Union predicts that subscriptions will pass seven billion early in 2014.

There are currently 6.8 billion mobile subscriptions and 7.1 billion people.

The ITU World in 2013 report also found that more than a third of the global population are online.



There will be more mobile phones than people by the end of 2014 thinks the ITU

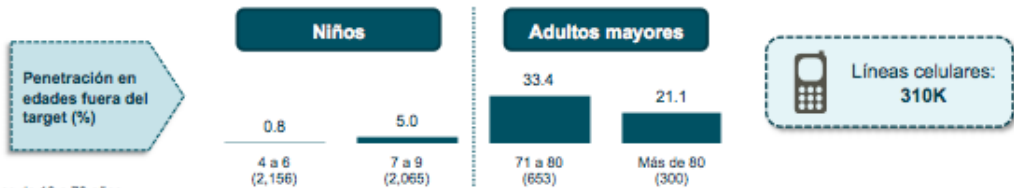
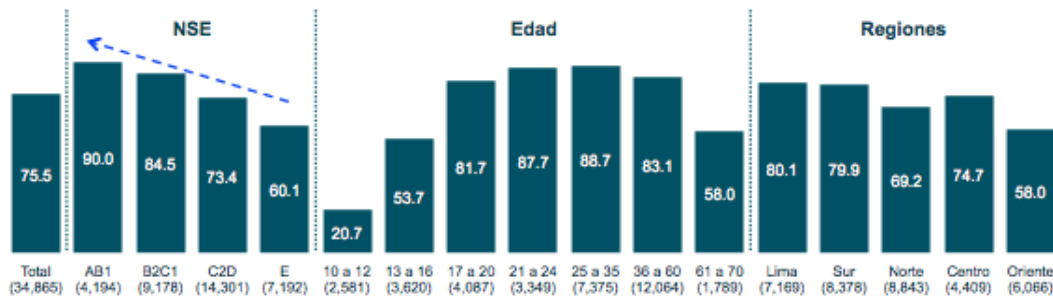
Related Stories

Market Share



Peru Mobile Phone Penetration

Penetración de telefonía móvil (%)



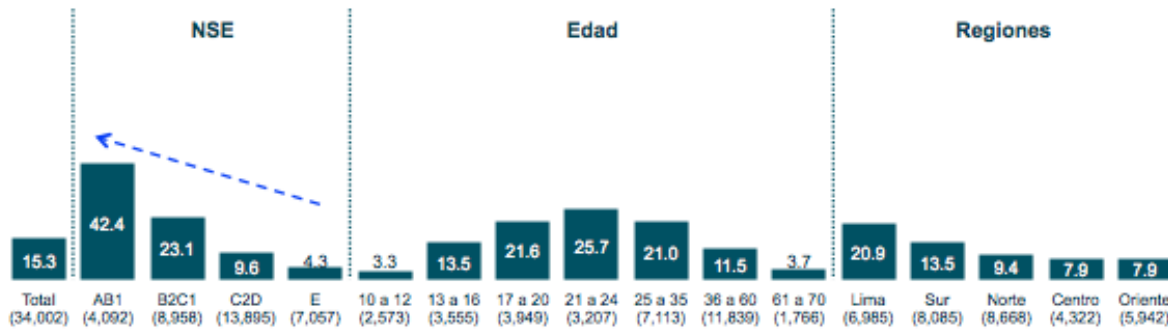
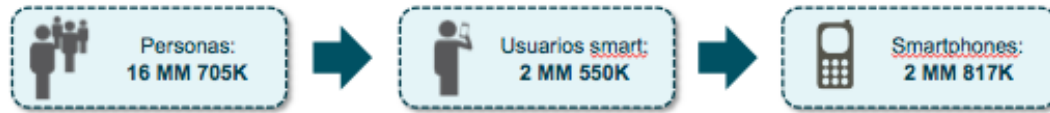
Base: Personas de 10 a 70 años.

- ❖ Between ages 10 and 70, there are 16,750,000 people, out of whom 12,605,000 use cell phones.
 - ~75.5% of population use cell phones
 - Common in all regions and for all ages above 17

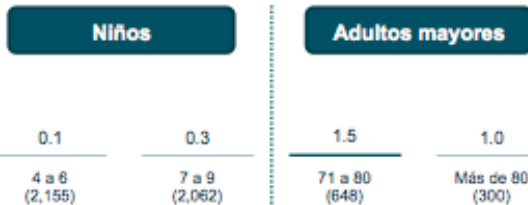
Peru Smartphone Penetration

Penetración de smartphones (%)

El target son las personas de 10 a 70 años



Penetración en edades fuera del target (%)



- ❖ Between ages 10 and 70, out of 16,705,000 people, 2,550,000 people use smartphones.
 - ~15.3% of population uses smartphones
 - Most common in Lima and then Southern Peru
 - Most common for ages 21-24

Base: Personas de 10 a 70 años.

Peru's Mobile Market

GSMA Intelligence Country overview: Peru

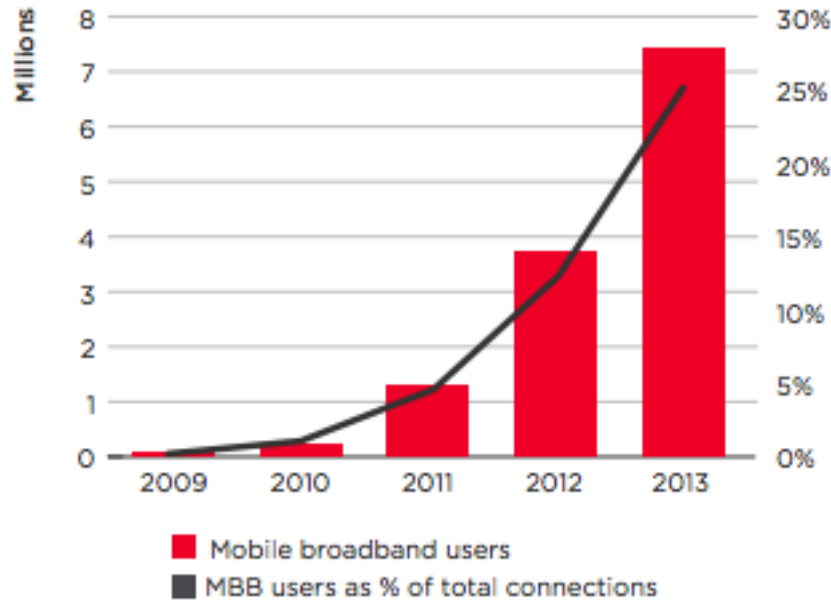


Figure 6: Mobile broadband connections in Peru

Source: GSMA Intelligence

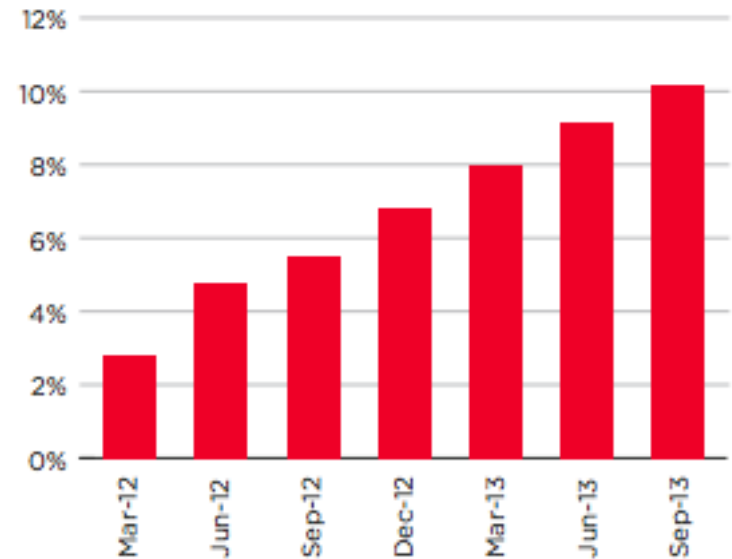


Figure 7: Smartphone penetration, Movistar

Source: GSMA Intelligence

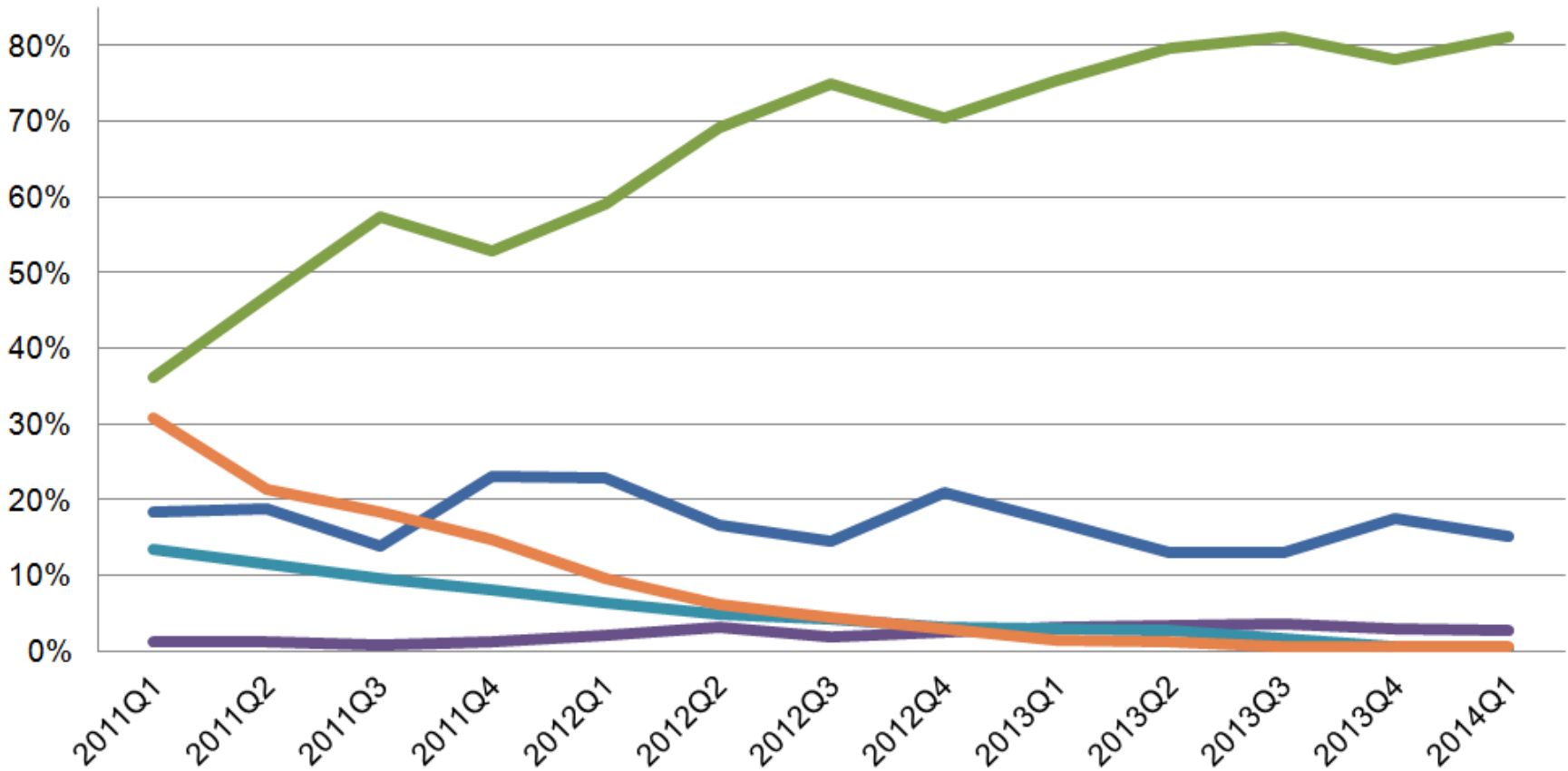
Peru's Mobile Market

From Figures 6 & 7 on previous slide:

- ❖ At the end of 2013, mobile broadband connections accounted for 25% of total connections, compared to less than 5% two years before.
- ❖ Smartphone penetration in 2013 was at 10%, double that from the year before.

Peru's mobile market is growing!

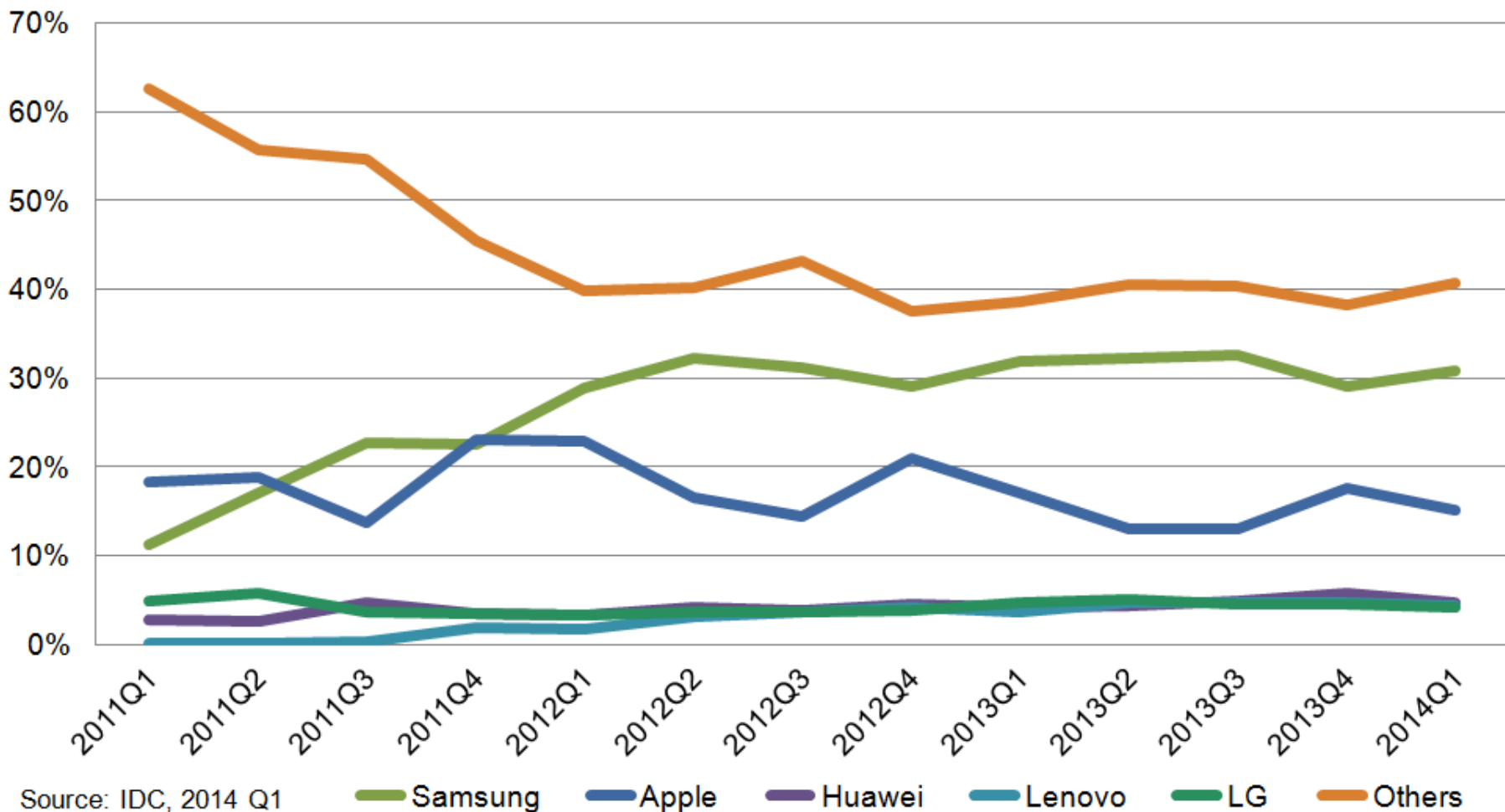
Worldwide Smartphone OS Market Share (Share in Unit Shipments)



Source: IDC, 2014 Q1

— Android
 — iOS
 — Windows Phone
 — BlackBerry OS
 — Others

Worldwide Smartphone Vendor Market Share (Share in Unit Shipments)



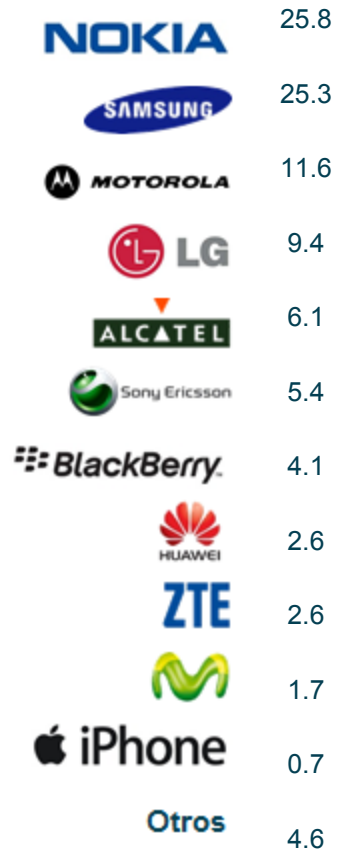
World Smartphone Vendor Market Share Q1 2014

Period	Samsung	Apple	Huawei	Lenovo	LG	Others
Q1 2014	30.8%	15.2%	4.7%	4.4%	4.3%	40.7%
Q1 2013	31.8%	17.1%	4.3%	3.6%	4.7%	38.5%
Q1 2012	28.9%	23.0%	3.4%	1.6%	3.2%	39.9%
Q1 2011	11.3%	18.3%	2.8%	0.1%	4.9%	62.6%

Source: IDC, 2014 Q1



Phone Vendor Market Share Peru (%)



Mobile Technologies



Applications on Mobile

- SMS/USSD
- Mobile Web
- Local Applications

SMS (Short Messaging Protocol)

- GSM Protocol that allows for exchange of short messages
 - CDMA networks also have SMS protocol
- Each SMS messages is 140 bytes (byte = 8 bits)
 - Can encode up to 160 7-bit characters using default GSM alphabet

MMS (Multimedia Message Service)

- Extension to SMS that allows message to include more content:
 - Images, videos, and audio
- Use WAP browser to display the message
- Much bigger payload than SMS
- Problems:
 - Displaying on different phone (content adaption)
 - Access to MMSC from provider

USSD (Unstructured Supplementary Services Data)

- Short, user-initiated responses (pull)
- Option Menu for Movistar: *515#
- USSD supported in all GSM phones
- New standards support push messages
 - Balance Transfer
 - M-Pesa
 - Instant messaging
- USSD is not SMS!

SMS Premium Services with Operator Agreement

- Examples: Ringtones, digital content, state updates
- Value-added Service Provider (VASP) has agreement with operator
- Extra charges are added to SMS to/from VASP
- VASP and operator share extra charge
- Revenue share or fixed transport fee
- Short codes
- Messages transported between operator and VASP via Internet
- VASP uses Gateway software

SMS-based Service

- Interaction with service via SMS's
- Types of services:
 - Information push: breaking news, emergency info
 - Interactive: weather given zipcode, voting system, twitter, facebook status update, etc.
- For interactive: a protocol must be defined
 - Ex: send “weather 02319” to 01234

Mobile Web

- Internet on your phone
- Simplified UI for smaller screens
- Many generations of mobile web
 - Started as simple list of links
 - Now, full-featured websites - m.facebook.com

Local Apps

- Application made specifically for your mobile OS platform
- Feature Rich, Interactive applications

Android



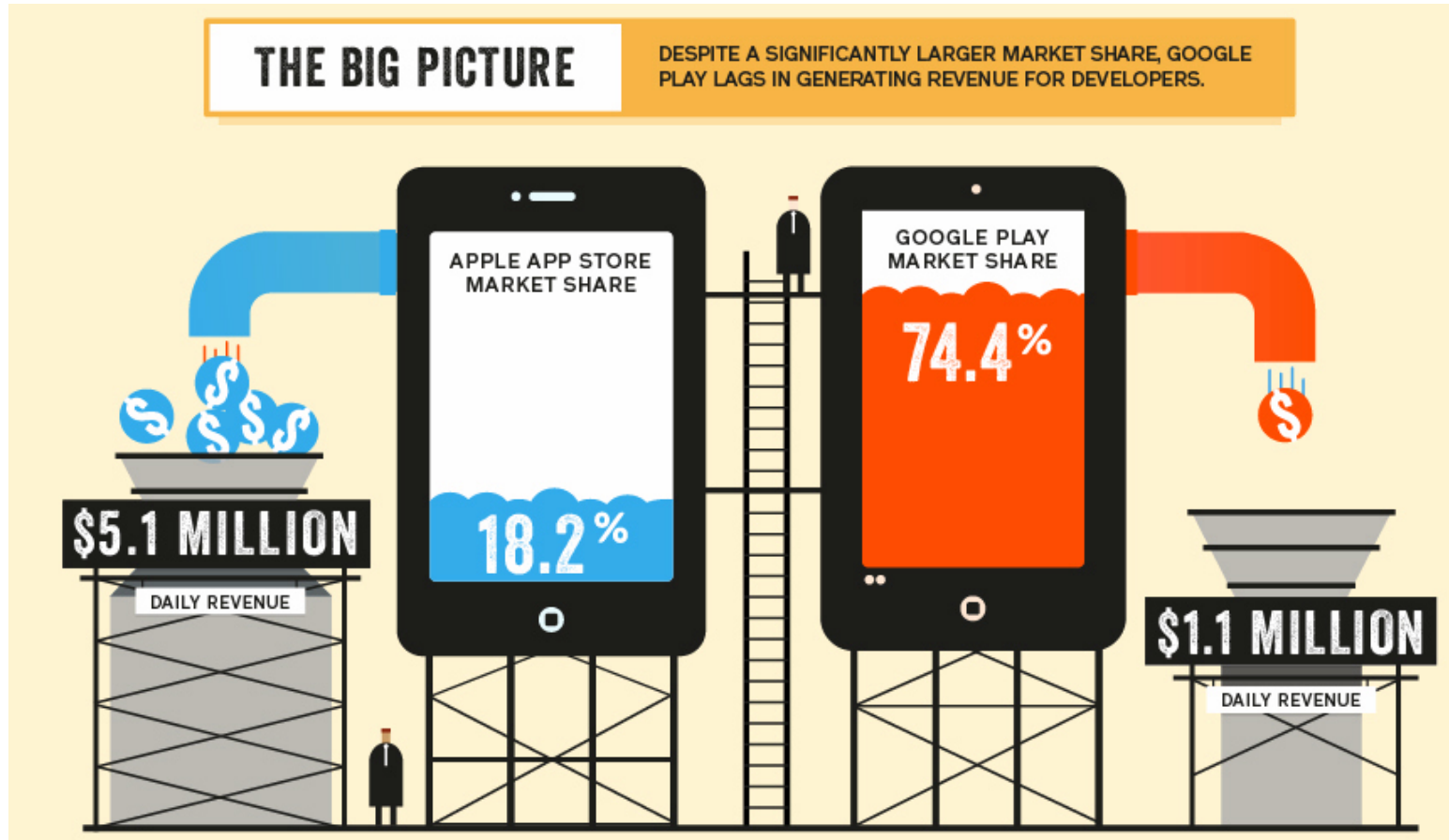
- ❖ Apps are in Java language
- ❖ Operating System: multi-user Linux
- ❖ App Building blocks: components (see reference)
- ❖ Adaptive framework: apps adapt to different devices
- ❖ Google Play Store
- ❖ Reference: <http://developer.android.com/guide/index.html>

iOS



- ❖ Objective-C language and iOS frameworks
- ❖ Consistent across devices, with minor UI differences
- ❖ X Code development environment
- ❖ iTunes App Store
- ❖ Curated app distribution
 - Apple's app store examines and approves apps first
- ❖ Reference: <https://developer.apple.com/>

iTunes App Store vs Google Play

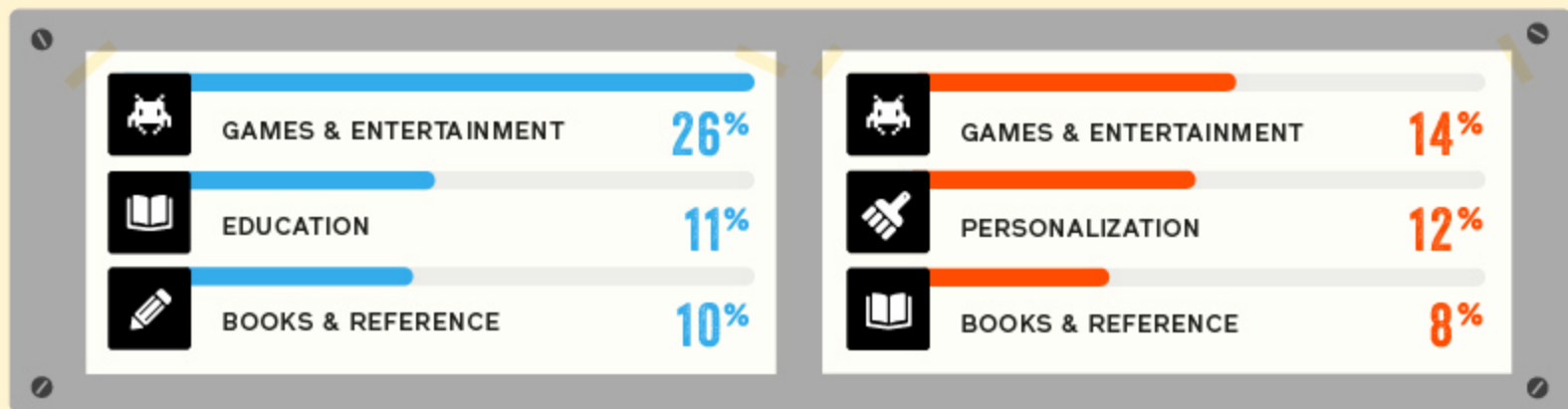


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iTunes App Store vs Google Play

CATEGORY BY CATEGORY

ANDROID'S OPEN AND CUSTOMIZABLE PLATFORM HAS TRIGGERED A SIZEABLE CATEGORY OF PERSONALIZATION APPS.

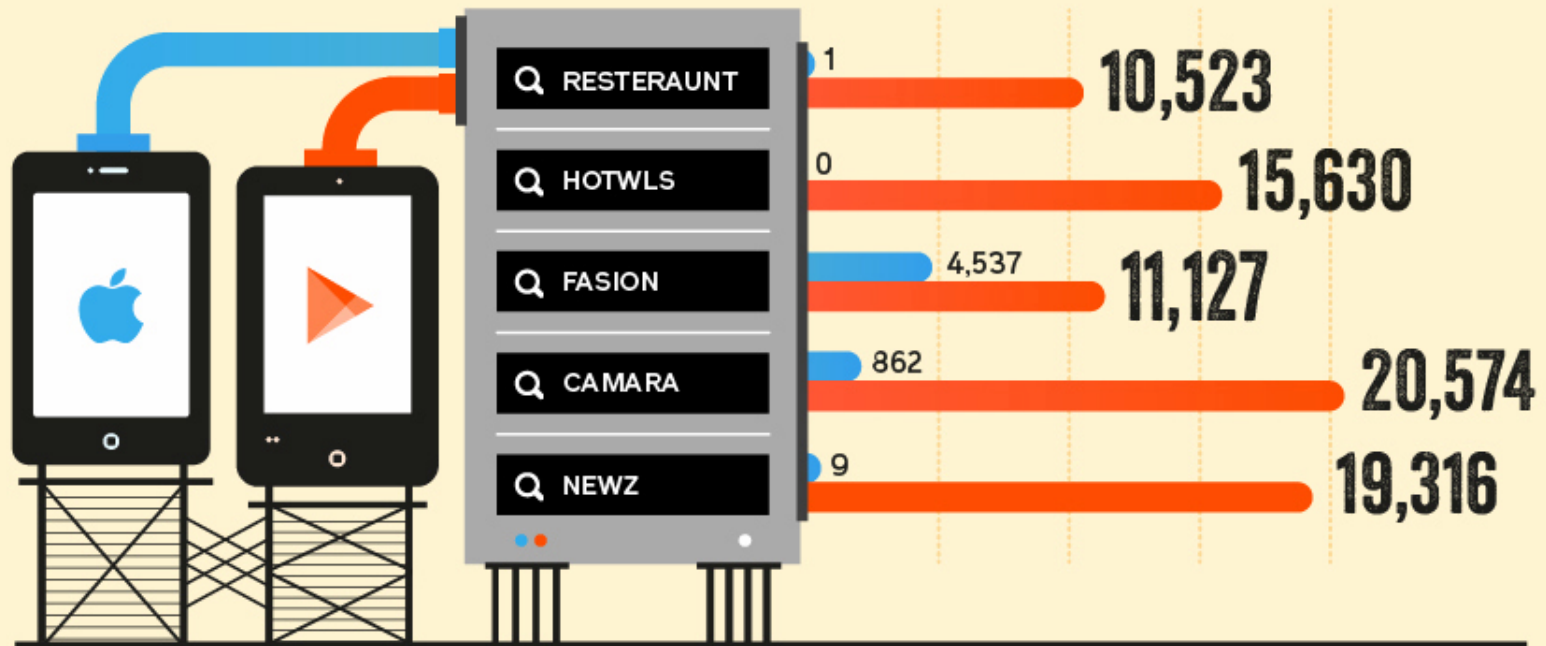


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iTunes App Store vs Google Play

APP DISCOVERY

GOOGLE PLAY'S SUPERIOR SEARCH FUNCTION MAKES IT EASIER TO FIND APPS — EVEN WITH A KEYWORD MISPELLED.

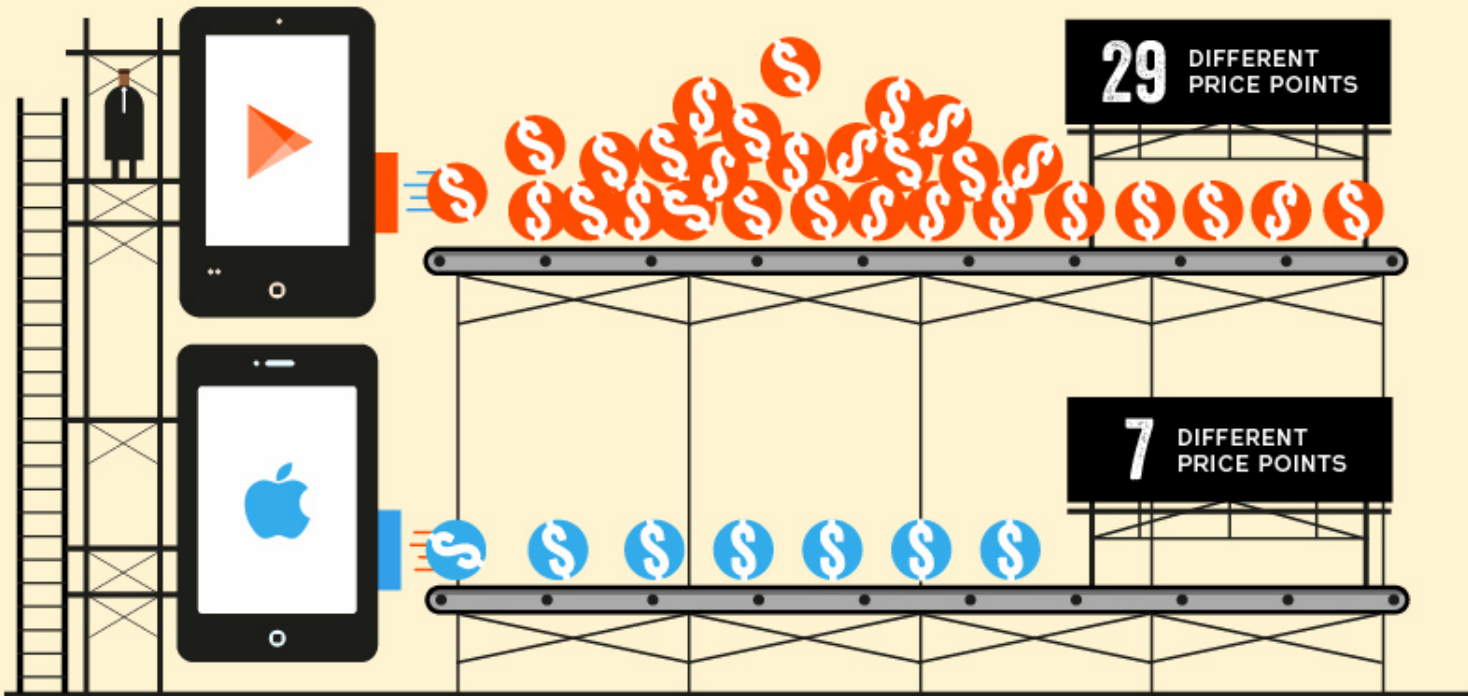


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iTunes App Store vs Google Play

PRICE POINT DISTRIBUTION

GOOGLE PLAY'S PRICING MODEL ALLOWS FOR A LARGER NUMBER OF PRICE POINTS (FROM TOP 100 APPS AS OF 7/9/2013).

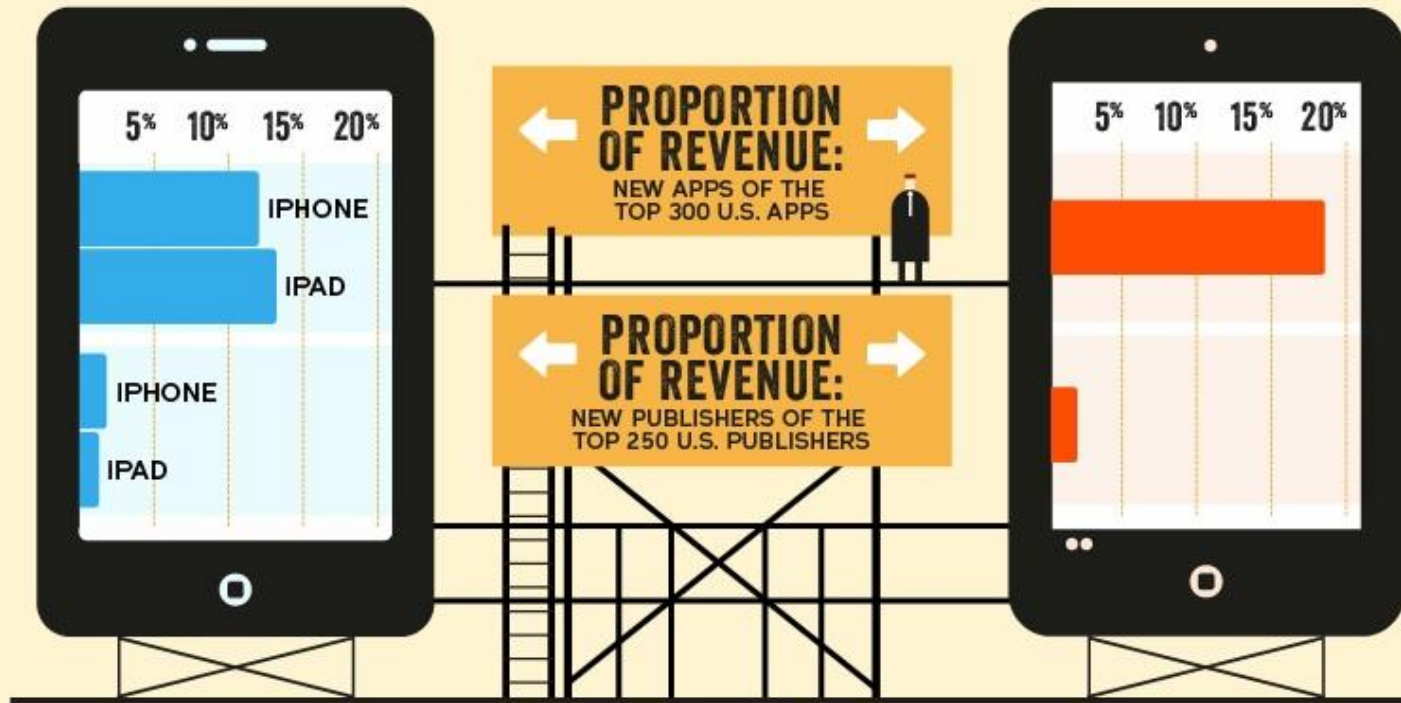


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iTunes App Store vs Google Play

NEWCOMERS AND REVENUE

THE PERCENTAGE OF REVENUE GENERATED BY NEW ANDROID APPS SUGGESTS GOOGLE PLAY MAY SOON CLOSE THE REVENUE GAP WITH THE APP STORE.



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Technology Tradeoff

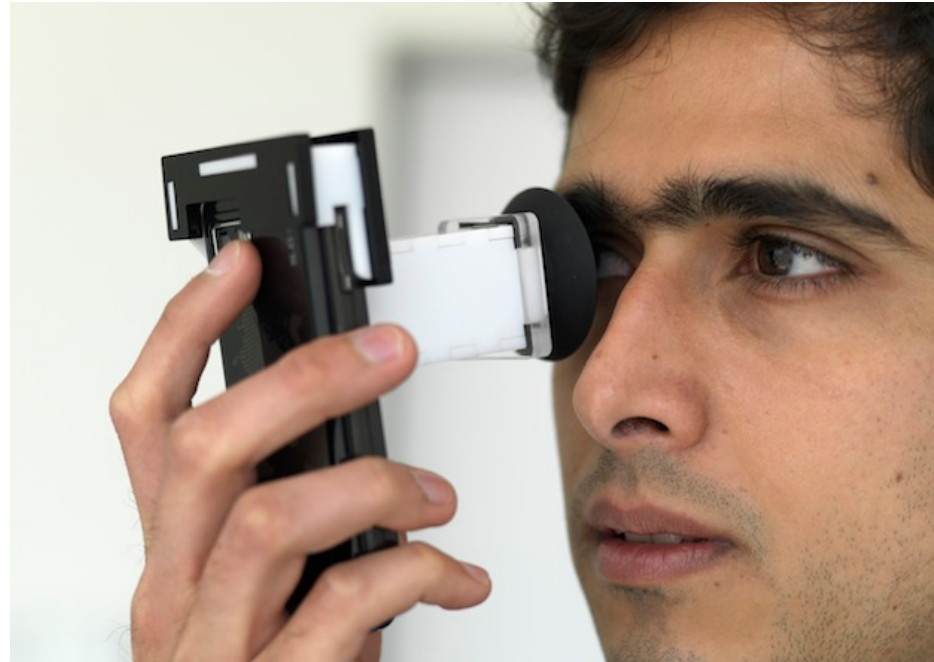
	SMS/USSD Application	Mobile Web	Local Application
Installed Base	Everyone	Mostly Everyone	Many and growing
Portability	Best	Different Flavors (screen size)	Phone Specific /Platform specific
Bandwidth Req.	Low	High (nothing local)	Variable (local interaction /cache locally)
User Interface / User Experience	Simple	Adequate	Rich & Responsive
Advanced Features	None	Few	Yes!
Deployment	VASP	Web	Platform based Application Store

What's possible?



EyeNetra

- \$1 plastic lens attachment
- Measure eye glass prescription
- MIT spinout



Square

Mobile Register

- Disruptive payment system
- Credit Card payment any place any time



Wise-Pet

Smartphone powered educational toy

- Educational Features
 - bed time stories
 - video educational lessons
- 5 different pets with different personalities



Keeping up with technology

Knowledge is power!

- Read up!
 - slashdot.org, gizmodo.com
 - MIT Technology Review, Harvard Business Review
 - Inc, Fast Company
- Join clubs, online forums
 - IEEE, ACM, Peruvian Linux User Groups