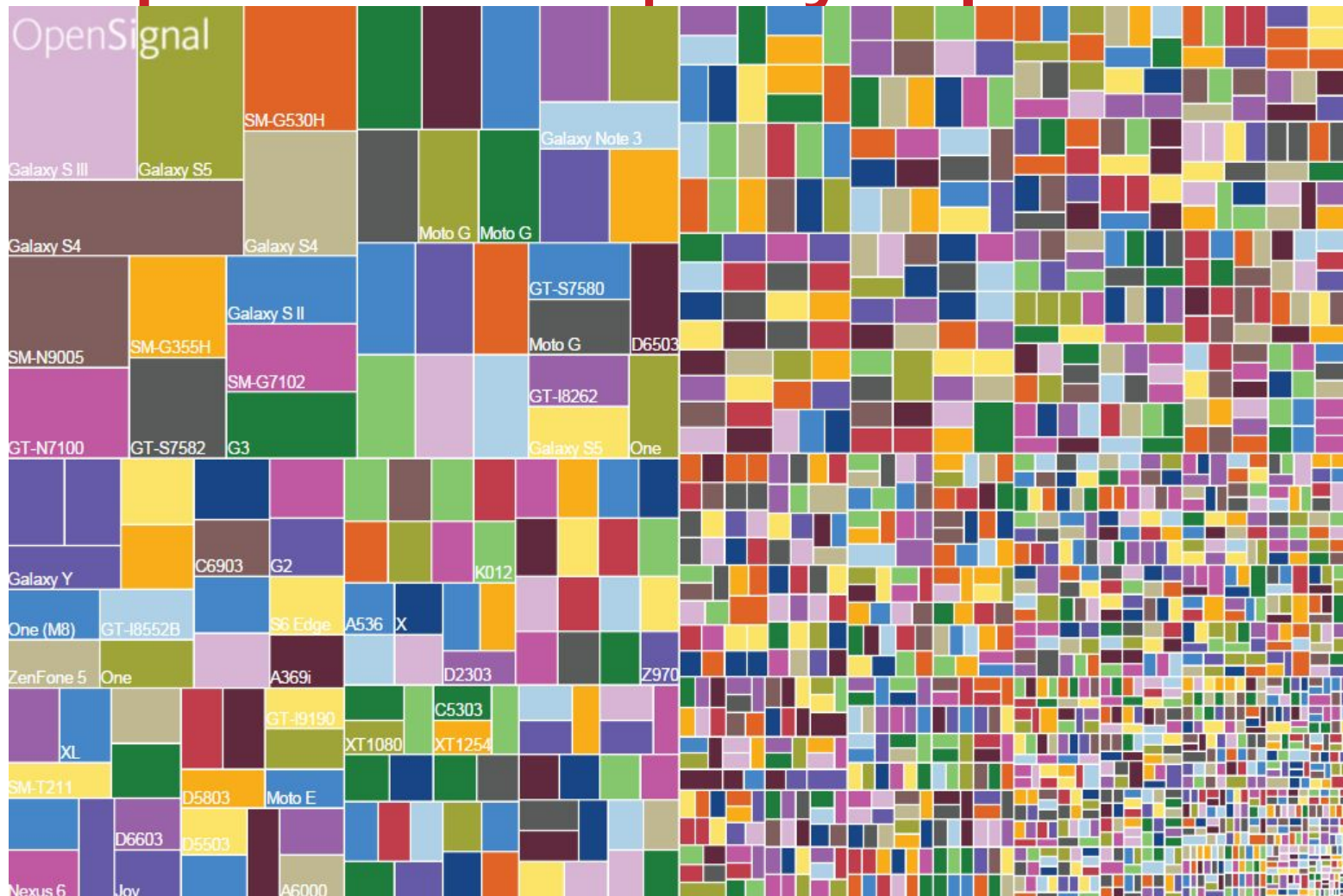


Как определить покрытие?

- Тип устройства
- Разрешение/размер экрана
- Популярность бренда/модели
- ОС

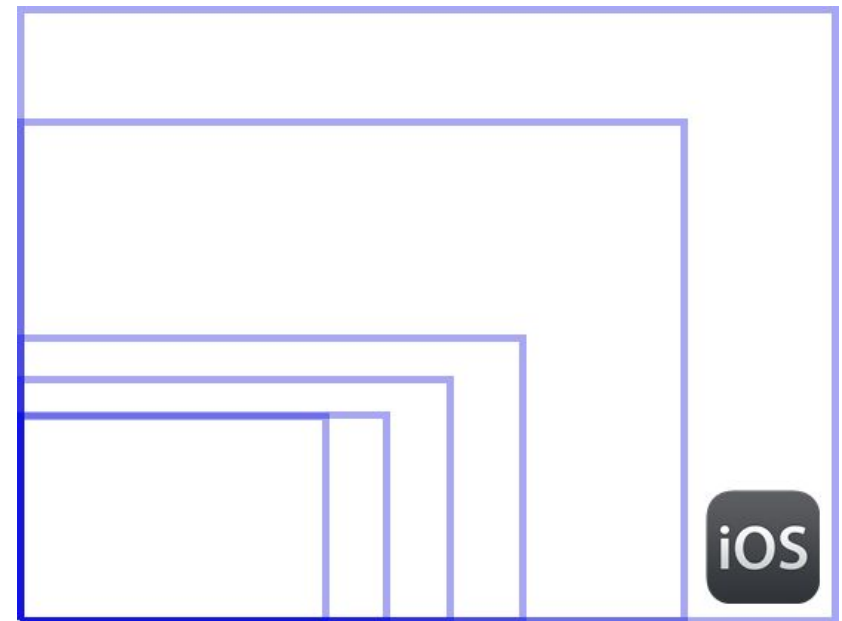
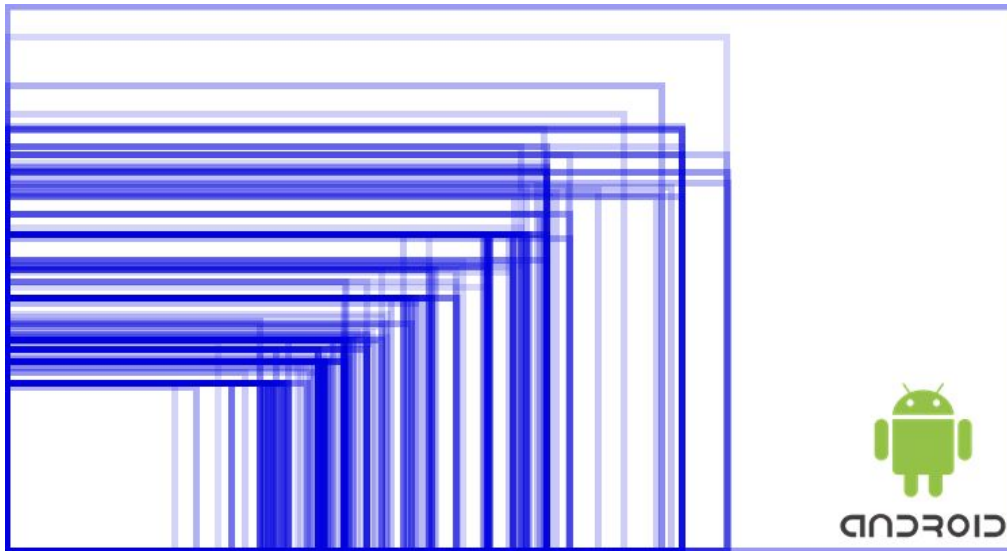
Фрагментация устройств



Размеры экранов

Android

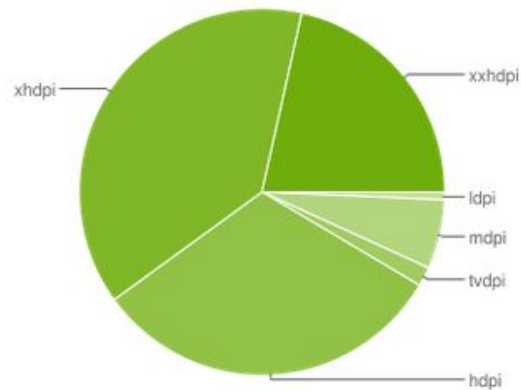
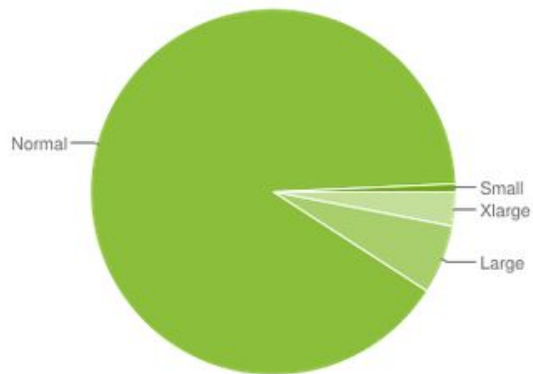
iOS



Размеры экранов

Android

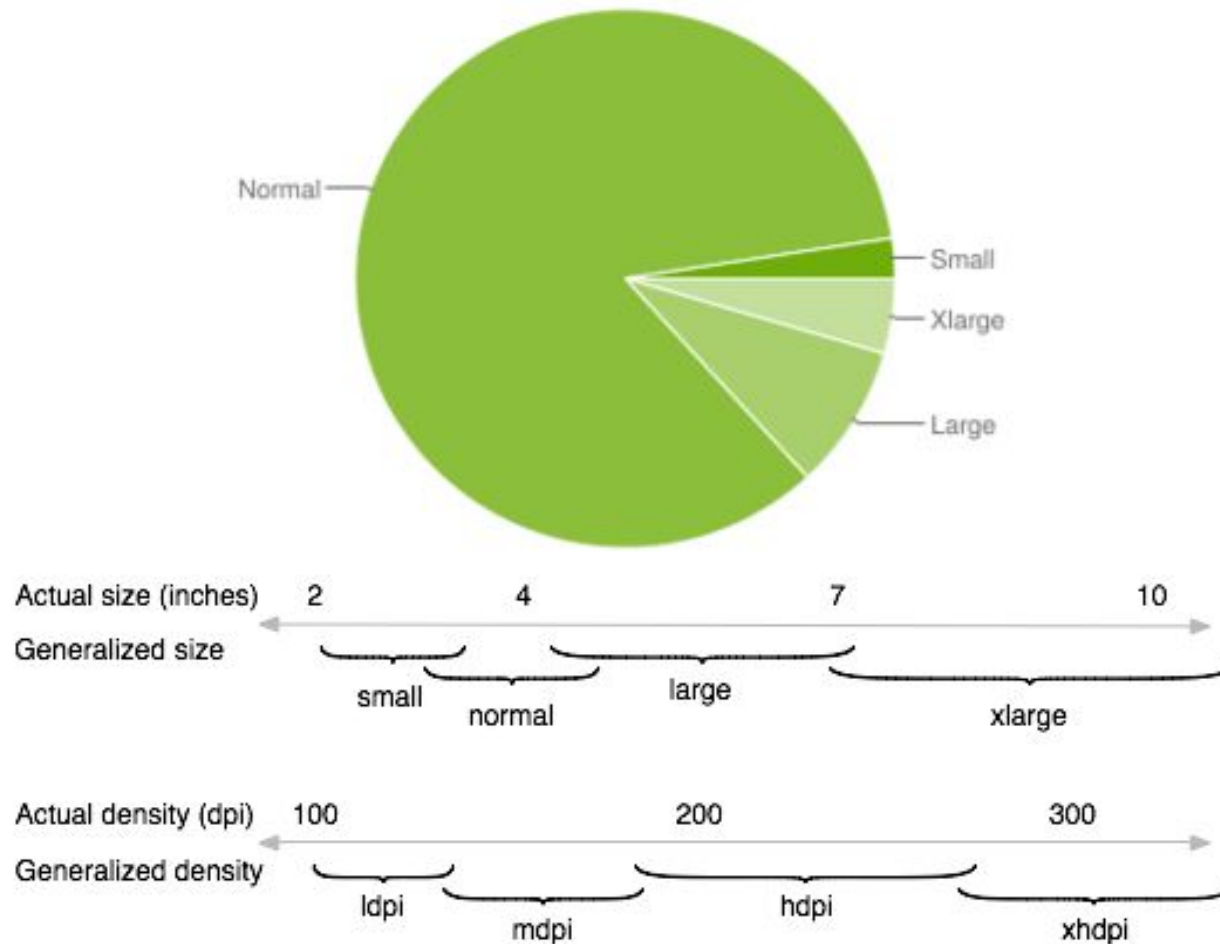
	ldpi	mdpi	tvdpi	hdpi	xhdpi	xxhdpi	Total
Small	0.6%					0.1%	0.7%
Normal		1.4%	0.2%	30.5%	37.1%	21.0%	90.2%
Large	0.1%	2.7%	1.5%	0.5%	0.9%	0.4%	6.1%
Xlarge		2.0%		0.5%	0.5%		3.0%
Total	0.7%	6.1%	1.7%	31.5%	38.5%	21.5%	



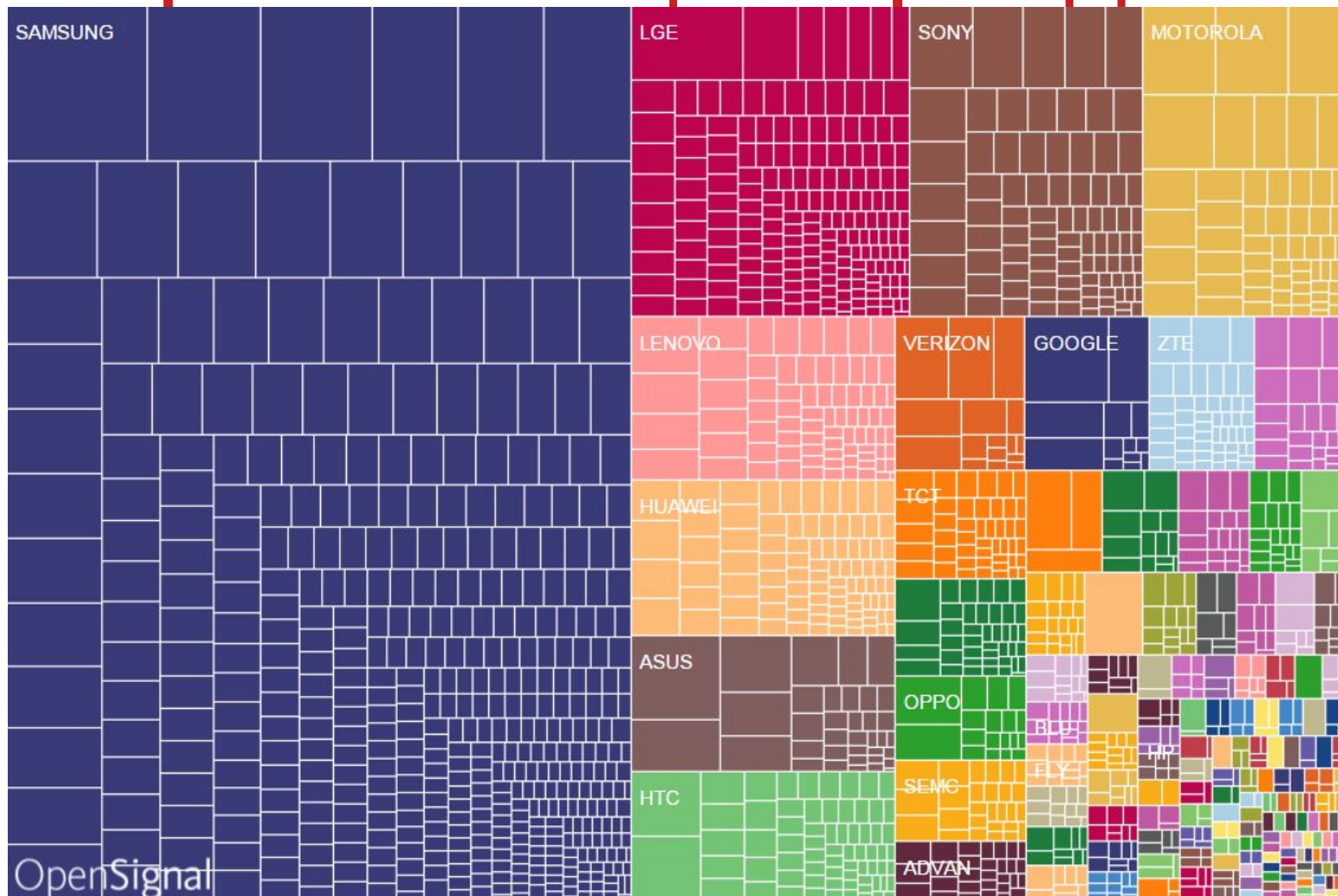
Data collected during a 7-day period ending on November 9, 2017.

Any screen configurations with less than 0.1% distribution are not shown.

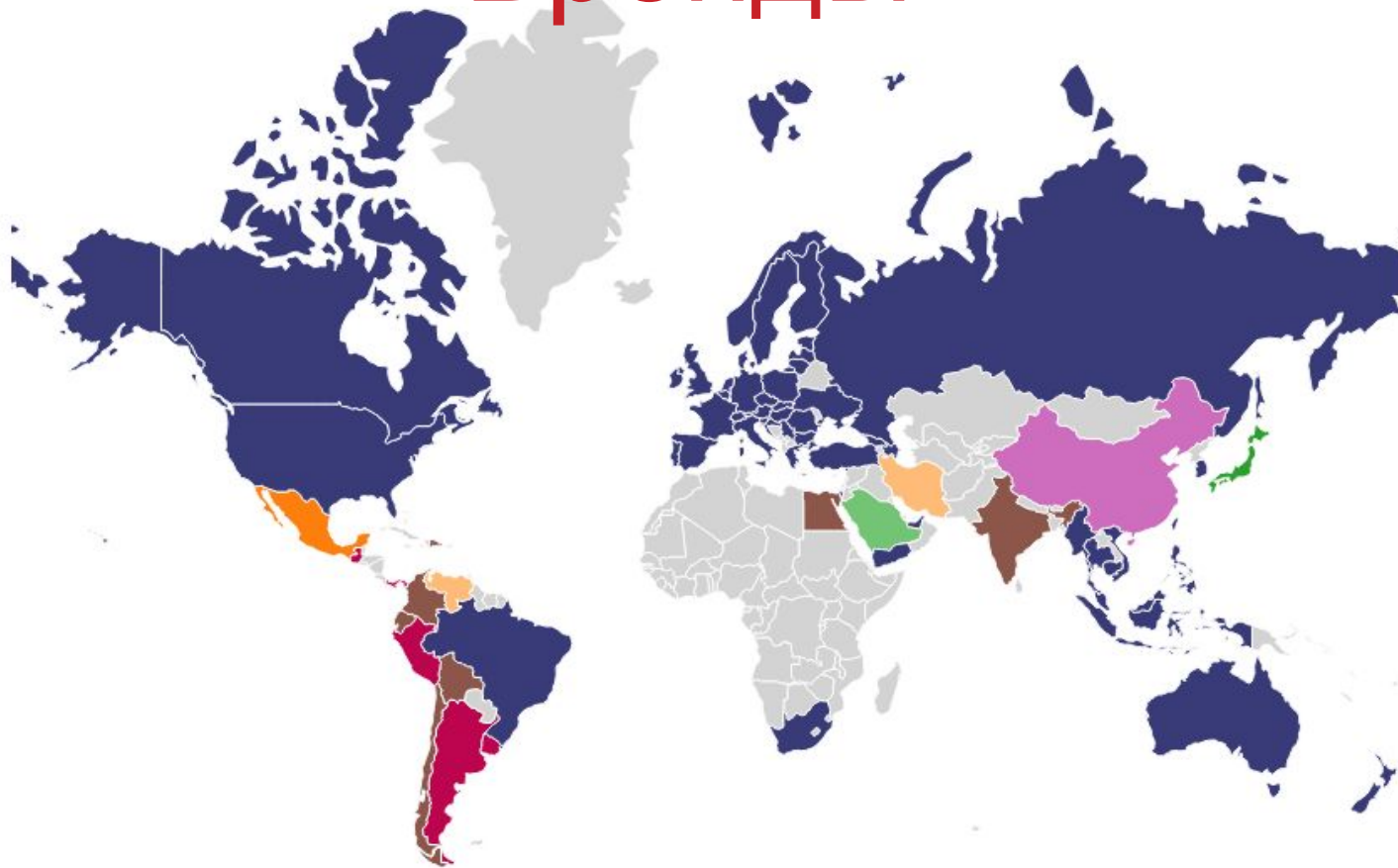
Android Screen Size



Фрагментация брендов



Бренды

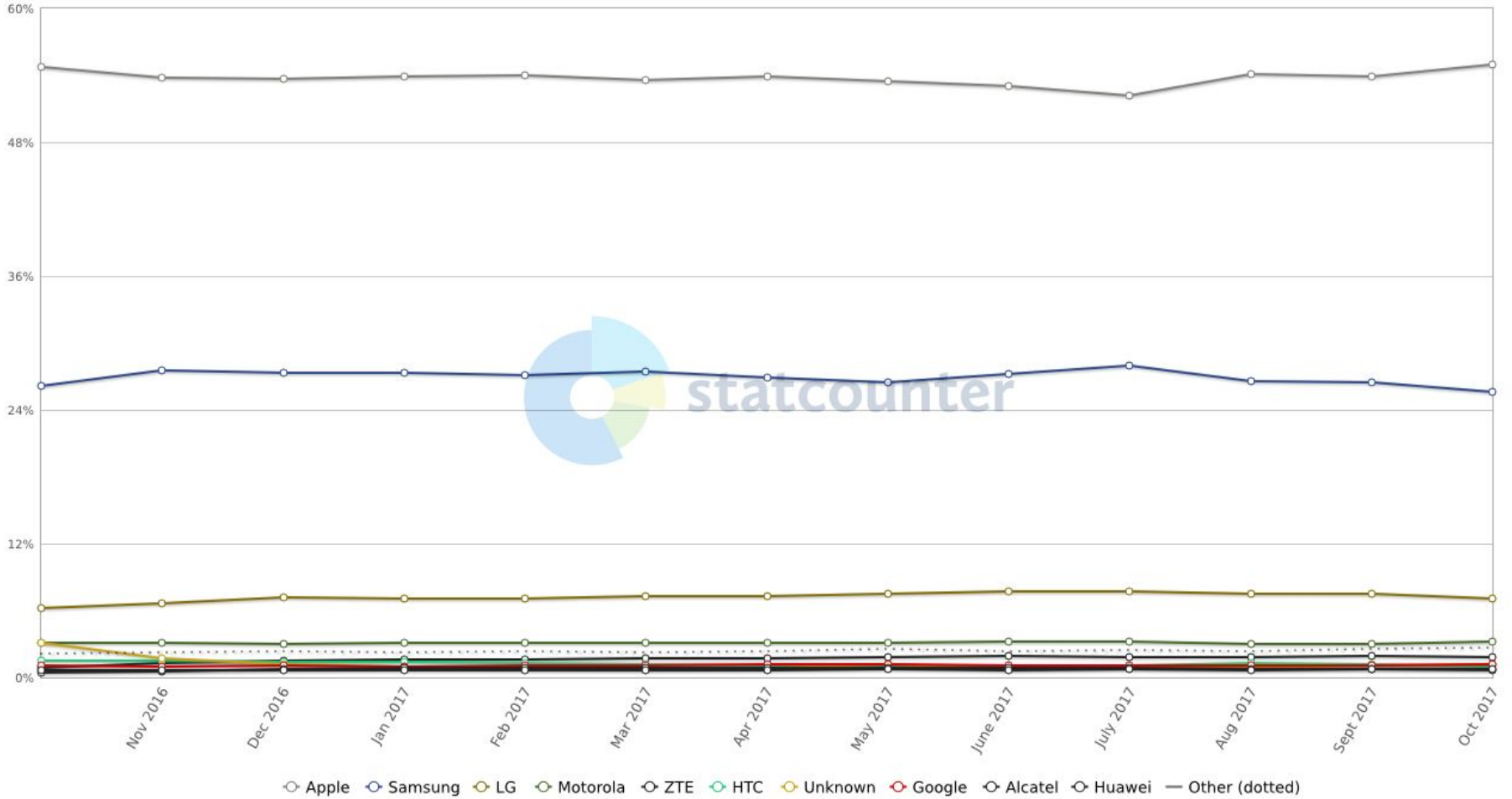


Legend for mobile phone brands:

- No data
- HTC
- TCT
- Docomo
- Huawei
- Xiaomi
- Sony
- LG
- Samsung

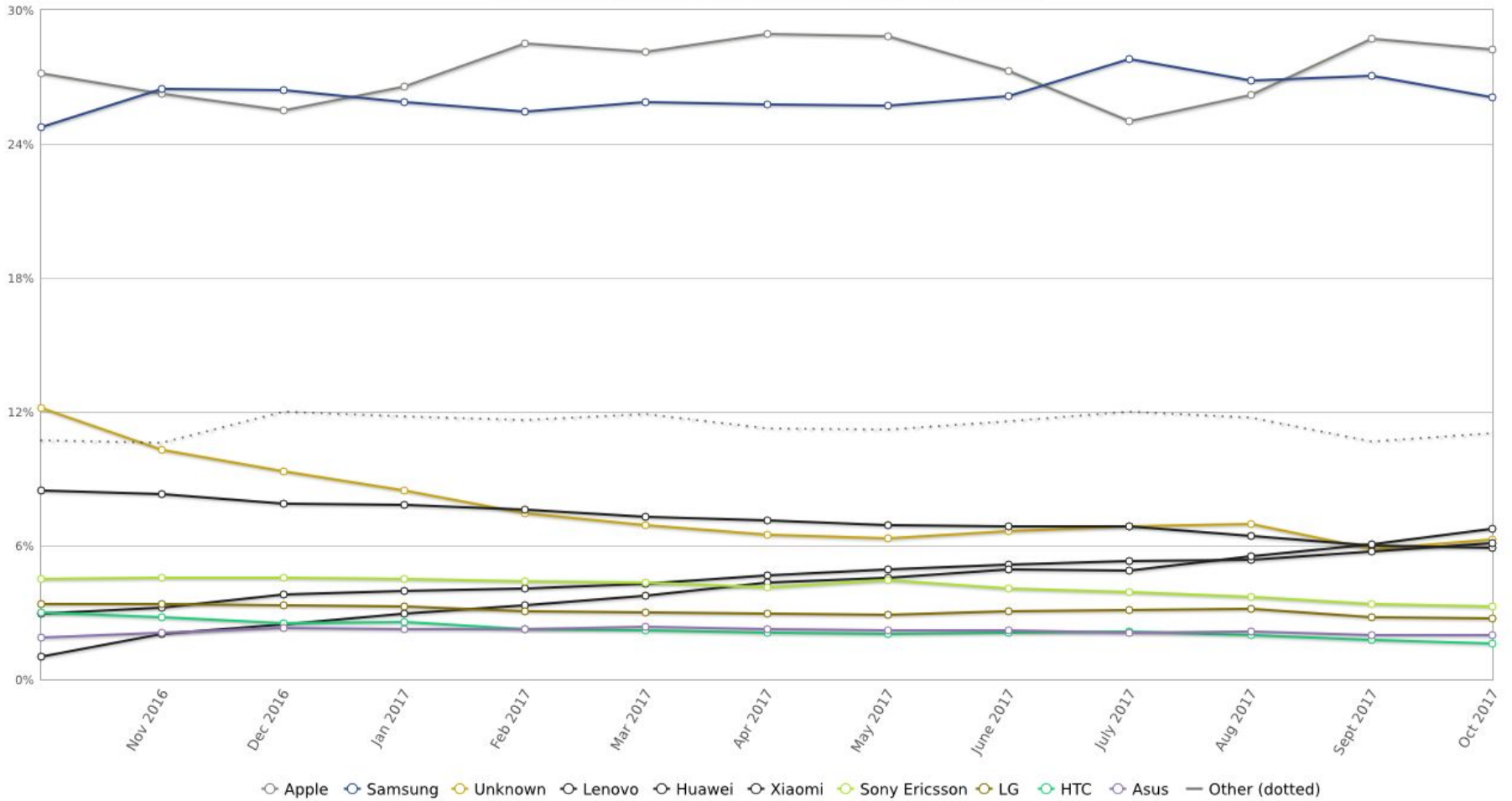
USA

StatCounter Global Stats
Mobile Vendor Market Share United States Of America from Oct 2016 - Oct 2017



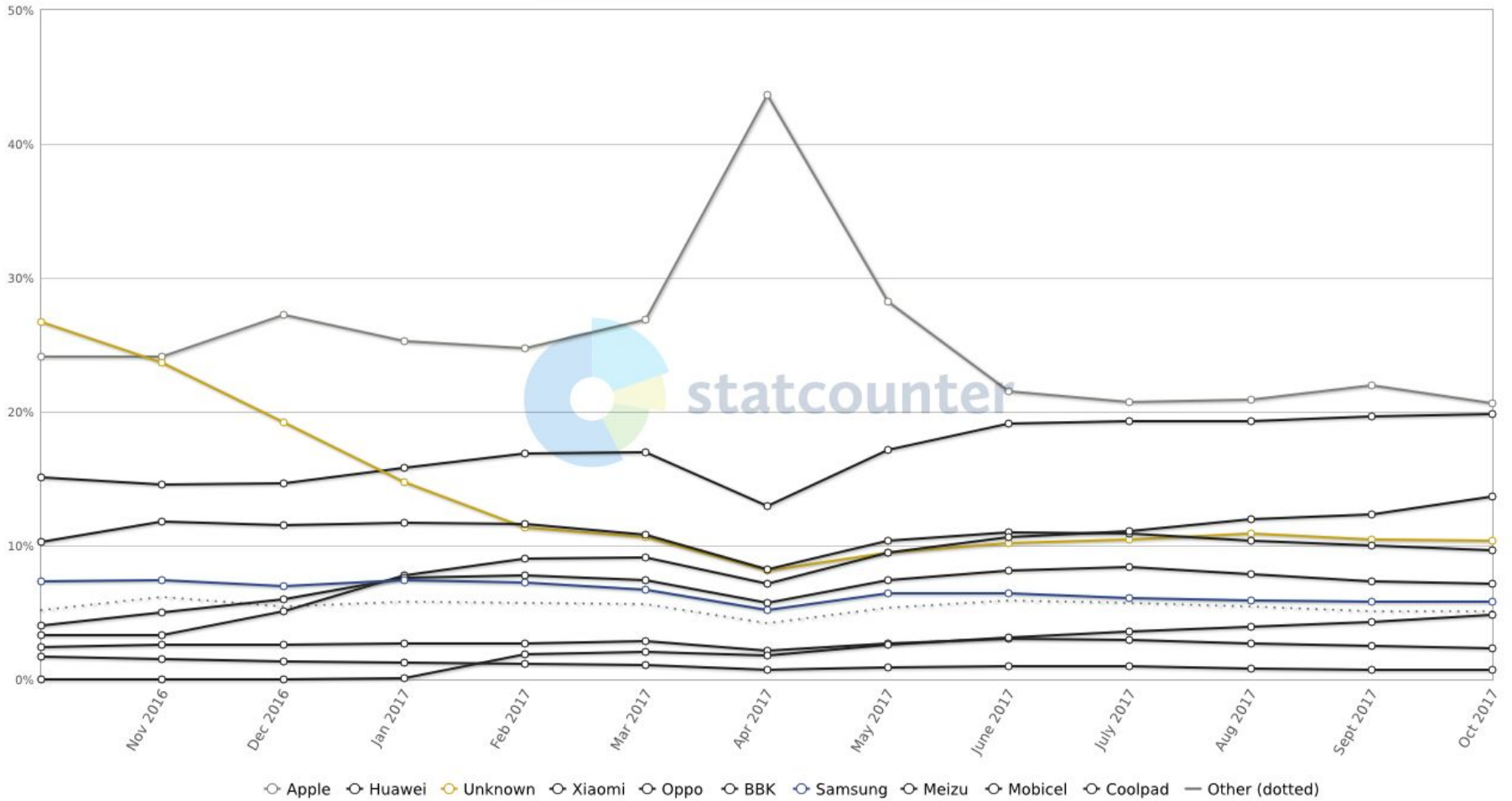
Russia

StatCounter Global Stats
Mobile Vendor Market Share Russian Federation from Oct 2016 - Oct 2017



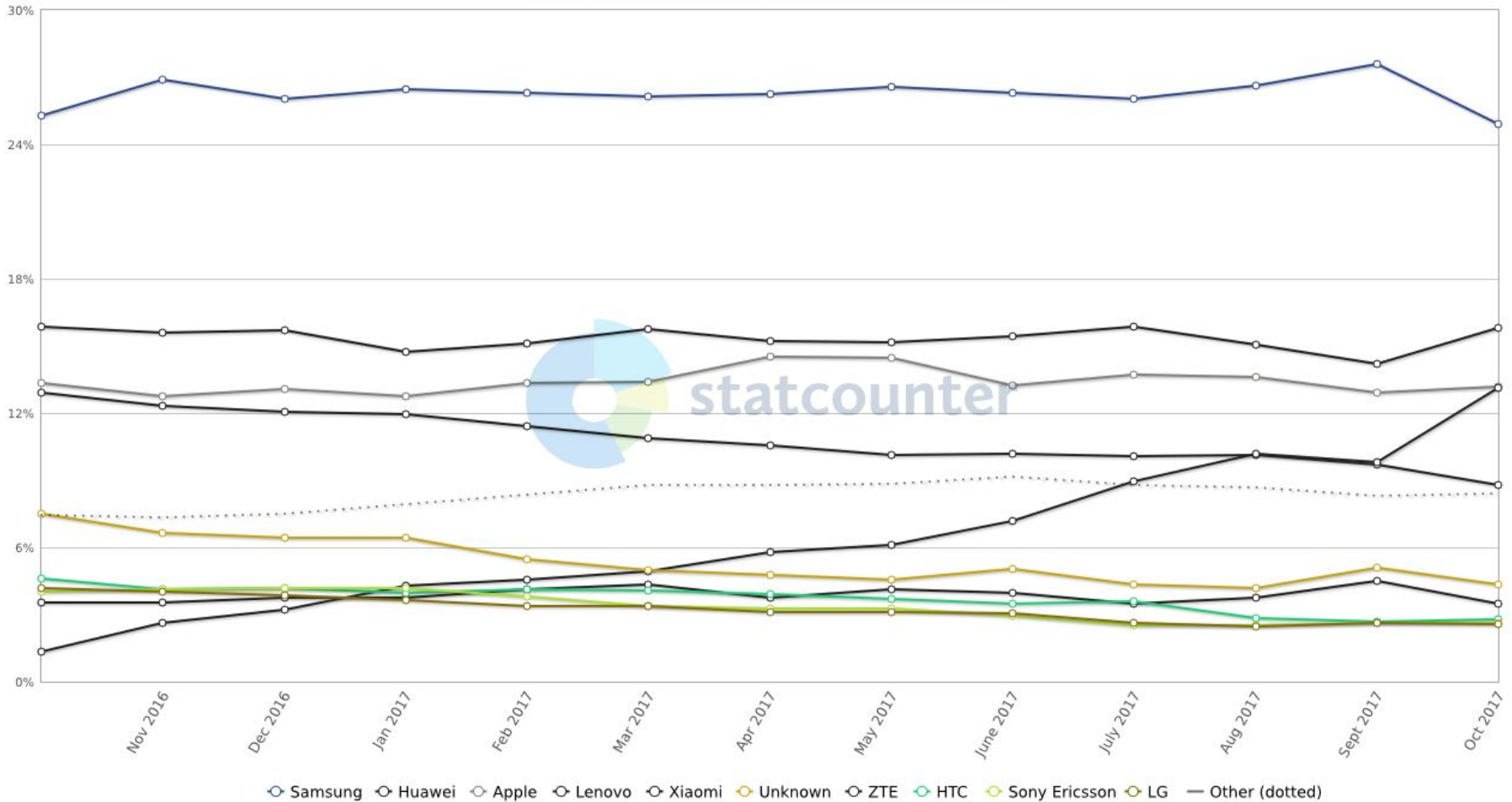
China

StatCounter Global Stats
Mobile Vendor Market Share China from Oct 2016 - Oct 2017



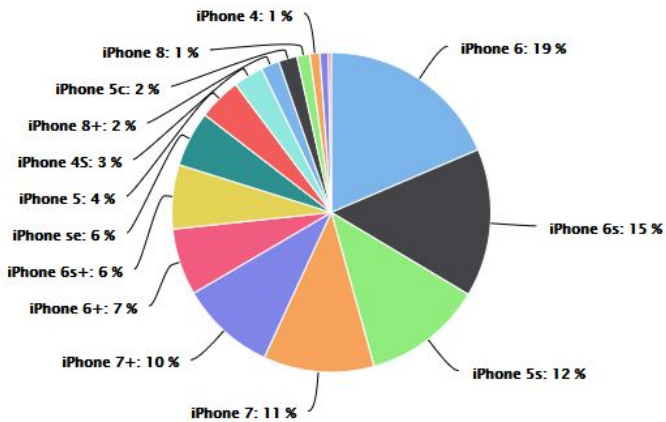
Belarus

StatCounter Global Stats
Mobile Vendor Market Share Belarus from Oct 2016 - Oct 2017



Apple

iPhone Breakdown

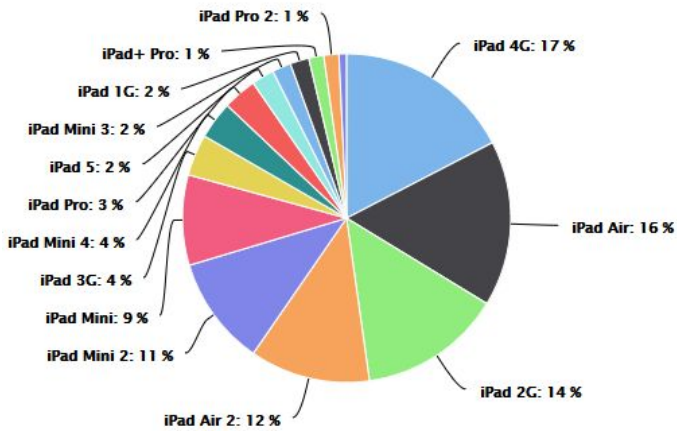


iPhone Breakdown (sorted by Usage)

Device	Device Usage	iOS breakdown							
		11.X	10.X	9.X	8.X	7.X	6.X	5.X	4.X
iPhone 6	18.5%	68.7%	30.9%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%
iPhone 6s	15.0%	76.7%	22.2%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%
iPhone 5s	12.1%	50.6%	46.9%	2.1%	0.5%	0.0%	0.0%	0.0%	0.0%
iPhone 7	11.2%	84.0%	16.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
iPhone 7+	9.7%	87.1%	12.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
iPhone 6+	6.8%	79.1%	19.9%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%
iPhone 6s+	6.4%	91.9%	7.4%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%
iPhone se	5.6%	78.8%	20.8%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%
iPhone 5	4.4%	0.0%	91.3%	2.3%	2.9%	3.5%	0.0%	0.0%	0.0%
iPhone 4S	3.0%	0.0%	0.0%	87.7%	5.0%	4.3%	0.0%	2.9%	0.0%
iPhone 8+	1.9%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
iPhone 5c	1.9%	0.0%	84.1%	2.1%	0.0%	13.8%	0.0%	0.0%	0.0%
iPhone 8	1.3%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
iPhone 4	1.0%	0.0%	0.0%	0.0%	0.0%	64.8%	34.7%	0.0%	0.5%
iPhone X	0.9%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
iPhone 3GS	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	99.5%	0.0%	0.5%
Overall		68.0%	26.3%	3.4%	0.4%	1.2%	0.7%	0.1%	0.0%

Apple

iPad Breakdown



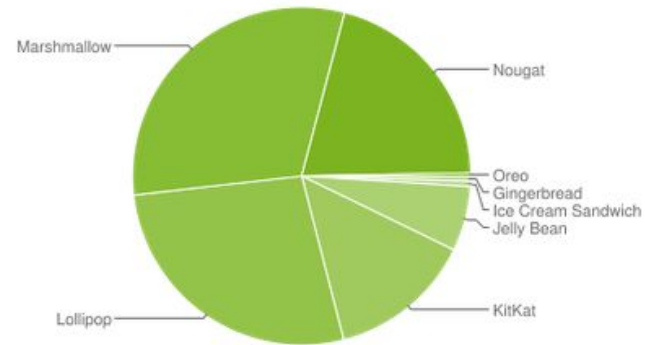
iPad Breakdown (sorted by Usage)

Device	Device Usage	iOS breakdown							
		11.X	10.X	9.X	8.X	7.X	6.X	5.X	4.X
iPad 4G	17.5%	0.0%	91.7%	0.0%	0.5%	7.8%	0.0%	0.0%	0.0%
iPad Air	16.3%	50.0%	42.9%	1.2%	5.9%	0.0%	0.0%	0.0%	0.0%
iPad 2G	14.0%	0.0%	0.0%	95.2%	2.3%	2.0%	0.2%	0.4%	0.0%
iPad Air 2	12.0%	63.2%	27.7%	1.5%	7.6%	0.0%	0.0%	0.0%	0.0%
iPad Mini 2	10.7%	76.4%	20.5%	3.0%	0.0%	0.0%	0.0%	0.0%	0.0%
iPad Mini	8.7%	0.0%	0.0%	89.7%	5.1%	5.2%	0.0%	0.0%	0.0%
iPad 3G	4.2%	0.0%	0.0%	97.6%	2.0%	0.4%	0.0%	0.0%	0.0%
iPad Mini 4	3.7%	52.2%	22.7%	25.1%	0.0%	0.0%	0.0%	0.0%	0.0%
iPad Pro	3.2%	87.5%	12.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
iPad 5	2.3%	75.7%	24.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
iPad Mini 3	1.7%	45.2%	54.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
iPad 1G	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
iPad+ Pro	1.6%	74.9%	25.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
iPad Pro 2	1.5%	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
iPad+ Pro 2	0.7%	93.8%	6.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Overall		34.6%	31.8%	26.9%	2.8%	2.1%	0.0%	1.8%	0.0%

OS Android

Текущая дата

Version	Codename	API	Distribution
2.3.3 - 2.3.7	Gingerbread	10	0.5%
4.0.3 - 4.0.4	Ice Cream Sandwich	15	0.5%
4.1.x	Jelly Bean	16	2.2%
4.2.x		17	3.1%
4.3		18	0.9%
4.4	KitKat	19	13.8%
5.0	Lollipop	21	6.4%
5.1		22	20.8%
6.0	Marshmallow	23	30.9%
7.0	Nougat	24	17.6%
7.1		25	3.0%
8.0	Oreo	26	0.3%

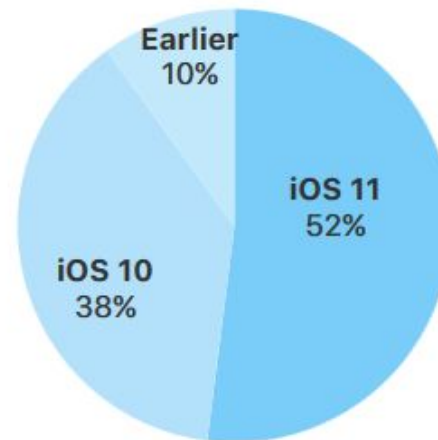


Data collected during a 7-day period ending on November 9, 2017.

Any versions with less than 0.1% distribution are not shown.

iOS

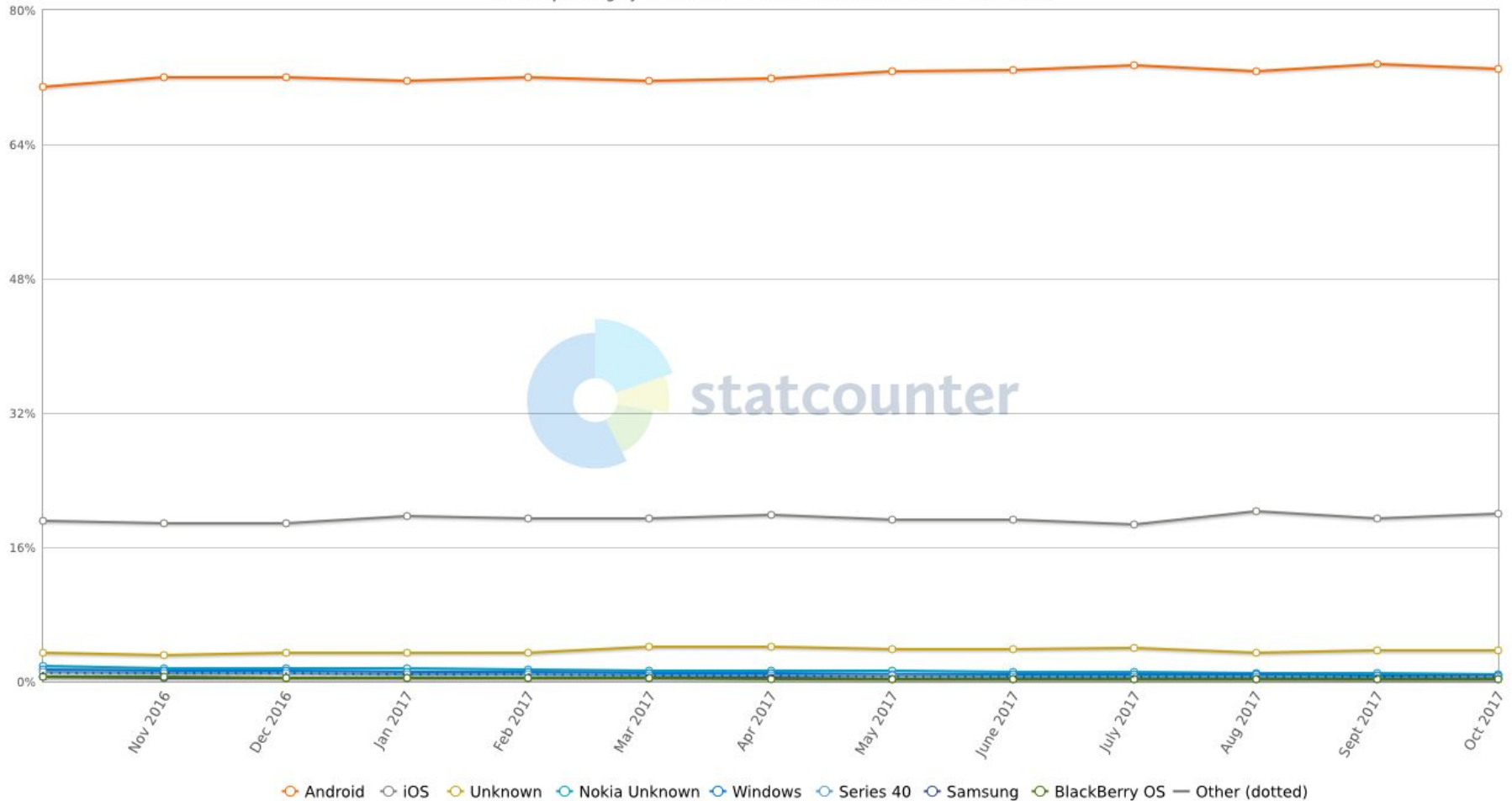
52% of devices are using iOS 11.



As measured by the App Store on November 6, 2017.

Mobile Operating Systems

StatCounter Global Stats
Mobile Operating System Market Share Worldwide from Oct 2016 - Oct 2017



Тест план

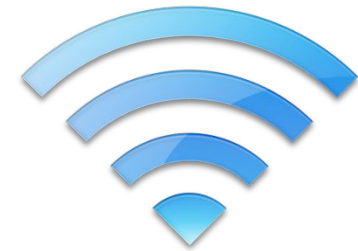
- Сервисы гео позиционирования
- Интеграция с сервисами
- Связь
- Системные прерывания и нотификации
- Время (батарея)
- Анализ обратной связи

Основные тесты

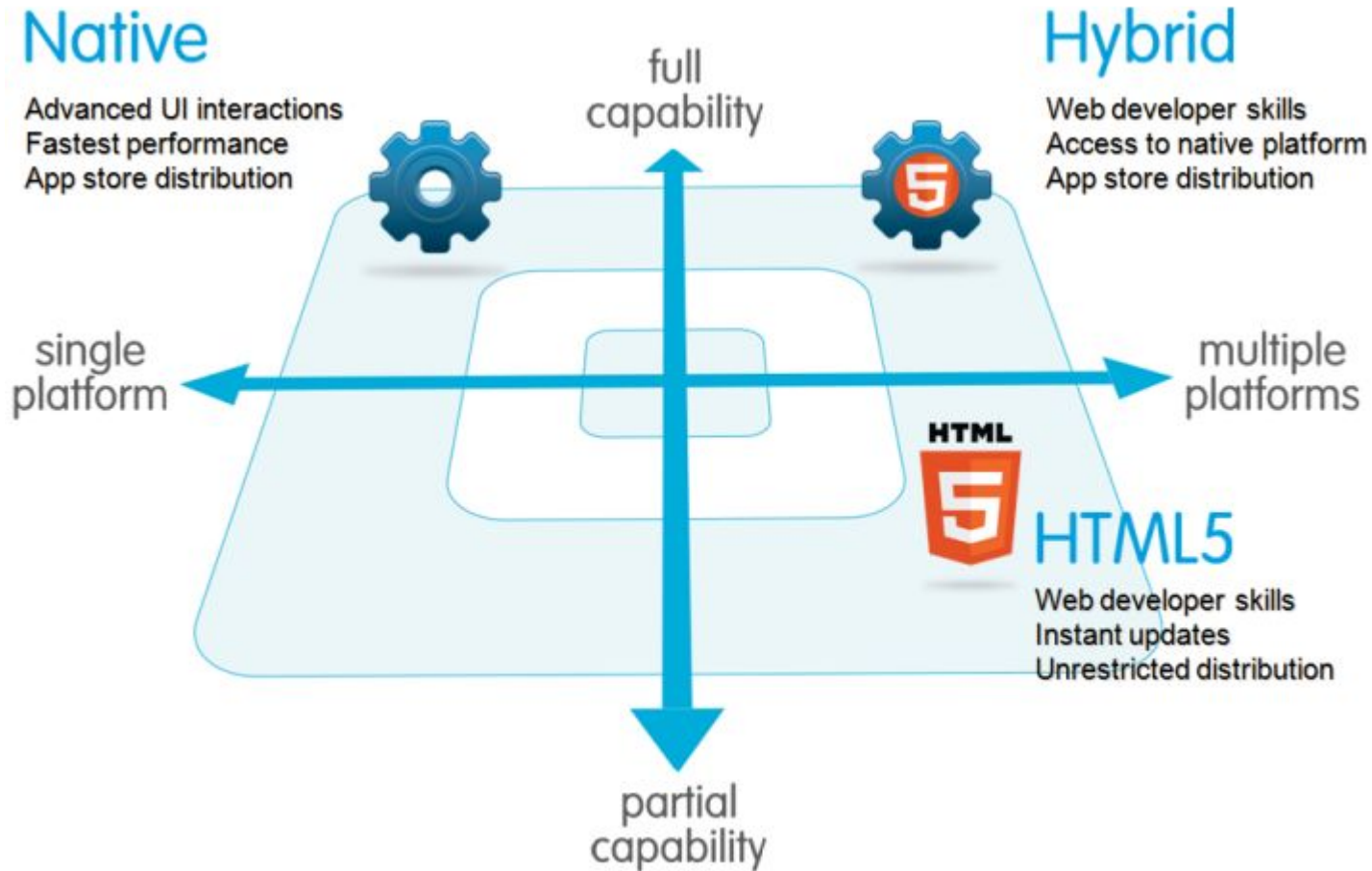
- Изменение ориентации экрана
- Изменения конфигурации устройства (клавиатура, язык, ...)
- Ресурсы батареи
- Зависимость от внешних ресурсов (сеть, SMS, Bluetooth)

Сетевые подключения

- 2G 3G 4G
- WiFi
- Airplane mode
- Personal Hotspot



Типы мобильных приложений



Нативные приложения

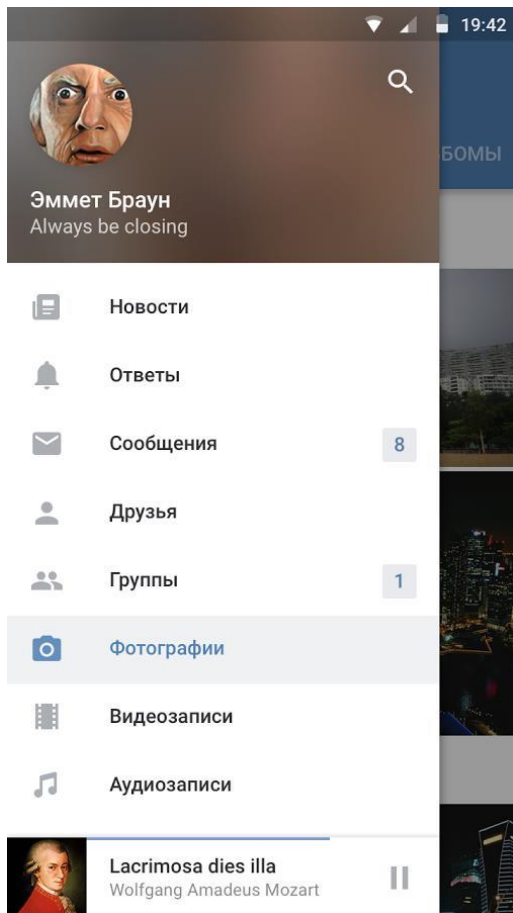
Преимущества

- Макс. функциональность и скорость работы
- Не требуется интернет-соединение для использования
- Доступ к API смартфона (GPS, Камера, Календарь, Контакты)
- Распространение через магазины приложений (Google Play, App Store)

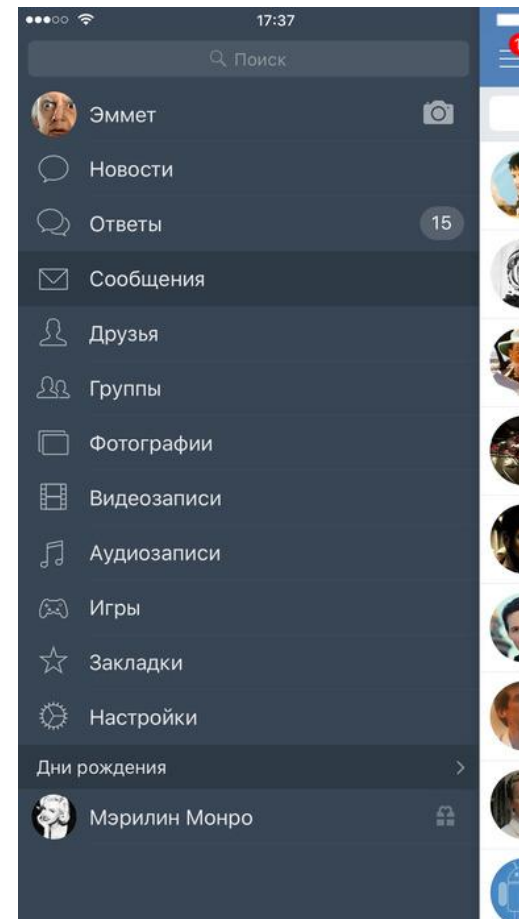
Недостатки

- Выше стоимость и дольше сроки разработки
- Работает только с одной платформой
- При косметических изменениях необходимо выпускать обновление

Нативные приложения



Android



iOS

Web-приложения (HTML5)

Преимущества

- Кроссплатформенность
- Не требует загрузки из магазина мобильных приложений
- Изменения сразу доставляются на все платформы
- Простота создания и поддержки

Недостатки

- Требуется подключения к интернету
- Не имеет доступа к API смартфона
- Не может отправлять push-уведомления
- Невозможность использования некоторые жесты взаимодействия

Web-приложения (HTML5)



English (US)
Frysk
Türkçe
Português (Brasil)

Nederlands
Polski
Español
+

Facebook ©2016



Android



English (US)
Frysk
Türkçe
Português (Brasil)

Nederlands
Polski
Español
+

Facebook ©2016



iOS

Гибридные приложения

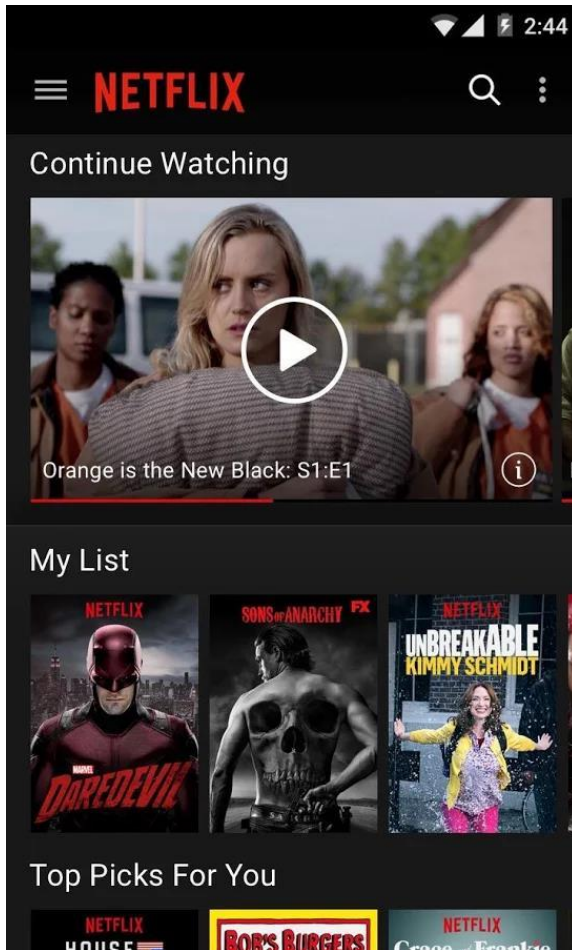
Преимущества

- Функциональность нативного приложения - API (Камера, Контакты, Календарь и пр.) на независимой платформе (HTML5)
- Запускается не из браузера в отличии от web-приложений
- Распространение через магазины приложений (Google Play, App Store)

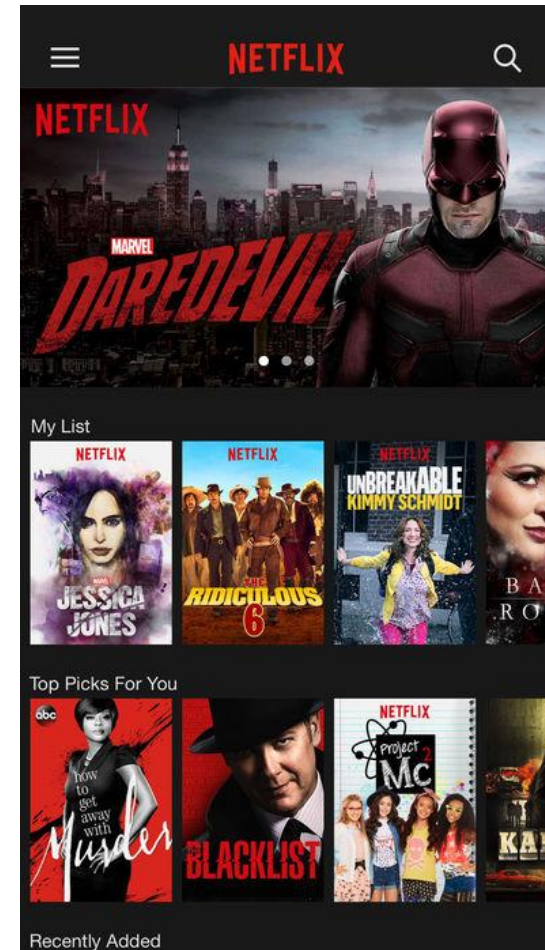
Недостатки

- Требует подключения к интернету для работы внутри приложения
- Необходимость соответствия требованиям магазинов приложений (Guidelines)

Гибридные приложения



Android



iOS

УТИЛИТЫ

SDK (Software development kit):

- DDMS (Dalvik Debug Monitor Server)
- ADB (Android Debug Bridge)

DDMS

The screenshot displays the Dalvik Debug Monitor (DDMS) interface. The top window shows a list of processes with columns for Name, PID, and TID. The bottom window shows a log of messages with columns for Level, Time, PID, TID, Application, Tag, and Text.

Name	PID	TID
samsung-gt_i9505-5d5997ae	Online	
com.mobeam.barcodeService	3707	
com.samsung.android.app.storyalbumwidget	1762	
com.google.android.gms	1641	
com.google.process.gapps	2036	
com.android.phone	1365	
com.vlingo.midas	4533	
com.google.process.location	1900	
com.sec.android.sviewcover	1109	
com.sec.knox.eventsmanager	1351	
com.sec.phone	2604	
com.sec.smartcard.manager	1892	
com.visionobjects.resourcemanager	1791	

Level	Time	PID	TID	Application	Tag	Text
E	10-24 06:53:17.807	2048	2098		MP-Decision	UP cpu:1 core_idx:1 Nw:
D	10-24 06:53:18.098	4828	4828	com.nuance.sample	ServiceProxyBase:main	VAC_com.vlingo.core.int:
D	10-24 06:53:18.098	4828	4828	com.nuance.sample	ServiceProxyBase:main	VAC_handleBase: isConne:
						audio.AudioPlaybackServ:
E	10-24 06:53:19.859	2048	2098		MP-Decision	num online cores: 2 req
E	10-24 06:53:19.859	2048	2098		MP-Decision	UP cpu:1 core_idx:1 Nw:
E	10-24 06:53:19.859	2048	2098		MP-Decision	UP cpu:2 core_idx:2 Nw:
D	10-24 06:53:20.270	751	2887	system_process	SSRMv2:Monitor	SIOP:: AP = 290, Prev A:
D	10-24 06:53:20.270	751	2887	system_process	SSRMv2:AmoledAdjustTimer	prevTemp = 238, currTemp
E	10-24 06:53:20.710	2048	2098		MP-Decision	num online cores: 3 req
E	10-24 06:53:20.710	2048	2098		MP-Decision	DOWN cpu:2 core_idx:2 N:

ADB

```
Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\p.alekseev>adb
Android Debug Bridge version 1.0.32

  -a                    - directs adb to listen on all interfaces for a c
onnection
  -d                    - directs command to the only connected USB devic
e
                       returns an error if more than one USB device is
present.
  -e                    - directs command to the only running emulator.
                       returns an error if more than one emulator is r
unning.
  -s <specific device> - directs command to the device or emulator with
the given
                       SERIAL
                       environment variable.
  -p <product name or path> - simple product name like 'sooner', or
                       a relative/absolute path to a product
                       out directory like 'out/target/product/sooner'.
                       If -p is not specified, the ANDROID_PRODUCT_OUT
```

И ещё...

- Test Flight
- HockeyApp
- iOS Console (MacOS)
- Flurry
- Google Analytics

Основные жесты

- Tap



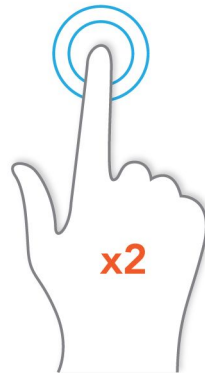
Основные жесты

- Tap



Основные жесты

- Double Tap



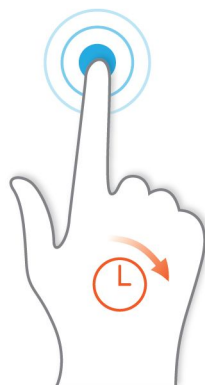
Основные жесты

- Double Tap



Основные жесты

- Long Press



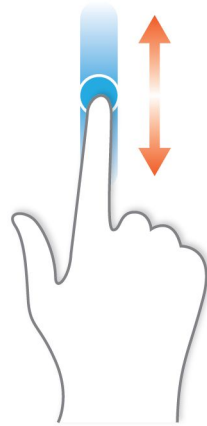
Основные жесты

- Long Press



Основные жесты

- Scroll



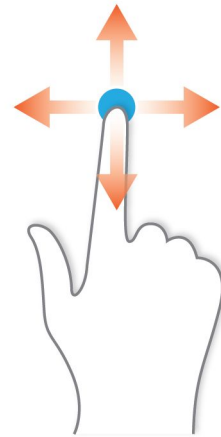
Основные жесты

- Scroll



Основные жесты

- Pan



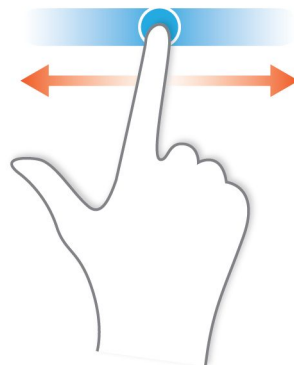
Основные жесты

- Pan



Основные жесты

- Flick



Основные жесты

- Flick



Основные жесты

- Two Finger Tap



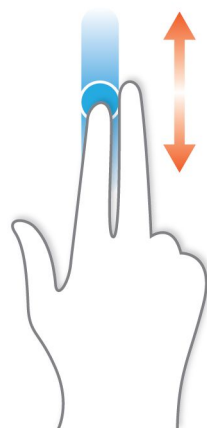
Основные жесты

- Two Finger Tap



Основные жесты

- Two Finger Scroll



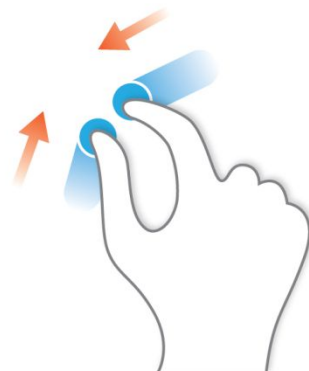
Основные жесты

- Two Finger Scroll



Основные жесты

- Pinch



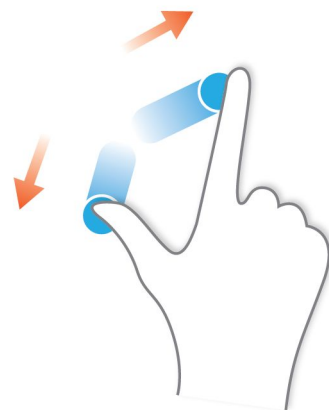
Основные жесты

- Pinch



Основные жесты

- Zoom (Unpinch)



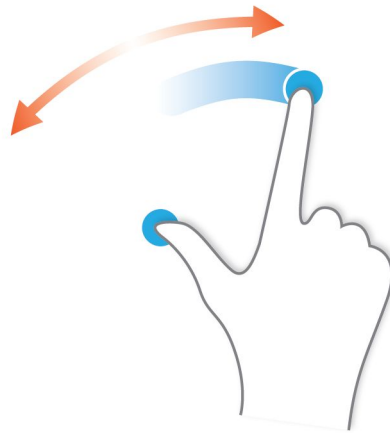
Основные жесты

- Zoom (Unpinch)



Основные жесты

- Rotate



Основные жесты

- Rotate



Рекомендуемые источники информации

- <http://developer.android.com/>
- <http://stackoverflow.com/>
- <http://4pda.ru/>
- <http://habrahabr.ru/>
- <http://gs.statcounter.com/>
- <https://developer.apple.com/support/appstore/>
- <http://david-smith.org/iosversionstats/>