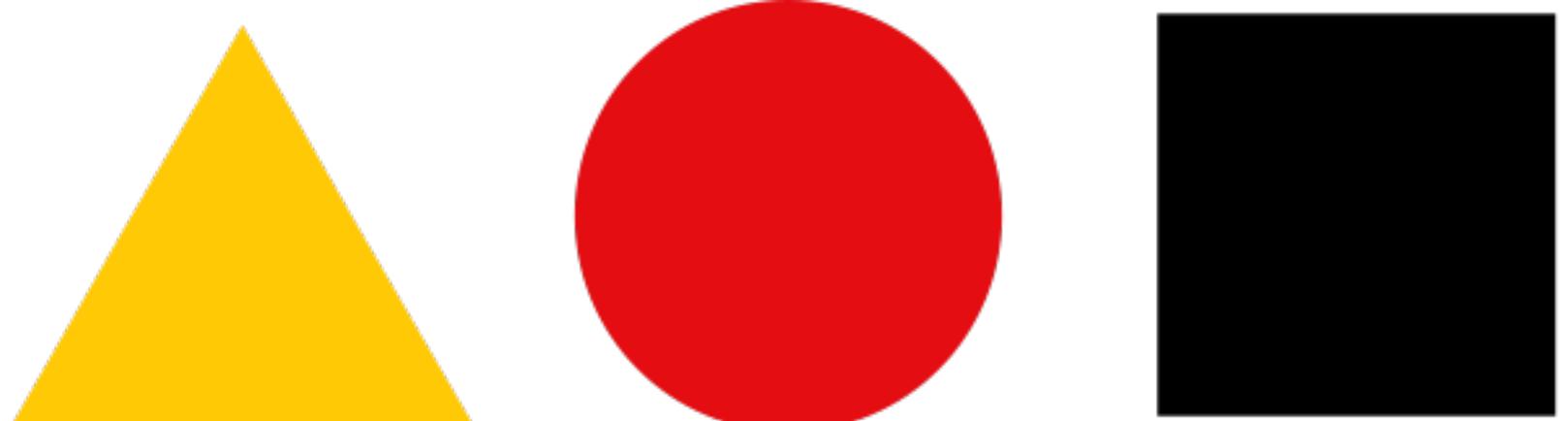


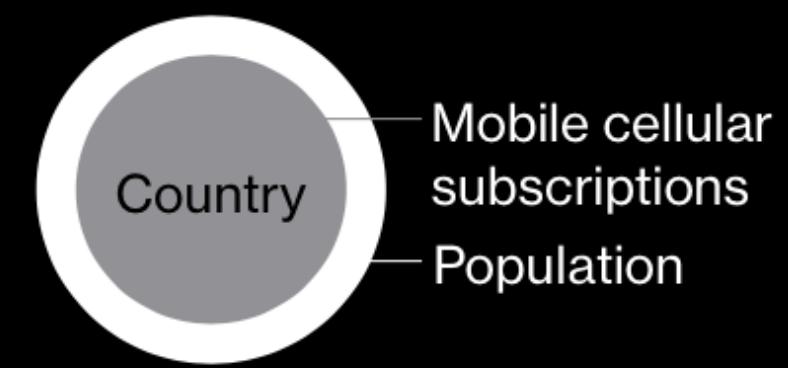
Эволюция платформы Android

Дмитрий Неведомский

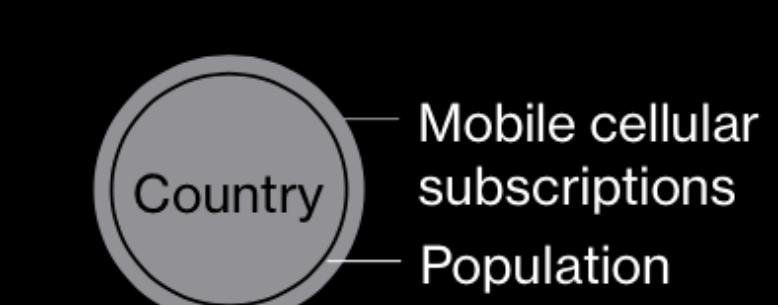


android A green Android robot icon is positioned to the right of the word "android". The icon is a stylized green head with two white eyes, a small white dot for a mouth, and two thin antennae-like features extending from its head.

More people than cellphones

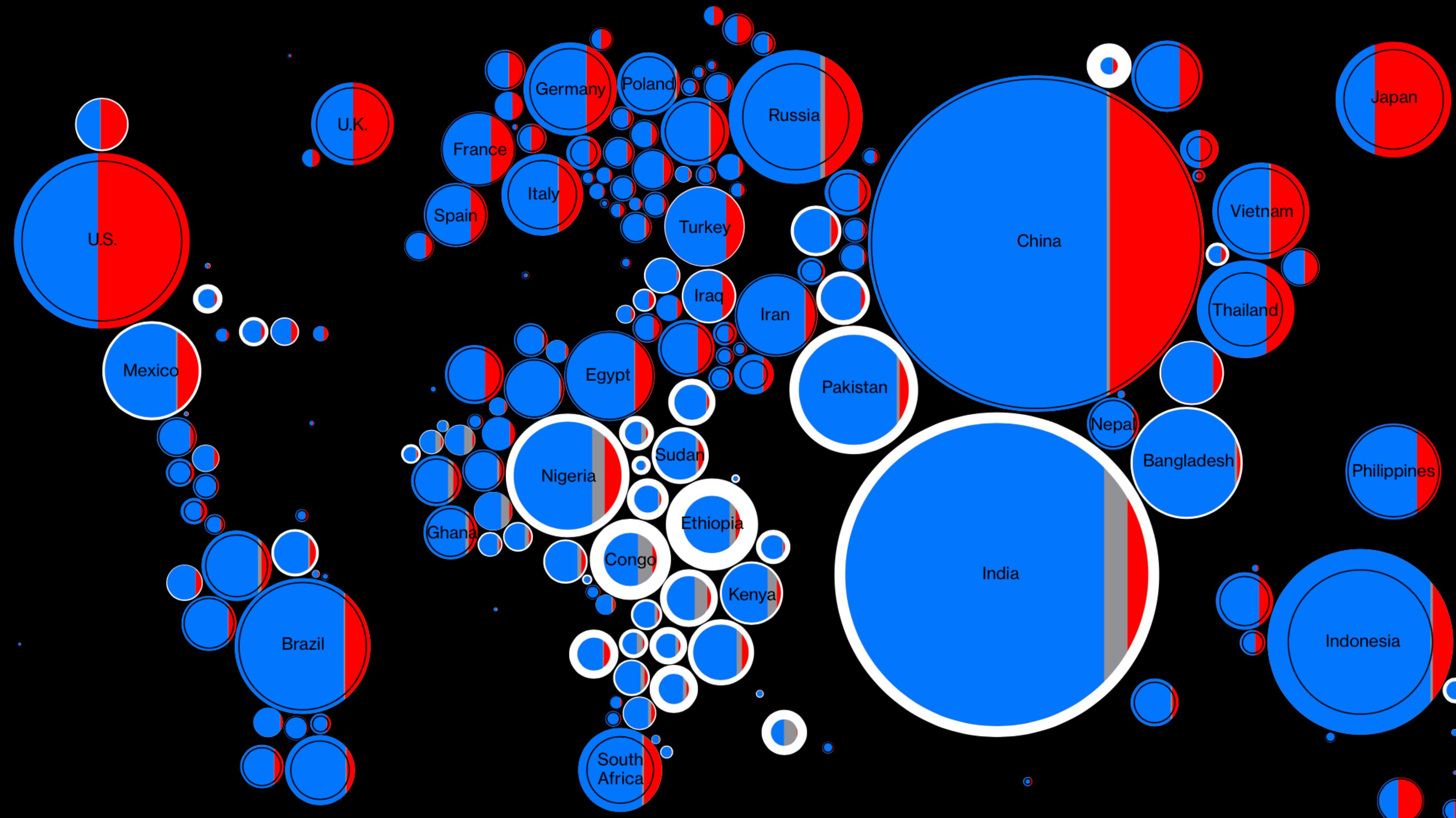


More cellphones than people



Mobile operating system share

- Android
- iOS
- Other



Adoption

Version	Codename	API	Distribution
2.3.3 - 2.3.7	Gingerbread	10	0.3%
4.0.3 - 4.0.4	Ice Cream Sandwich	15	0.3%
4.1.x	Jelly Bean	16	1.2%
4.2.x		17	1.5%
4.3		18	0.5%
4.4	KitKat	19	6.9%
5.0	Lollipop	21	3.0%
5.1		22	11.5%
6.0	Marshmallow	23	16.9%
7.0	Nougat	24	11.4%
7.1		25	7.8%
8.0	Oreo	26	12.9%
8.1		27	15.4%
9	Pie	28	10.4%

iOS and iPadOS Usage

As measured by the App Store on January 27, 2020.

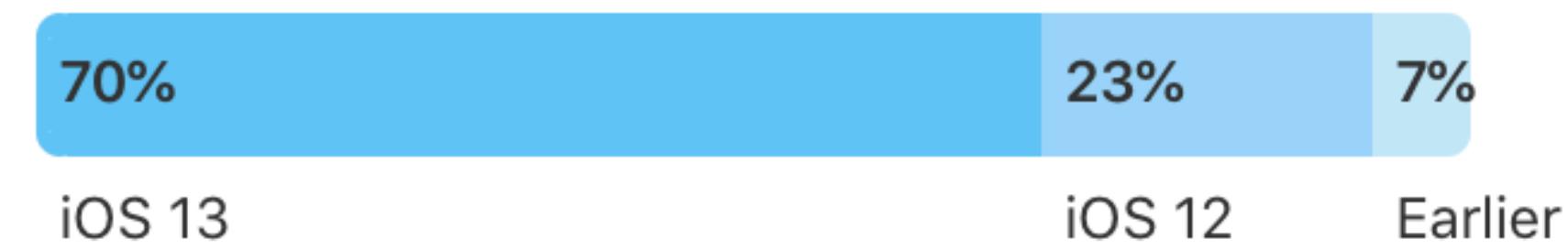
iPhone

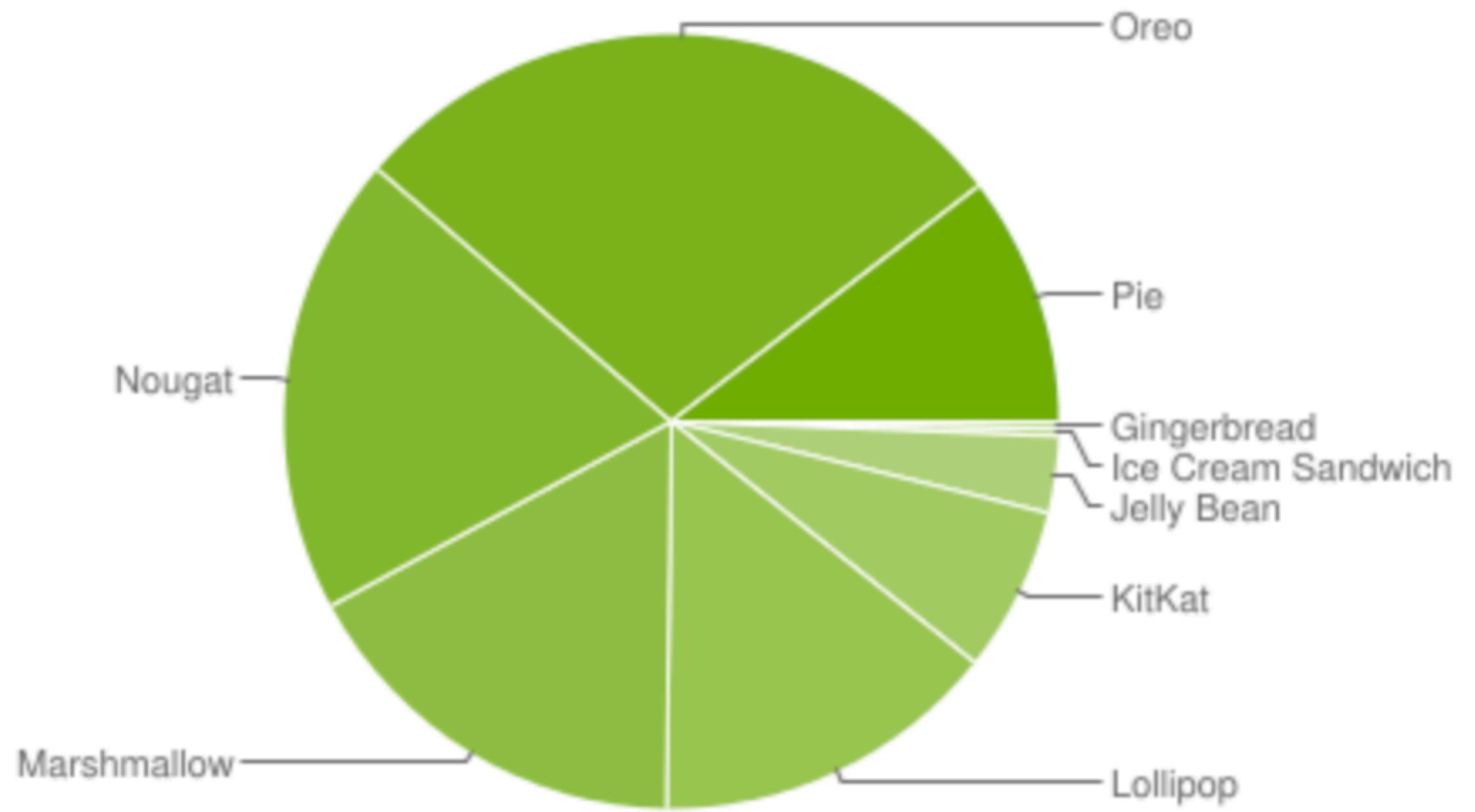


77% of all devices introduced in the last four years use iOS 13.



70% of all devices use iOS 13.





*Data collected during a 7-day period ending on May 7, 2019.
Any versions with less than 0.1% distribution are not shown.*



issue/123307735

123307735 ▾ Dashboard data outdated
30 people have starred this issue.

Порог вхождения

iOS/iPadOS

- Компьютер Apple
- Swift
- Лицензия для публикации - 100\$/год

Android

- Любой компьютер
- Java/Kotlin (C++, C)
- Лицензия для публикации - 25\$ единовременно

HTC Dream 2008



CPU	528 MHz Qualcomm MSM7201A ARM11 processor
Memory	256 MB of internal storage, 192 MB RAM
Removable storage	Up to 16 GB microSD
Battery	1150 mAh Internal rechargeable removable lithium-ion battery
Data inputs	capacitive touchscreen display, QWERTY keyboard, trackball, volume controls, 3-axis accelerometer
Display	320 x 480 px , 3.2 in (81 mm), HVGA , 65,536 color TFT-LCD at 180 pixels per inch (ppi)

Google Pixel 4 2019



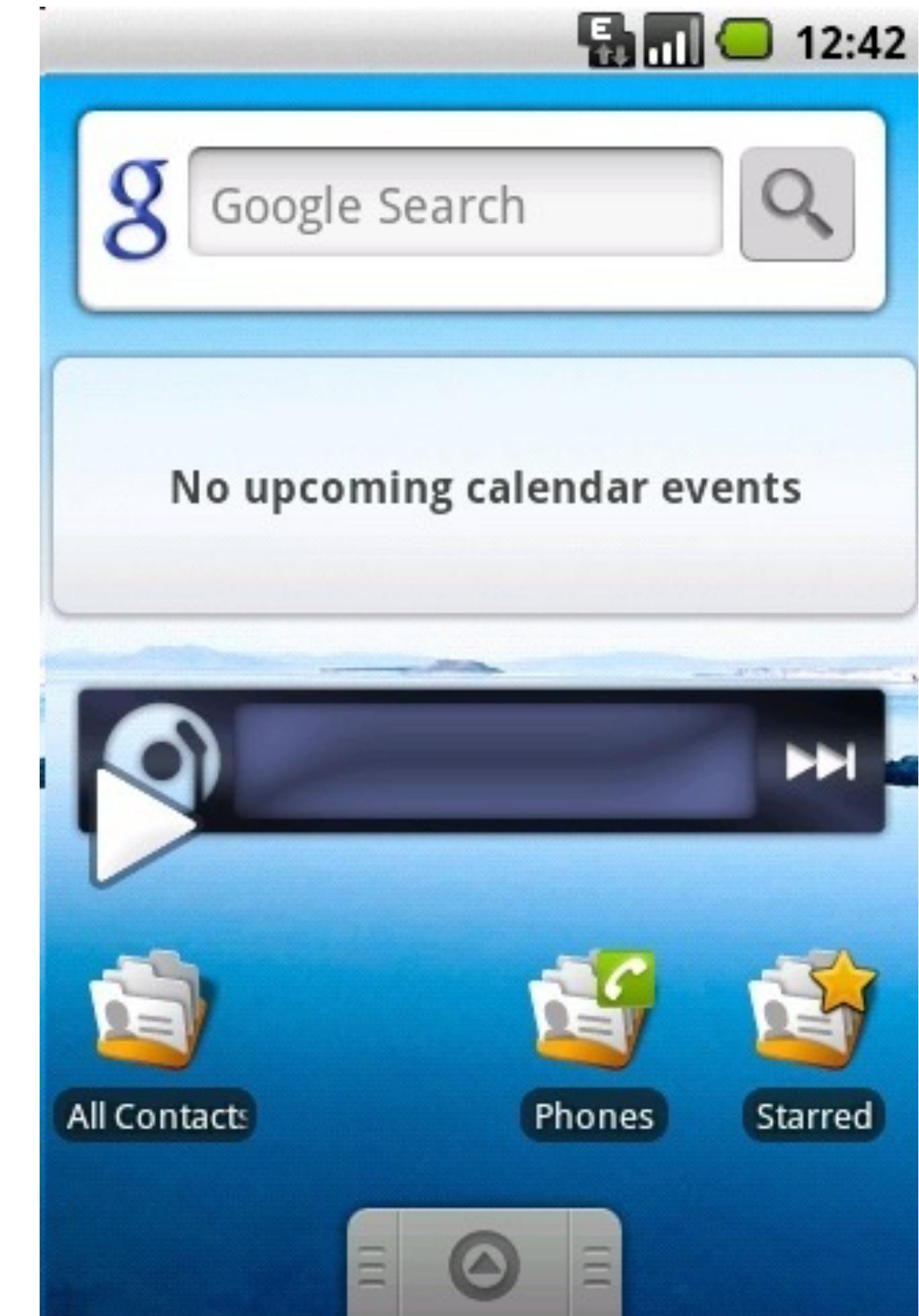
System on chip	Qualcomm Snapdragon 855
CPU	Octa-core (1 × 2.84 GHz Kryo 485 Gold Prime & 3 × 2.42 GHz Kryo 485 Gold & 4 × 1.78 GHz Kryo 485 Silver)
GPU	Adreno 640
Memory	6 GB LPDDR4X
Storage	64 GB or 128 GB UFS 2.1 ^[2]
Battery	3700 mAh
Display	6.3 in (160 mm) QHD+ 1440p P-OLED at 537 ppi, 3040 × 1440 pixel resolution (19:9)

Android 1.0 (API 1)

- Базовые функции телефона (Звонки, SMS, MMS)
- Веб-браузер
- Магазин приложений
- Камера
- Рабочий стол
- Системные API для работы с календарем и контактами
- Поддержка Bluetooth и WiFi

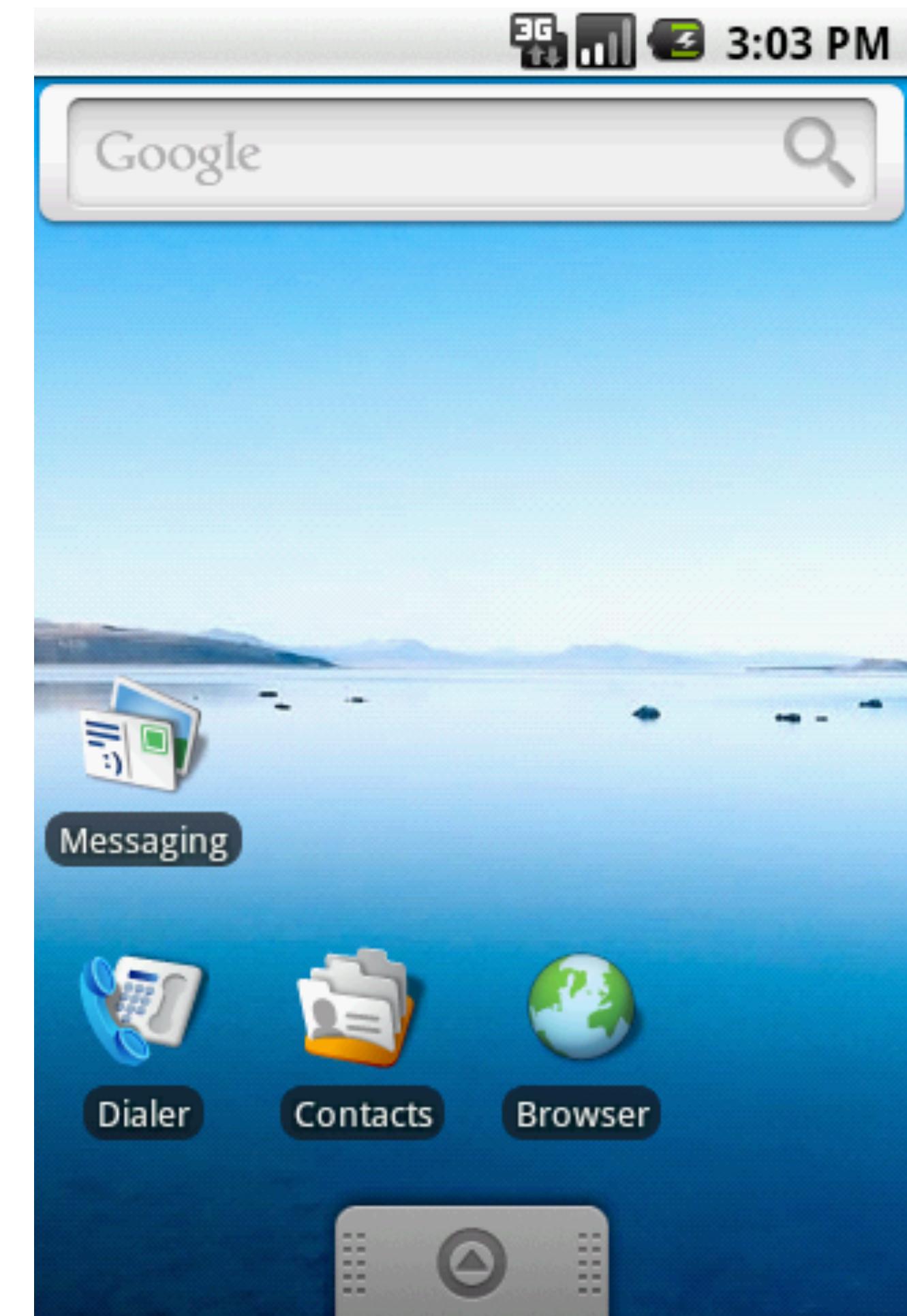
Android 1.5 (API 3) - Cupcake

- Поддержка 3rd-party клавиатур
- Виджеты рабочего стола
- Запись и проигрывание видео
- Копирование и вставка
- Автоворот
- Улучшения для Bluetooth



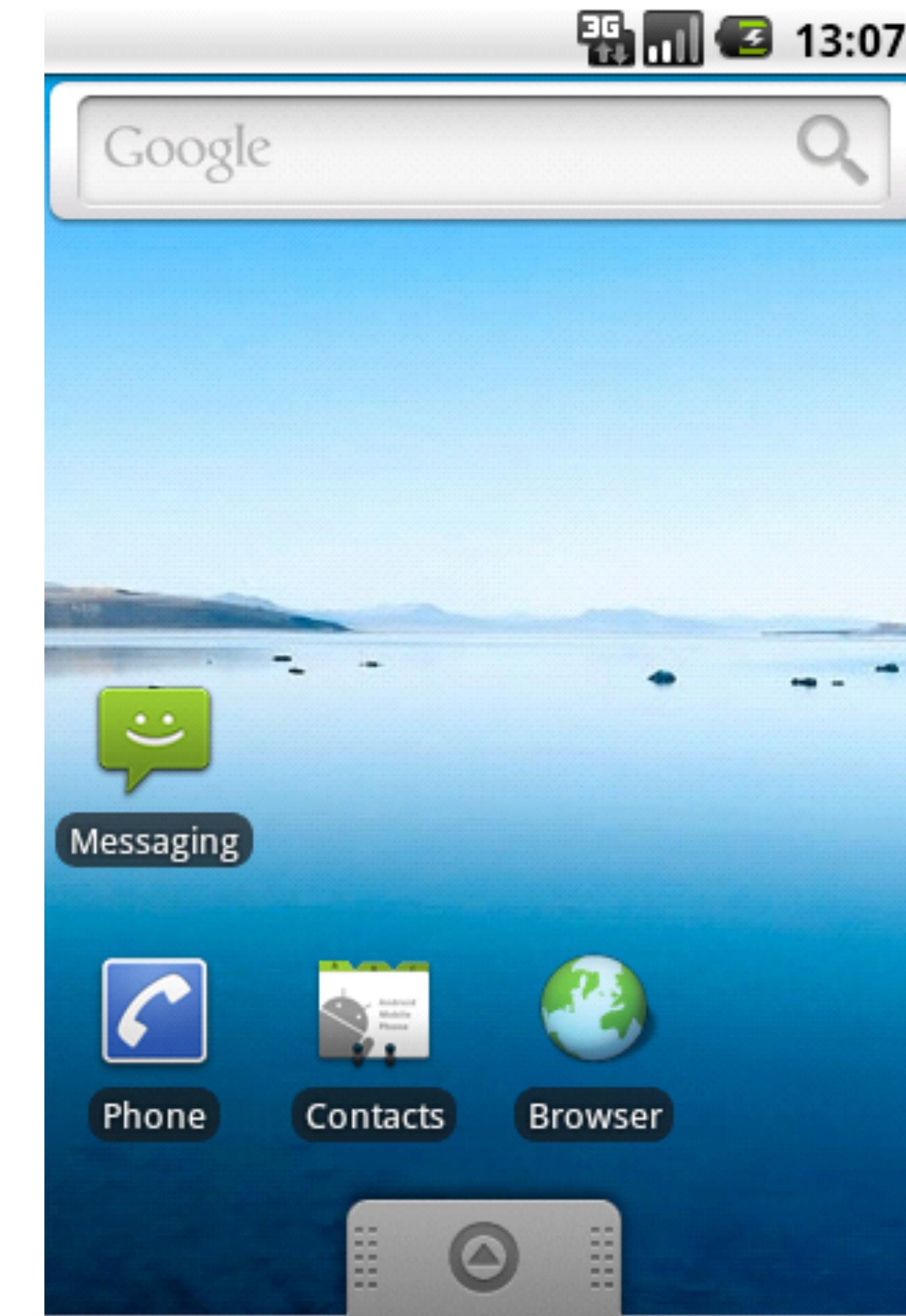
Android 1.6 (API 4) - Donut

- API системного поиска
- Синтез речи
- Поддержка экранов большего размера
- Улучшение системы жестов



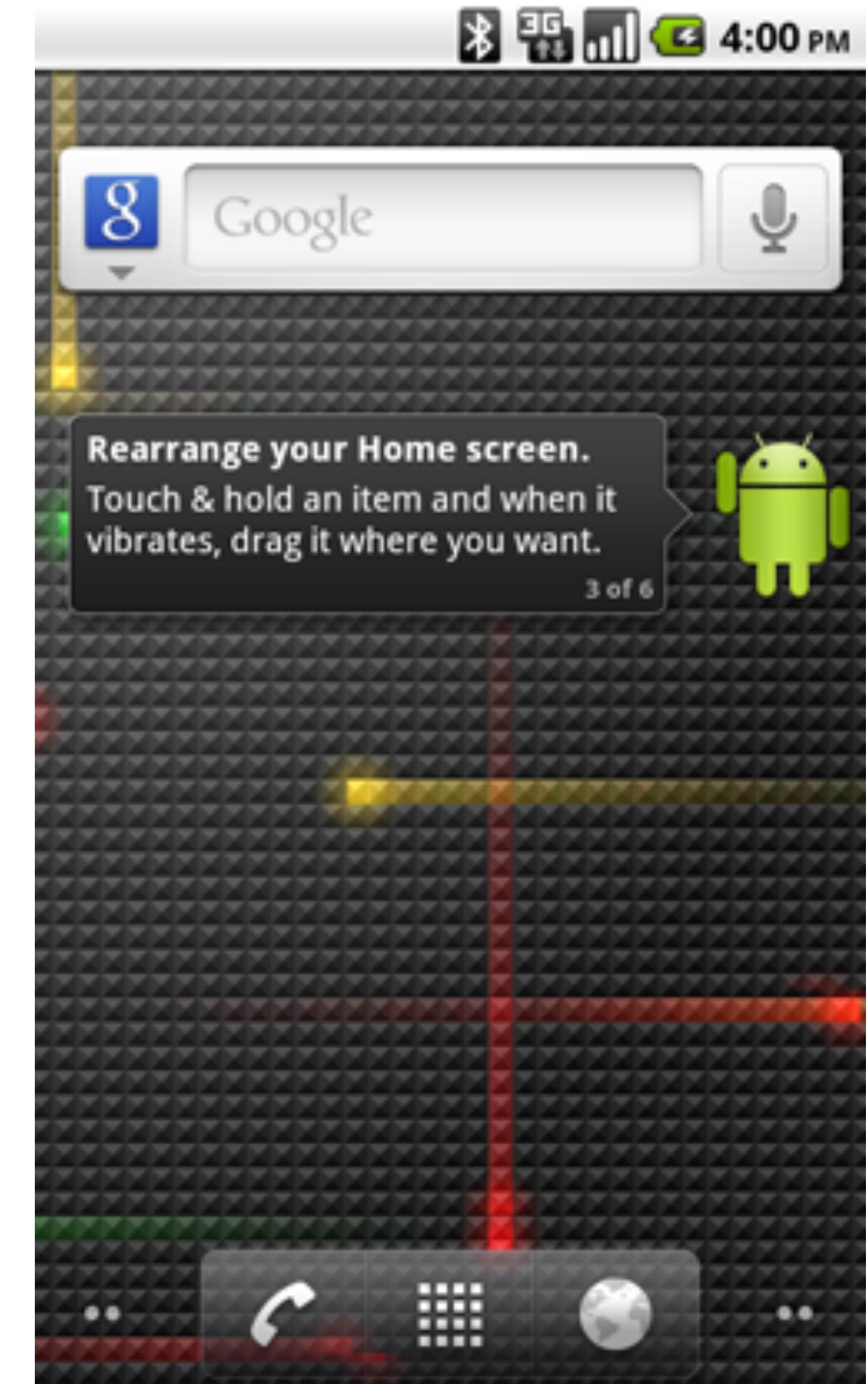
Android 2.0 (API 5) - Eclair

- API для Аккаунтов синхронизации
- Поддержка MultiTouch
- Живые обои 😊
- Поддержка HTML5
- Поддержка больше количества устройств



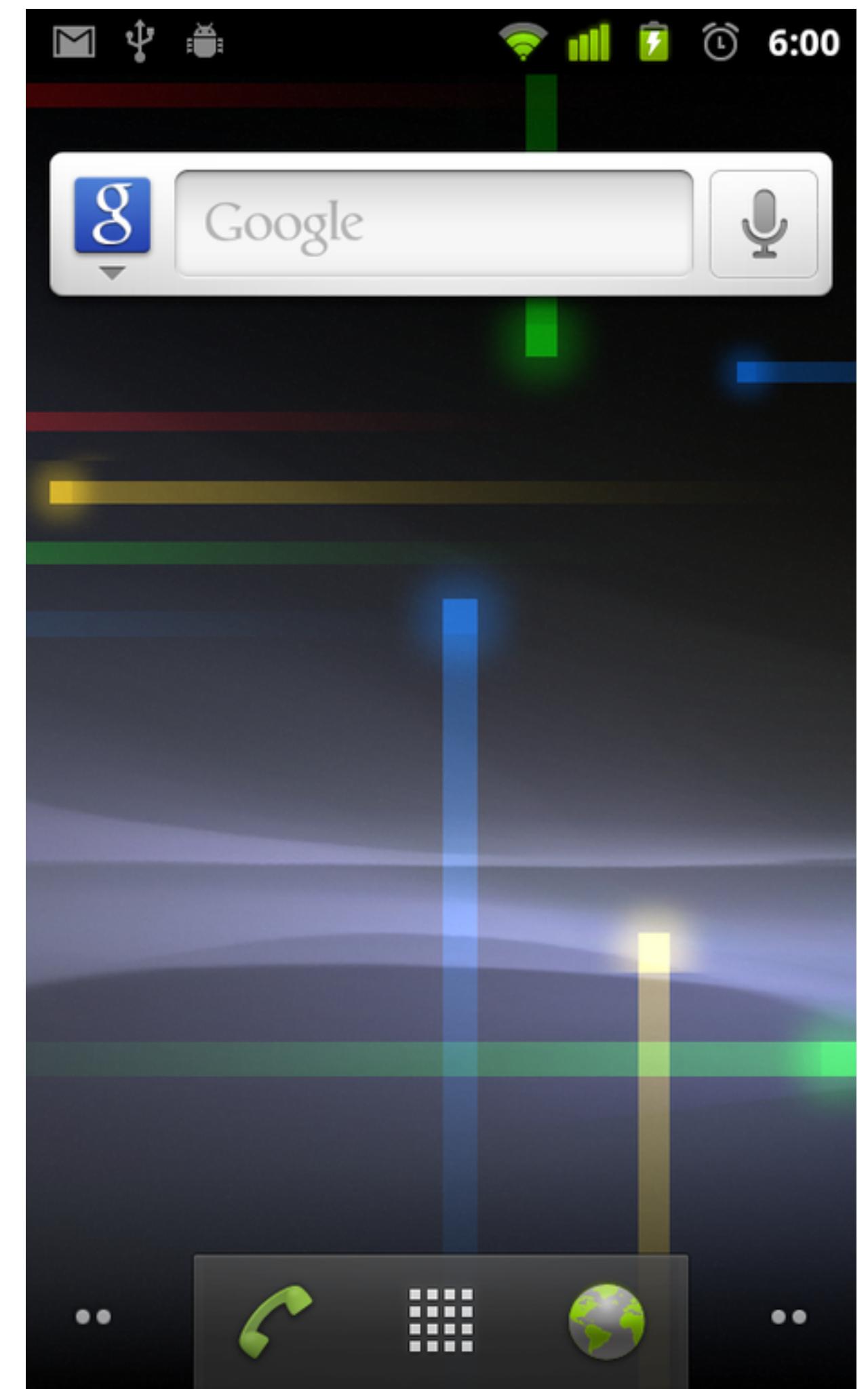
Android 2.2 (API 8) - Froyo

- Интеграция V8 в Android
- Точка доступа
- JIT
- Поддержка Flash
- Поддержка экранов высокой плотности



Android 2.3 (API 9) - Gingerbread

- NFC
- CopyPaste
- Менеджер загрузок
- Параллельный сборщик мусора
- Гироскоп и барометр



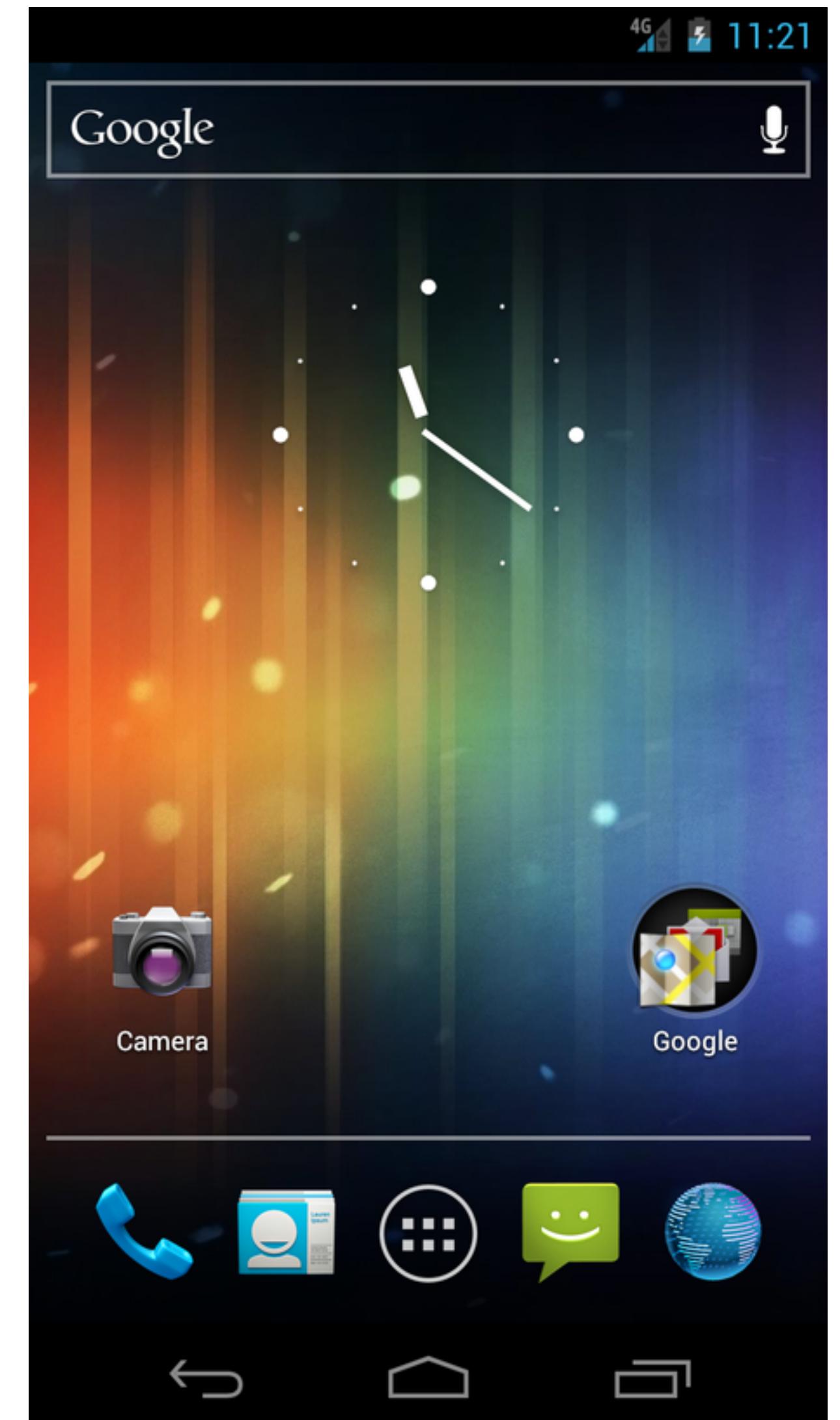
Android 3.0 (API 11) - Honeycomb

- Планшеты
- Fragment
- Multi-core CPU
- FUSE
- OTG
- Геймпады



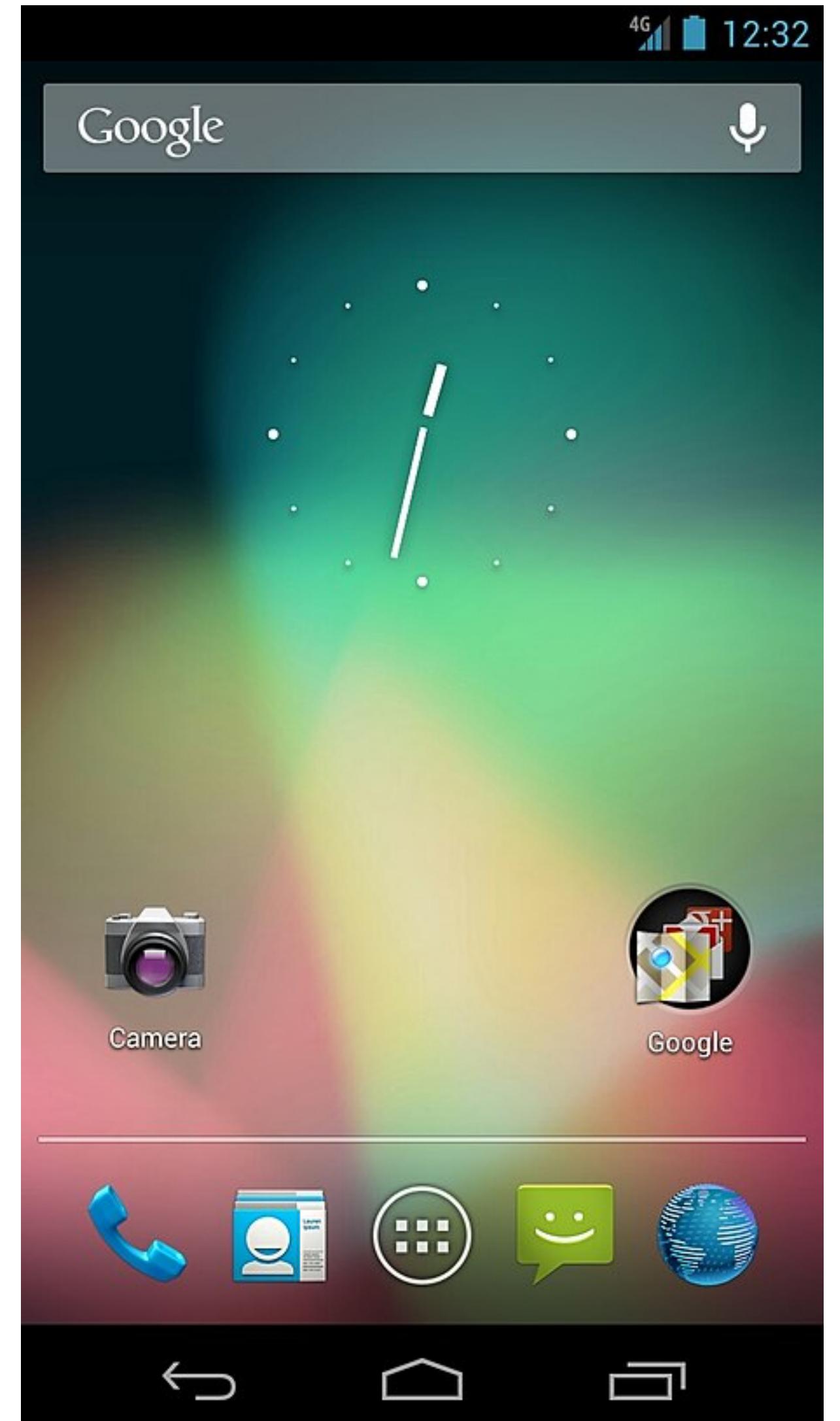
Android 4.0 (API 14) - Ice Cream Sandwich

- Софтверные кнопки
- Скриншоты
- Face Unlock
- Выгрузка приложения
- Android Beam
- Wi-Fi Direct
- VPN



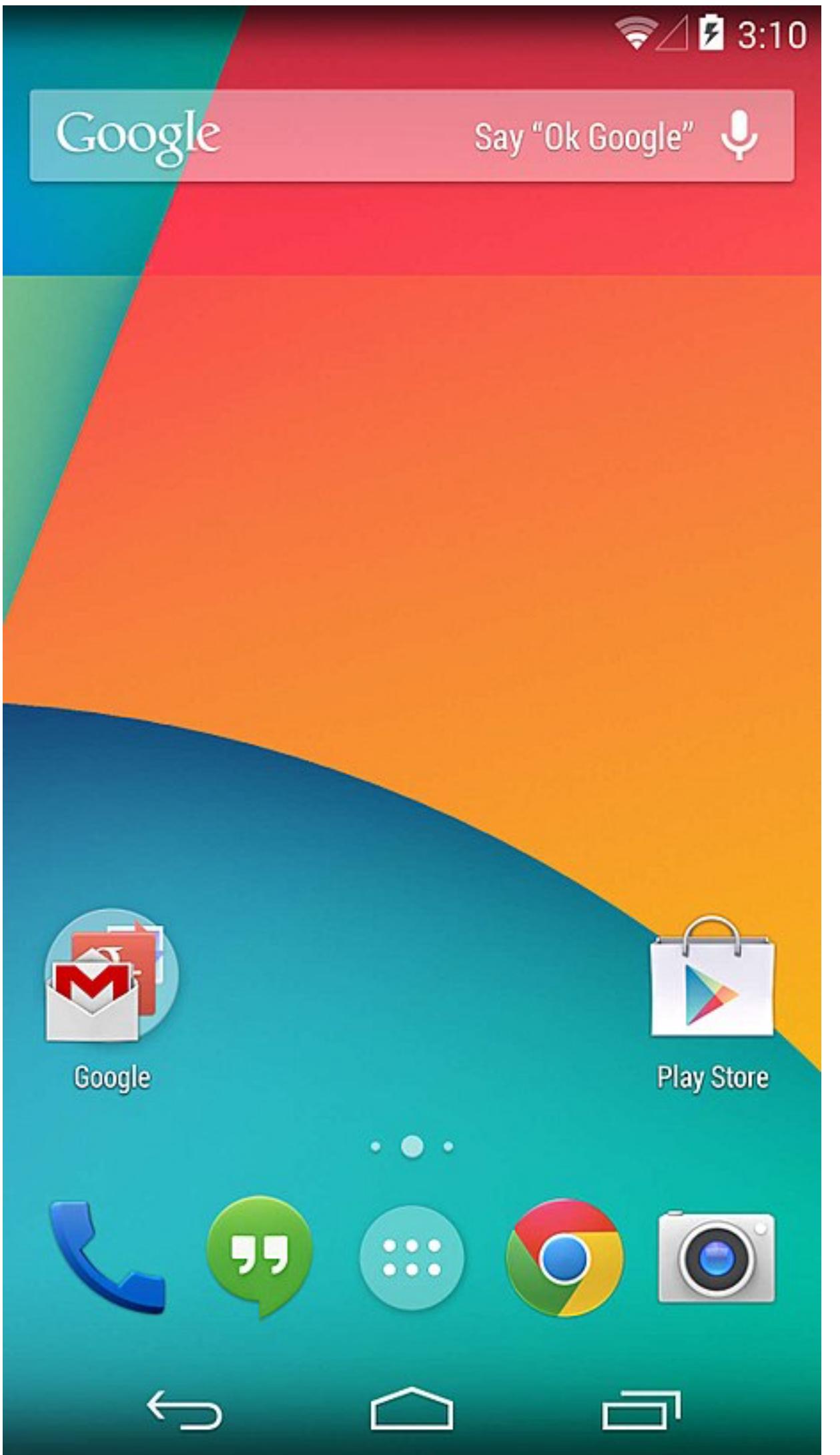
Android 4.1 (API 16) - Jelly Bean

- RTL
- Улучшения уведомлений
- USB audio
- VSync
- Quick Settings
- Daydream
- MultiUser
- Emoji
- OpenGL ES 3.0
- Bluetooth LE



Android 4.4 (API 19) - KitKat

- IR
- Запись экрана
- NFC HCE
- Chromium 😍
- ART
- Printing
- Storage Access Framework
- Transitions



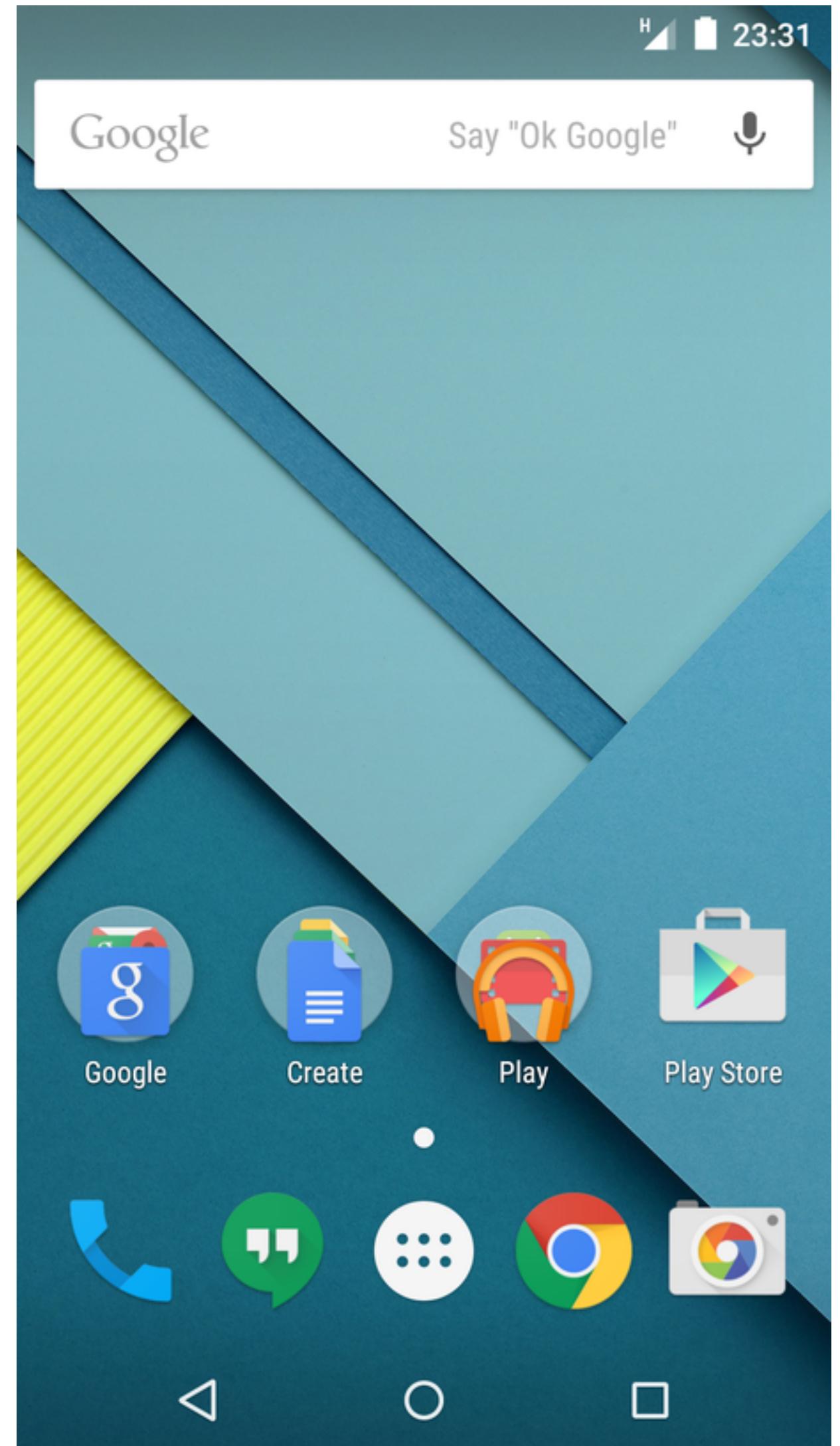
Android 4.4W (API 20) - Wear



Motorola Moto 360

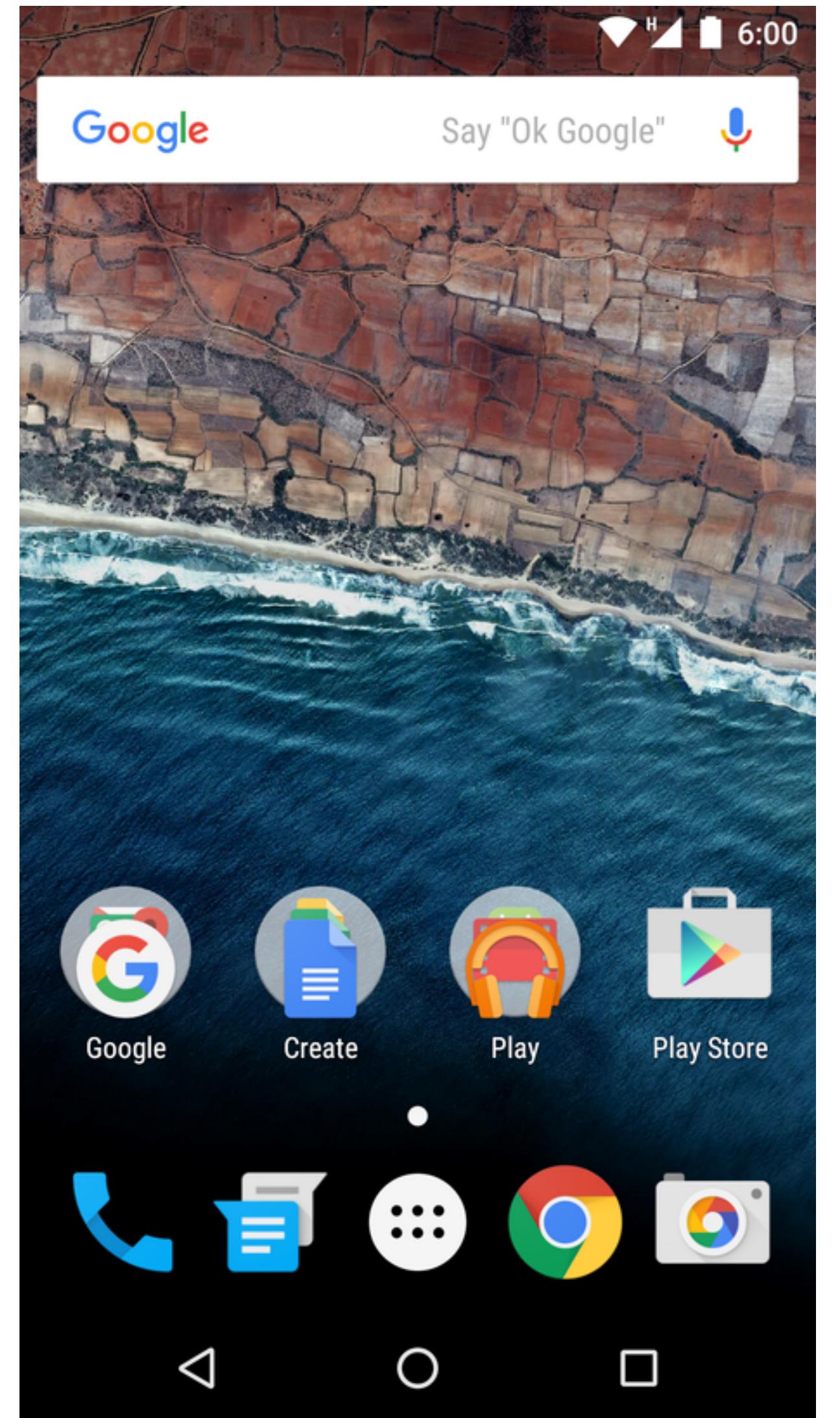
Android 5.0 (API 21) - Lollipop

- AOT
- 64-bit
- Vector
- Material Design
- Smart Lock
- WebView updates
- MultiUser
- Dual SIM



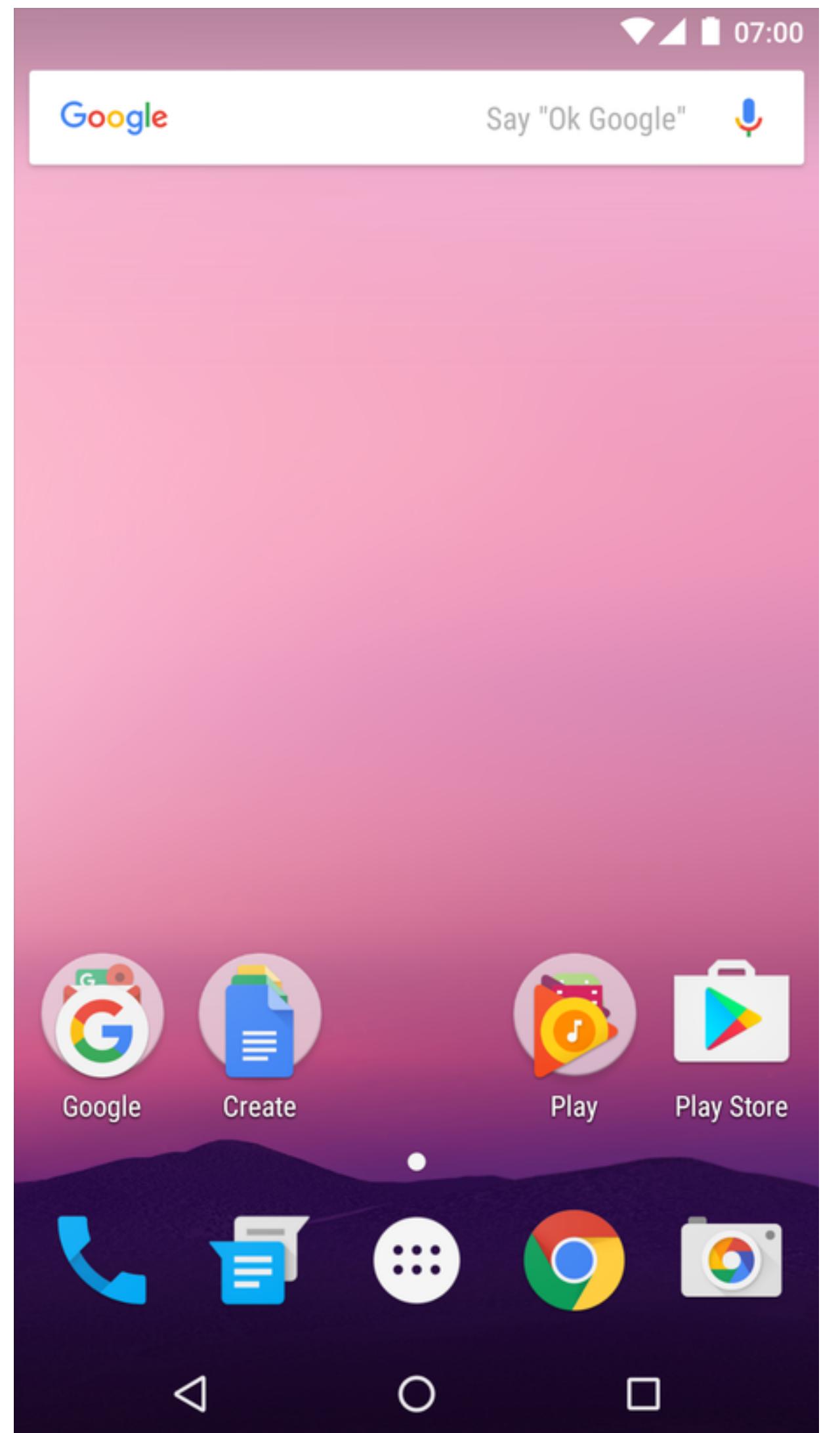
Android 6.0 (API 23) - Marshmallow

- Permissions 😈
- Fingerprints
- Doze mode
- Direct Share
- Data Backup
- MIDI
- MultiWindow
- Text Actions



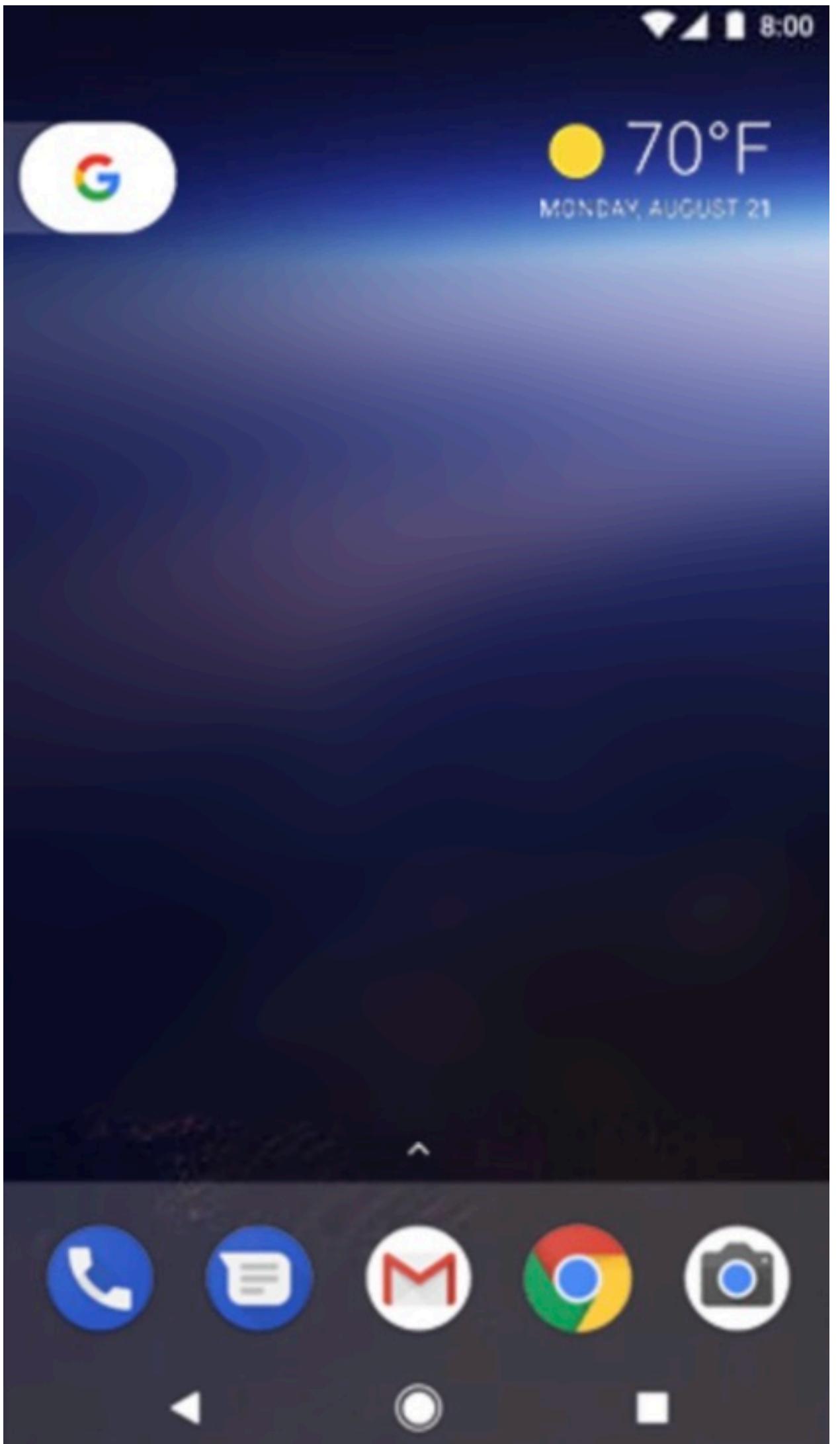
Android 7.0 (API 24) - Nougat

- VR
- Vulkan
- MultiWindow
- QuickSetting API
- Multi-Locale
- Scoped Directory Access
- Keyboard Shortcuts
- Android for Work
- Shortcuts



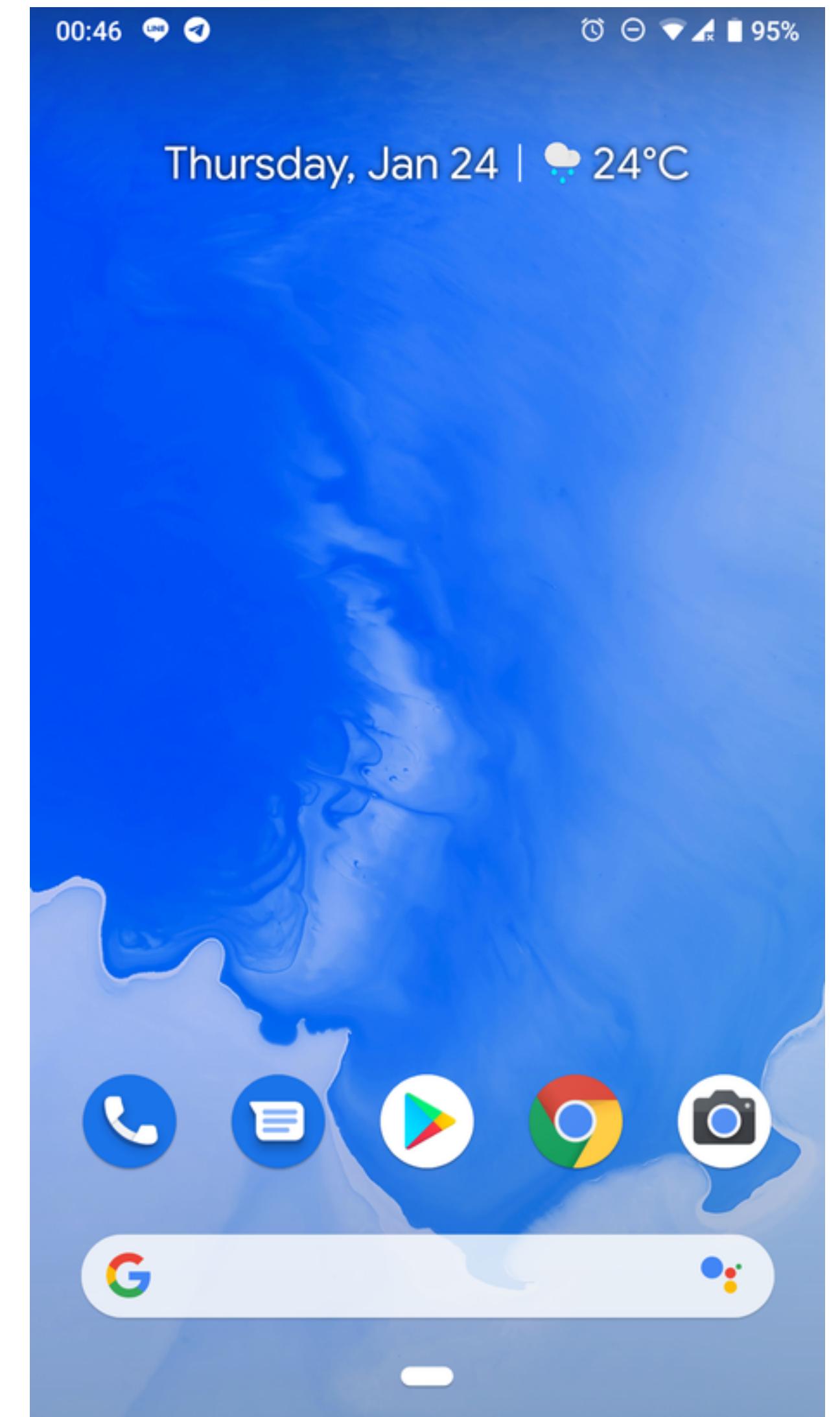
Android 8.0 (API 26) - Oreo

- PiP API
- Project Treble
- Adaptive Icons
- Autofill
- MultiDisplay
- Wide Color
- Background execution limits
- Notification Channels API
- Neural Networks API
- Android Go



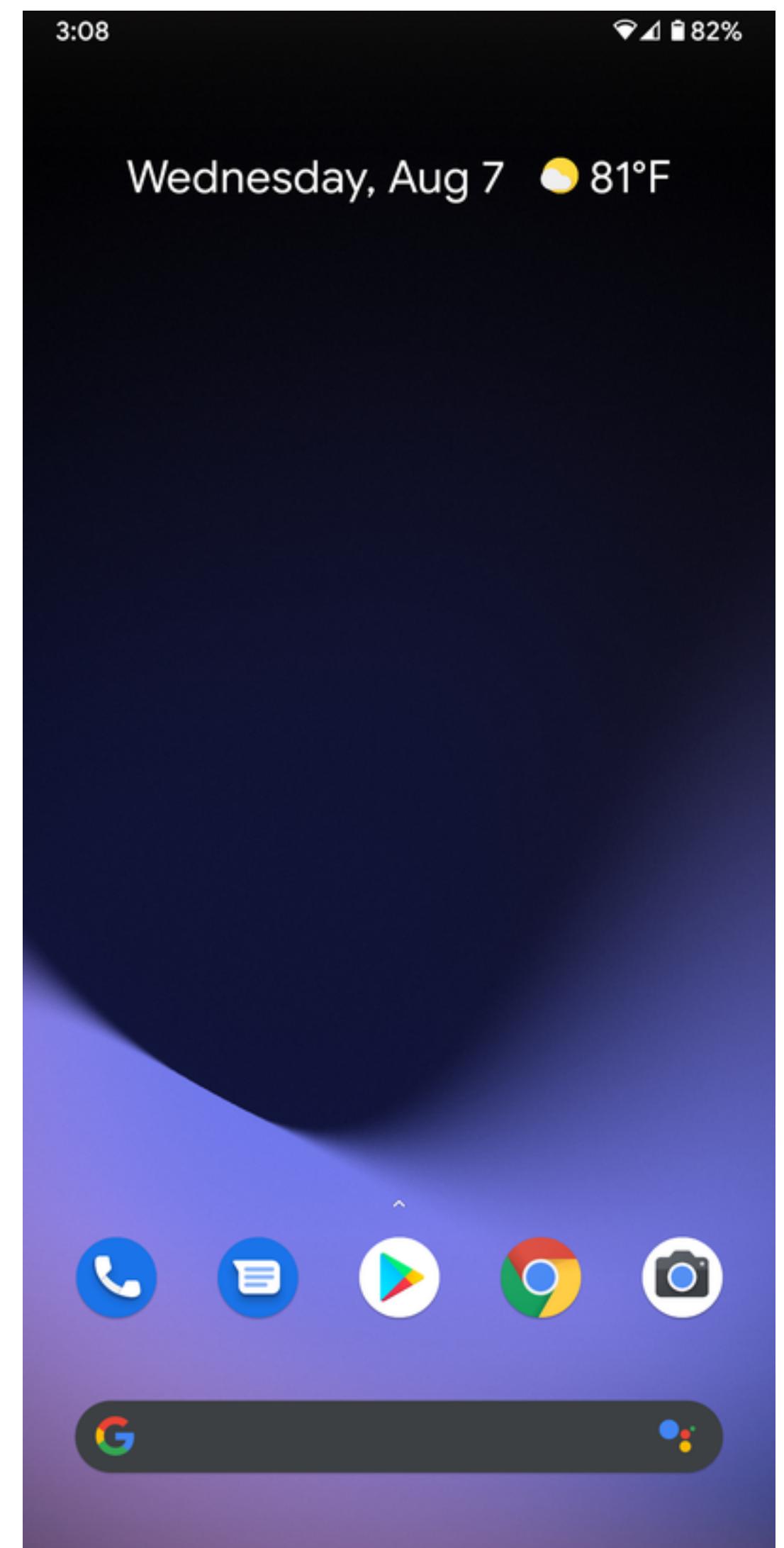
Android 9.0 (API 28) - Pie

- Поддержка вырезов экрана
- Multi Camera
- APK Signature Scheme v3
- Biometric
- HDR



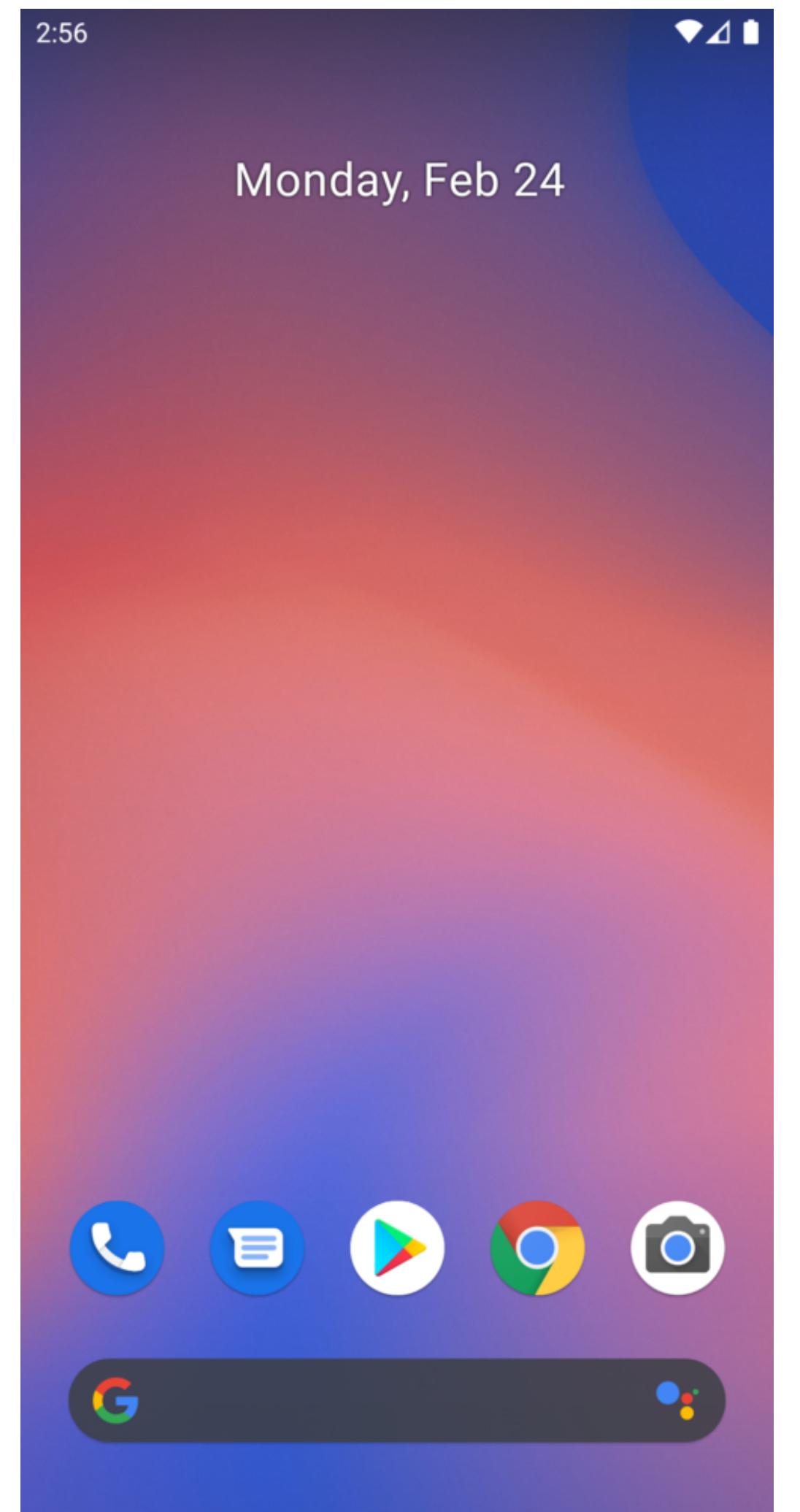
Android 10.0 (API 29) - Q

- Поддержка складных телефонов
- One time permissions
- ~~Device ID~~
- Notification Bubbles.
- Dark Mode 🌙
- Project Mainline
- Scoped Storage
- Жестовая навигация
- w[^]x



Android 11 Developer Preview 1 (API 30) - R

- Bubbles + Conversations
- One time permissions
- Blobs API
- Resource Loaders
- Scoped Storage



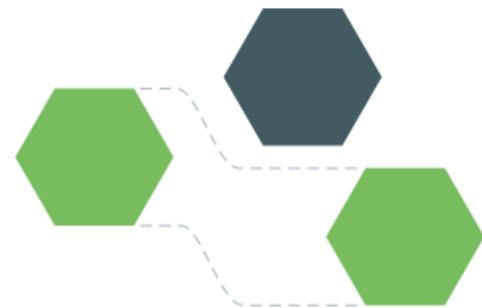
Android Everywhere

- Android Things = IoT
- WearOS = Wearables
- Android Automotive OS = Cars
- Android TV = Smart TVs

Обратная совместимость

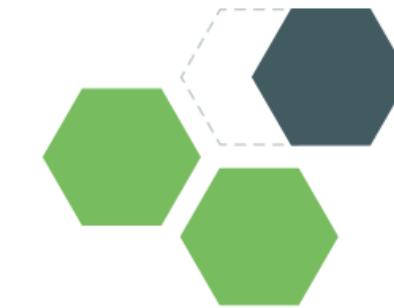


Android Jetpack



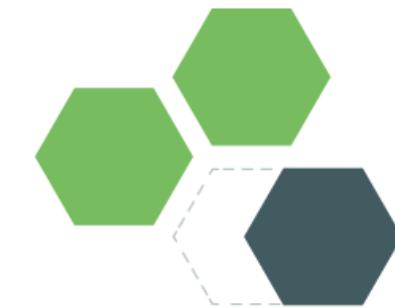
Foundation

Foundation components provide cross-cutting functionality like backwards compatibility, testing and Kotlin language support.



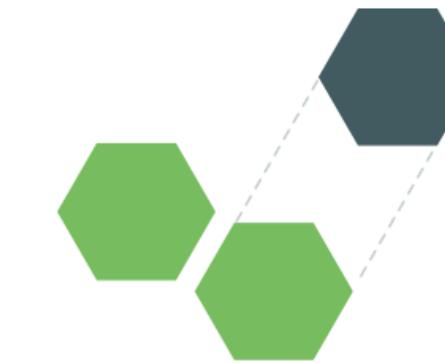
Architecture

[Architecture components](#) help you design robust, testable and maintainable apps.



Behavior

Behavior components help your app integrate with standard Android services like notifications, permissions, sharing and the Assistant.



UI

UI components provide widgets and helpers to make your app not only easy, but delightful to use. Learn about [Jetpack Compose](#), which helps simplify UI development.

Android KTX

Write more concise, idiomatic Kotlin code

AppCompat

Degrade gracefully on older versions of Android

Car

Components to help develop Android apps for cars

Benchmark

Quickly benchmark your Kotlin-based or Java-based code from within Android Studio

Multidex

Provide support for apps with multiple DEX files

Security

Read and write encrypted files and shared preferences by following security best practices.

Test

An Android testing framework for unit and runtime UI tests

TV

Components to help develop apps for Android TV

Data Binding

Declaratively bind observable data to UI elements

Lifecycles

Manage your activity and fragment lifecycles

LiveData

Notify views when underlying database changes

Navigation

Handle everything needed for in-app navigation

Paging

Gradually load information on demand from your data source

Room

Fluent SQLite database access

ViewModel

Manage UI-related data in a lifecycle-conscious way

WorkManager

Manage your Android background jobs

CameraX

Easily add camera capabilities to your apps

Media & playback

Backwards-compatible APIs for media playback and routing (including Google Cast)

Notifications

Provides a backwards-compatible notification API with support for Wear and Auto

Permissions

Compatibility APIs for checking and requesting app permissions

Preferences

Create interactive settings screens

Sharing

Provides a share action suitable for an app's action bar

Slices

Create flexible UI elements that can display app data outside the app

Animation & transitions

Move widgets and transition between screens

Emoji

Enable an up-to-date emoji font on older platforms

Fragment

A basic unit of composable UI

Layout

Lay out widgets using different algorithms

Palette

Pull useful information out of color palettes

ViewPager2

Create swipe views between tabs

WebView

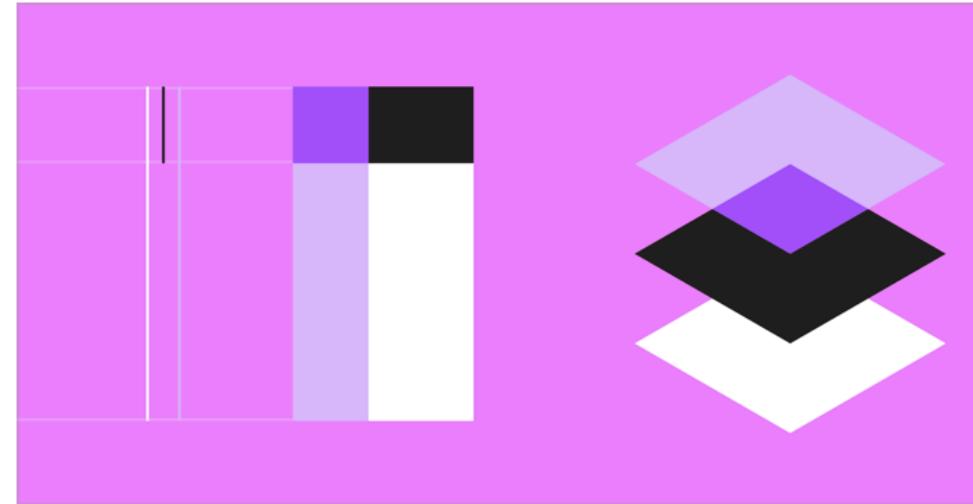
Deliver a web page or web application as a part of an app



Material Design

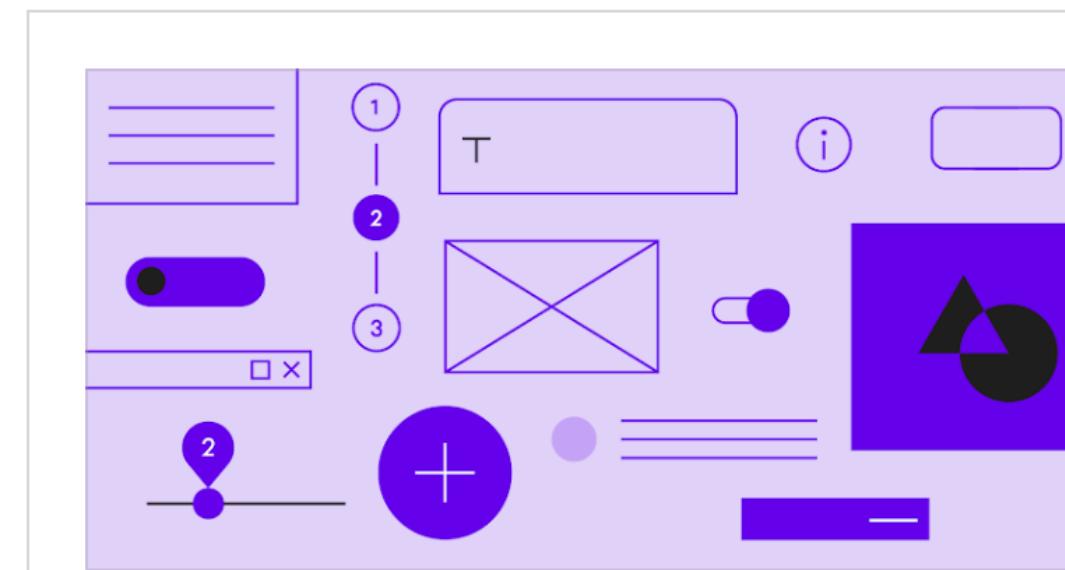
Design guidance and code

Use our most popular design and development resources to jumpstart your latest project



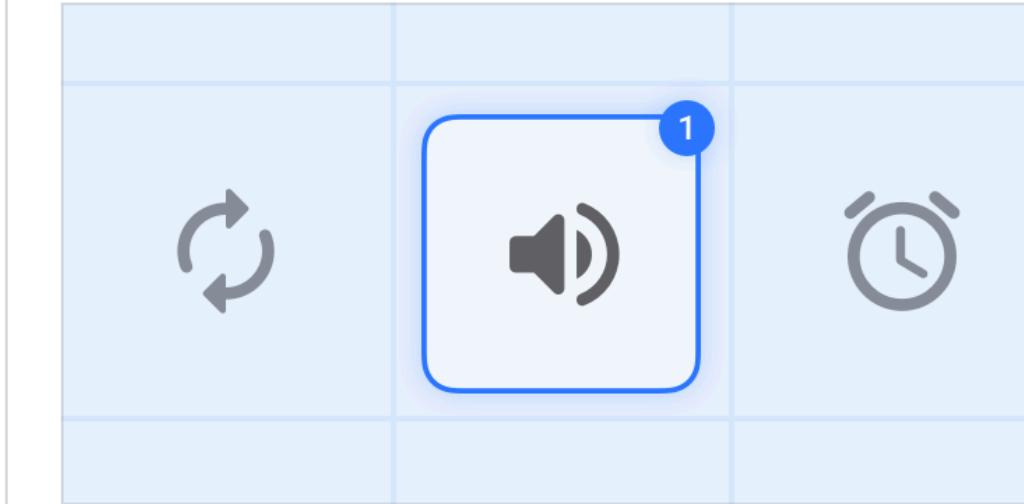
Material Design guidelines

Material Design principles, styles, and best practices



Components

Design guidance and developer documentation for interactive UI building blocks



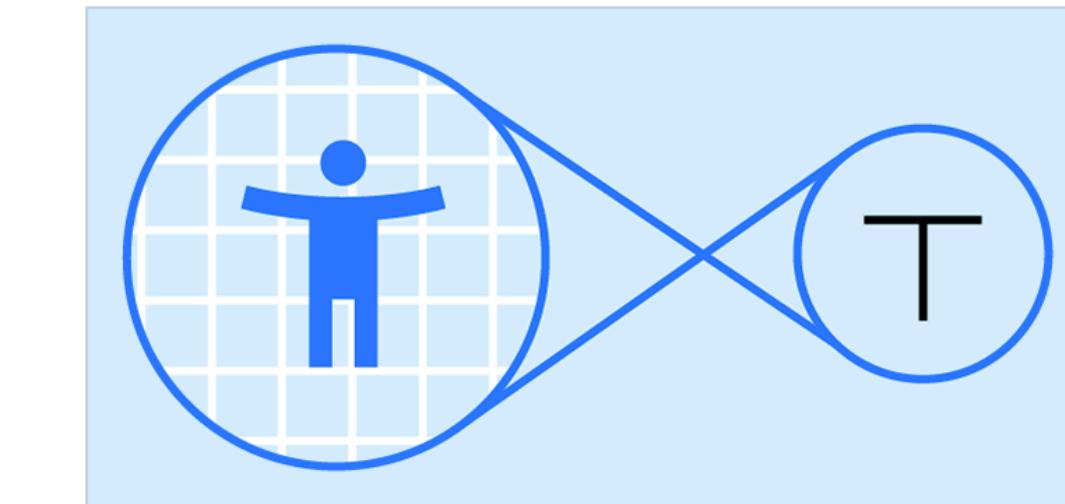
Icons

Access five sets of stylized system icons, available in a range of formats and sizes



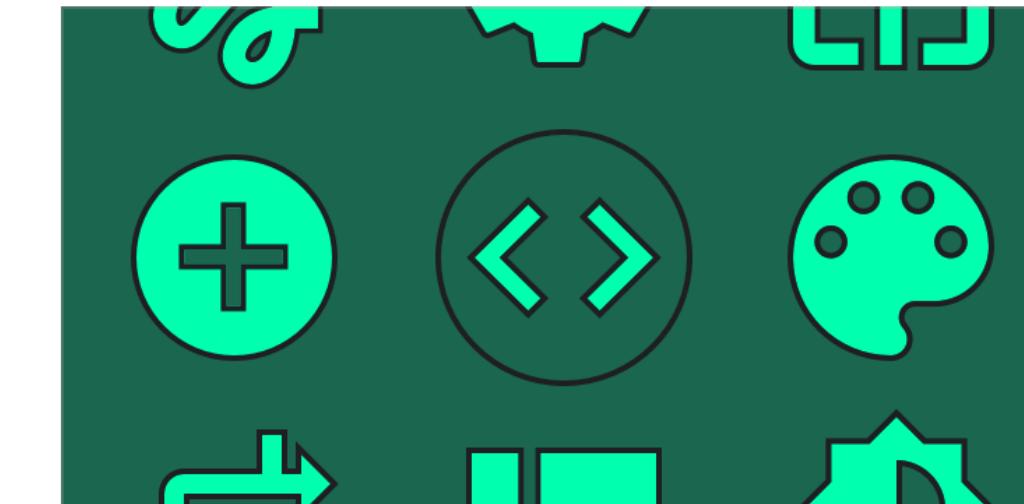
Material Components for the web

Implement and customize Material web apps with our code and documentation



Accessibility guidelines

Learn how to help users of diverse abilities to navigate, understand, and use your UI



Developer tutorials

Implement Material with Java, Kotlin, Objective C, Swift, the web, or Flutter

AOSP



Android Code Search

cs.android.com

:



Search for code or files



Android

Android is a mobile operating system developed by Google

[VIEW PROJECT](#)



AndroidX

AndroidX libraries for Android development

[VIEW PROJECT](#)

Вопросы?