



I – Desarrollo de videojuegos con HMS

Contenido



01 Introducción a HMS Core

02 Requerimientos y soluciones HMS para el desarrollo de juegos

03 Codelab



01

Introducción a HMS Core

¿Qué son los Huawei Mobile Services?

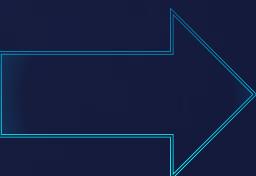
Chipset-Device-Cloud based open capabilities with HMS Ecosystem



1 Smartphone

8 Smart devices

N Ecosystem partner products



HMS

HMS Apps

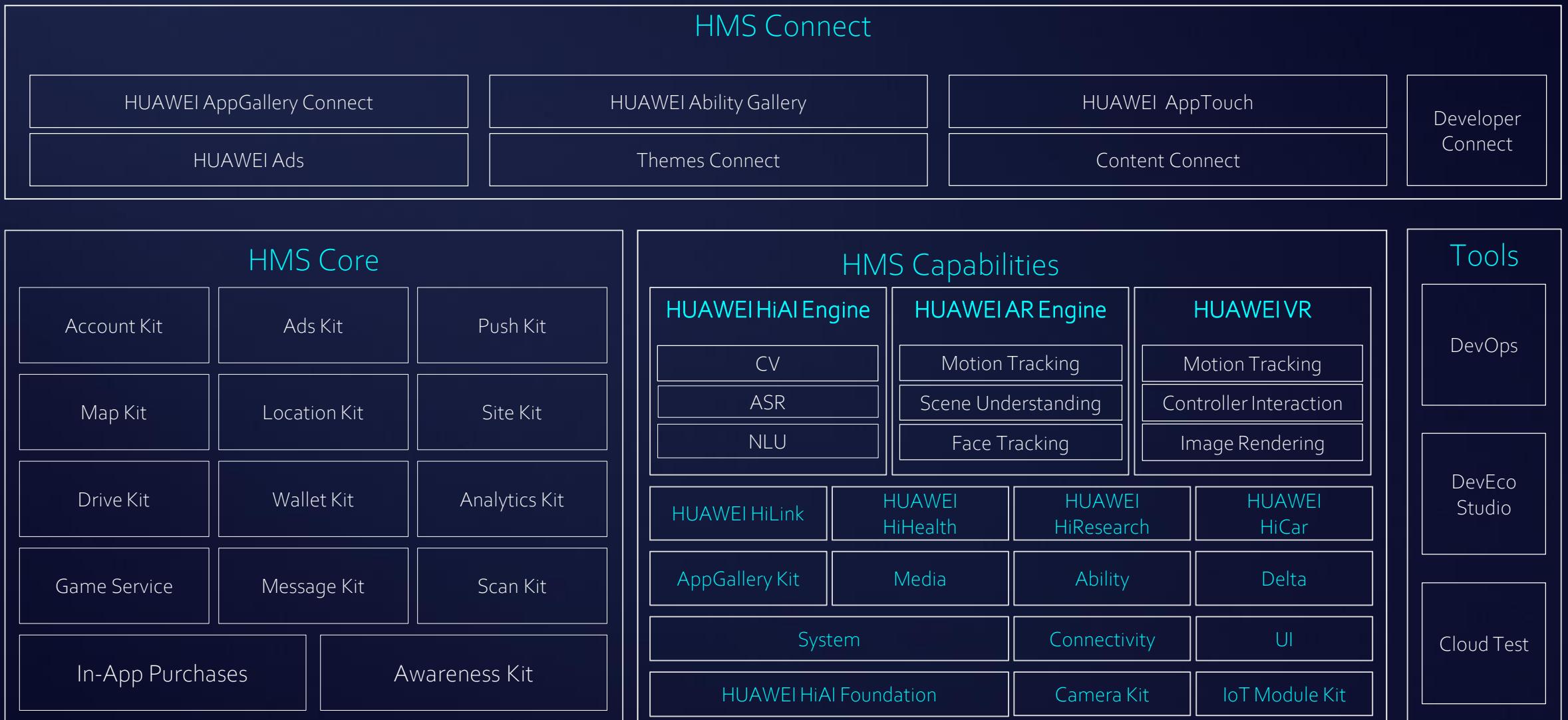
3rd Party Apps

HMS Core & Capabilities

OS

Chipset & Hardware

Arquitecture HMS



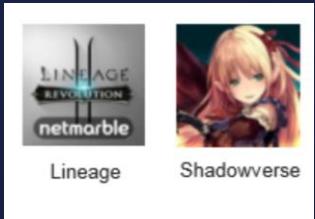
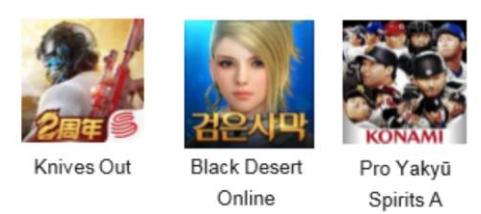


O2

Requerimientos y soluciones HMS para el desarrollo de juegos

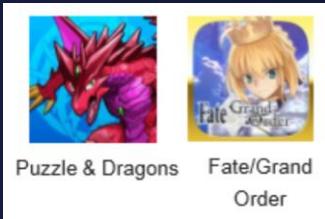
Category

Hardcore



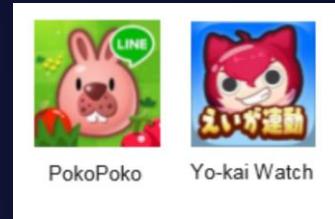
1, 2, 3

Mid-core



1, 2, 3, 4

Casual



1, 2, 3, 4

Solution Requirements

High payment rate
ARPPU*
Loyalty

Low payment rate
Medium ARPPU *
High loyalty

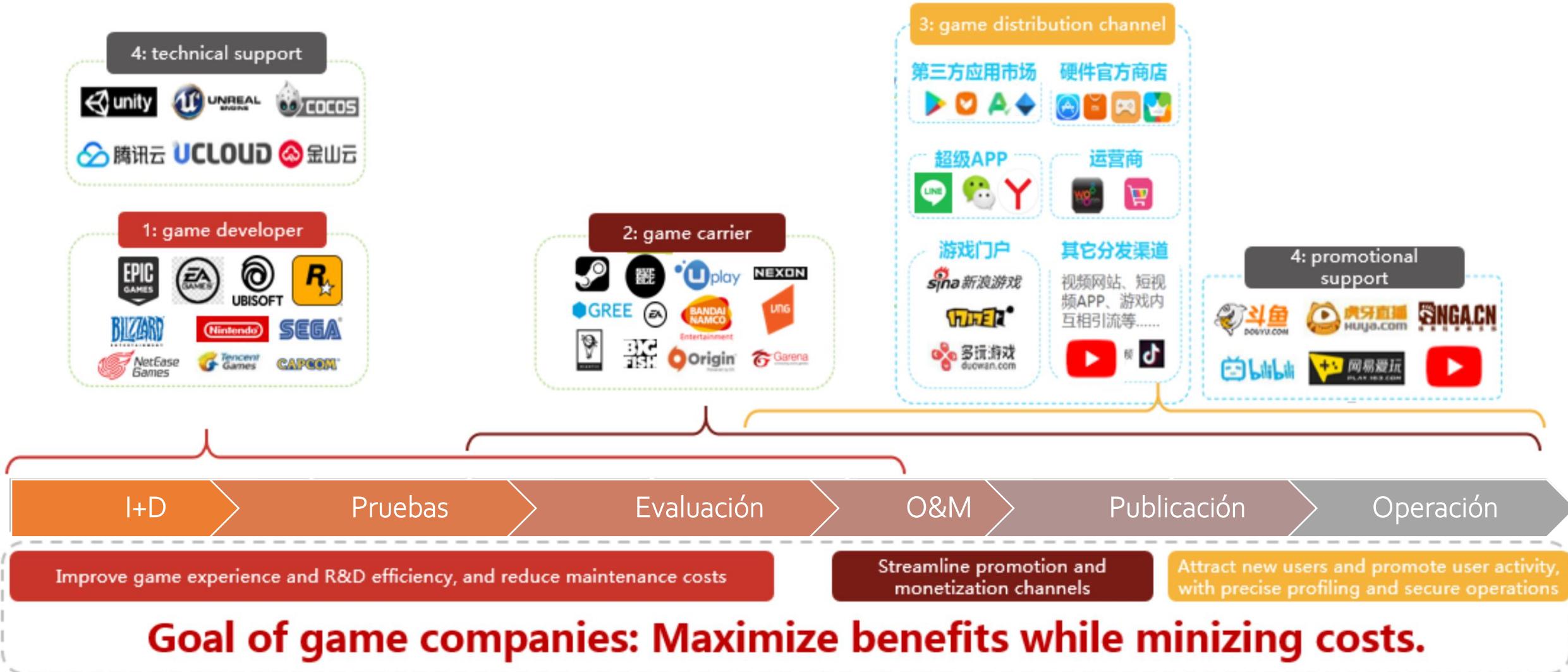
Extremely low payment rate and
ARPPU *
Large User Base

Maximize benefits while minimize costs

- 1.- Paid App (B2P) Player can download a game app only after purchase.
- 2.- In-app Purchase (IAP) also called Freemium. Pay for additional values in the game.
- 3.- Subscription Player must pay the game CP in each duration unit to obtain the game use rights or additional values in the game
- 4.- Ad, Monetize the traffic through the ad alliance

*ARPPU: Average Revenue Per Paying User

Requerimientos en el ecosistema de videojuegos



5 requerimientos clave de desarrolladores y carriers



Soluciones de desarrollo básico

Category	Sub-scenario	Solution	Intended For	Game Category	Kit	Key Values	Key Capabilities
Basic development	Graphics	3D graphics rendering engine	Game developers	Casual 3D games	Scene Kit	A lightweight and easy-to-use solution for rapid 3D graphics rendering.	Rendering engine, physical engine, particle effect, post-processing, etc.
		Graphics-intensive rendering framework	Game developers/ Game engine vendors	Large-scale 3D games	CG Kit	Improves the image quality of games.	Rendering framework, rendering enhancement plug-in, and cutting-edge edge graphics technologies
		Debugging tools for graphics rendering	Game developers/ Game engine vendors	All 3D games	Graphics Profiler	Quickly locates and solves graphics rendering problems.	Toolset that provides graphic frame analysis, offline performance analysis, and real-time performance analysis
	Development acceleration	Multi-thread programming library and computing acceleration	Game developers/ Game engine vendors	Large-scale 3D games	Accelerate Kit	Improves multi-thread development efficiency and provides access to hardware performance adjustment APIs.	Multi-thread library and Pergenius-based intelligent hardware scheduling

Graphics Rendering

Solución completa de renderización de gráficos

Scene Kit

Motor de renderizado de
gráficos 3D

Casual games 3D
Simplifica el desarrollo

CG Kit

Framework de renderizado
intensivo

Juegos 3D a gran escala
Mejor calidad de imagen y
desempeño

Graphics Profiler

Desarrollo grafico

Basado en circuitos
Desempeño superior

Qué es el Scene Kit?

Motor de gráficos ligero de alto rendimiento y de bajo consumo.

Servicios integrales de representación de gráficos, con capacidades abiertas que abarcan desde la capa del sistema de hardware hasta la capa de la plataforma de software

System layer

Las API de alto rendimiento son compatibles con Vulkan / OpenGL ES de manera eficiente, mejorando drásticamente el rendimiento de la representación.



Cross-platform support

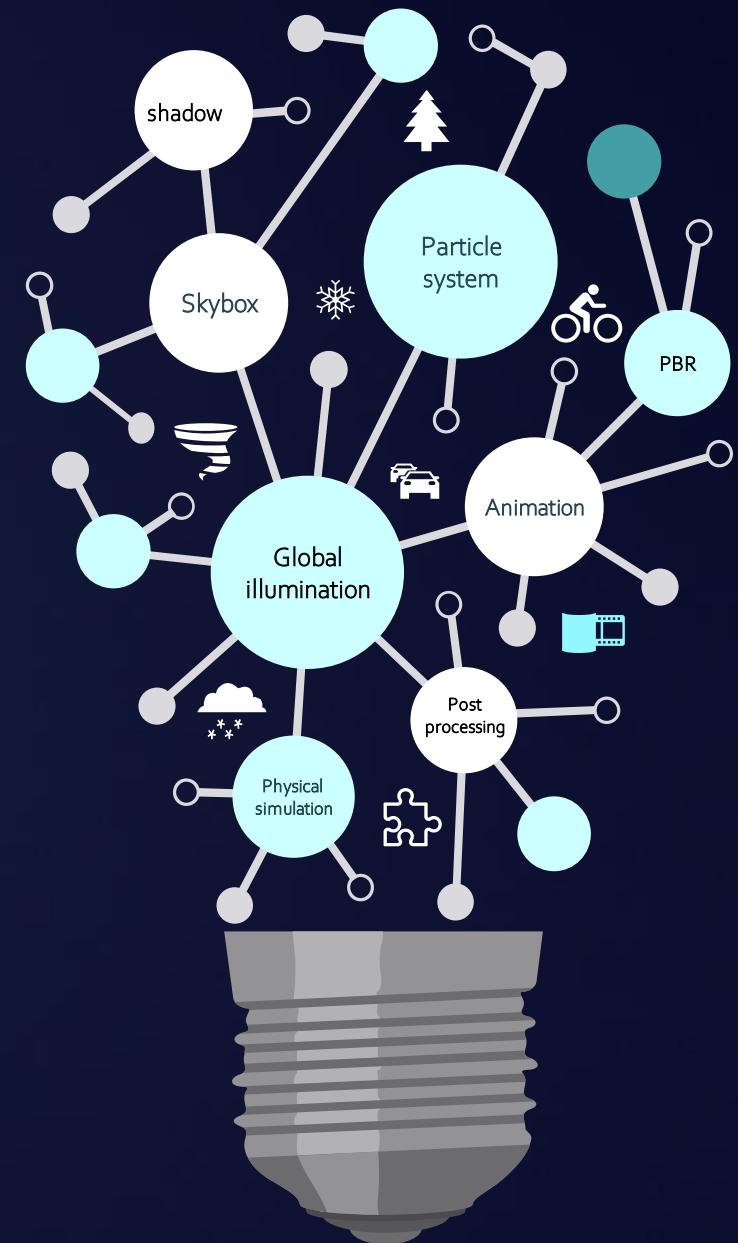
Android 4.4 or later (ARView
only supports Huawei devices.)

HMS Core (APK)

Full SDK: not required
Lite SDK: required

Qué puede hacer el Scene Kit?

- Scene Kit proporciona API descriptivas avanzadas para facilitar la edición, las operaciones y el renderizado de recursos 3D, proporcionando mejores efectos de renderizado.
- PBR pipeline
- Skybox
- Animation(planning)
- Physical simulation(planning)
- Particle system(planning)
- Post-processing (planning)
- Soft shadow (planning)
- Global illumination (planning)
- Real-time ray tracing (planning)



Motor de renderizado de gráficos 3D



SceneKit



Detalle de superficie de materiales
Zoom in y Zoom out

Motor de renderizado de gráficos 3D



Virtual 3D



Facial recognition

AR



Framework de renderizado intensivo de gráficos

Cross-platform support	HMS Core (APK)
All Android devices	Not required

CG Kit



HUAWEI Computer Graphics (CG) Kit proporciona tecnologías y capacidades avanzadas de gráficos por computadora para ayudar a los desarrolladores a entregar productos con una experiencia de usuario óptima.



CG Rendering Framework

Proporciona capacidades de renderizado Vulkan en la plataforma Android e integra las mejoras de Vulkan dedicadas a la plataforma Huawei.



GPU Extensions

Proporciona extensiones de GPU que incluyen Smart Cache y Prerotation para maximizar el rendimiento de la API de Vulkan.

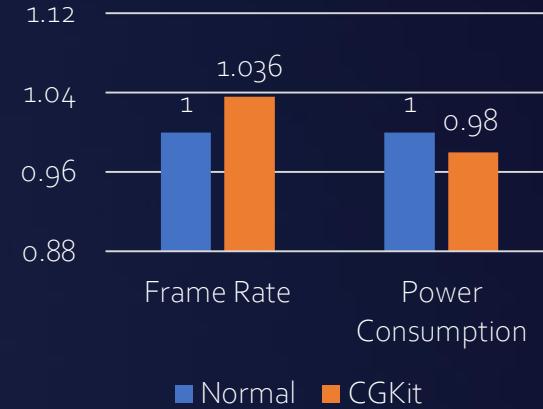
Framework de renderizado intensivo de gráficos

CG Kit



HD rendering

API fáciles de usar que permiten la visualización en HD de modelos de material PBR, lo que hace que el desarrollo sea más simple y rápido



Superb optimization

Mejores prácticas de las mejoras de Vulkan dedicadas a Huawei, respaldadas por las capacidades de optimización y extensión de la capa inferior del Huawei DDK

Framework de renderizado intensivo de gráficos

CG Kit



Hardcore 3D Games
Orientado a desarrollo



Motores de juegos
Unity, Unreal, Cocos ...

Framework de renderizado intensivo de gráficos

CG Kit

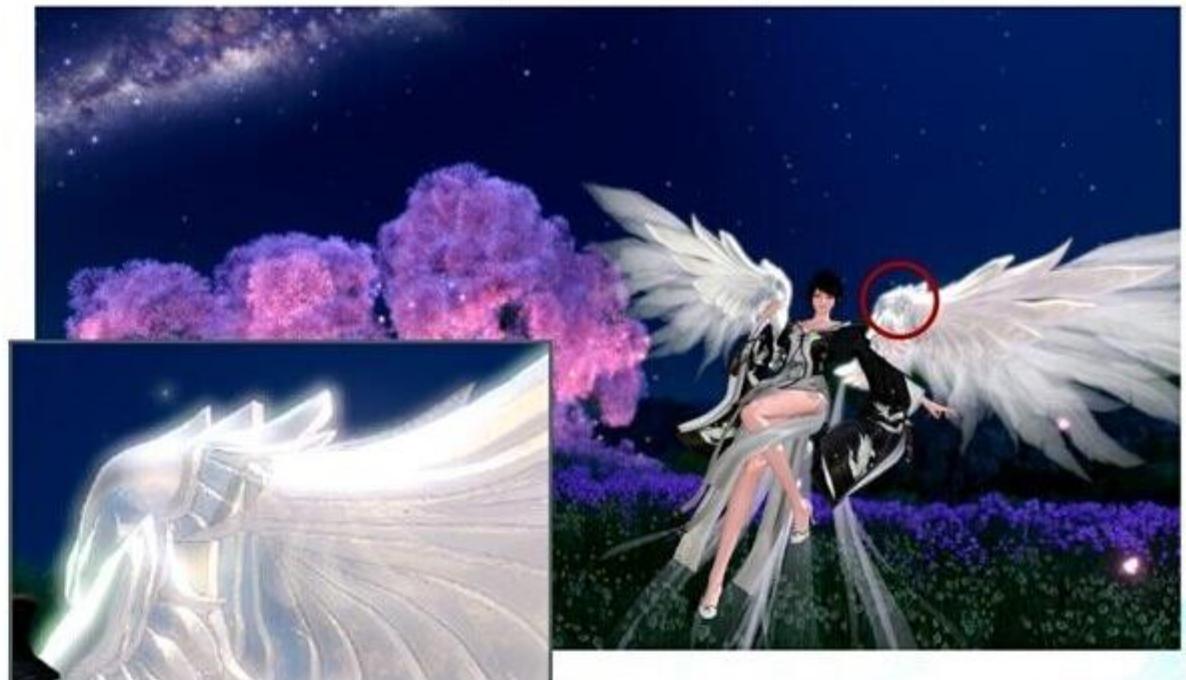


Mobile Game from NetEase

Without Computer Graphics Kit



With Computer Graphics Kit



Static super-resolution enhances image details

Aceleración de juegos

Accelerate Kit

Cross-platform support	HMS Core (APK) requirement
All Android devices	Not required

App

Games

Media & entertainment

Videos & photos

...

Accelerate Kit

Multithread-lib

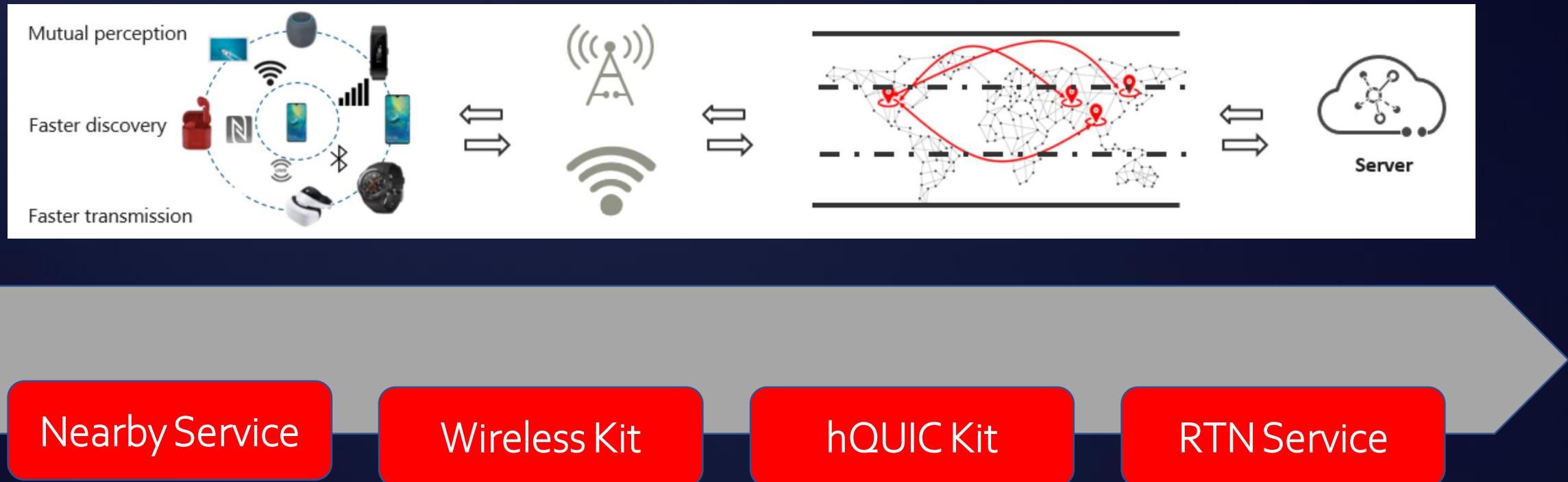
Kernel

Soluciones de aceleración de red

Category	Sub-scenario	Solution	Intended For	Game Category	Kit	Key Value	Key Capability
Network acceleration	Network communication performance improvement	Network performance optimization (to be launched in Q4 2020)	Game developer/Game engine supplier supplier	MMO, RPG, competitive multiplayer games, and cloud games	Network Turbo Kit	Guarantees high performance in poor network conditions, with low latency and packet loss mitigation.	Provides Huawei-developed protocol Meetu, single-path and multi-path optimization.
		Intelligent network switching	Game developer/Game engine supplier supplier	All games	Wireless Kit	Guarantees high performance in poor network conditions, and prevents slow response and disconnection.	Provides network QoE info and supports intelligent network switching.
		International network transmission optimization optimization (to be launched in 2021)	Game developer/Game engine supplier supplier	MMO, RPG and competitive multiplayer games	RTN Service	Provides a top-quality backbone network with low latency and high stability.	Provides a top-quality backbone network.
	File download acceleration	Game resource download acceleration	Game developer/Game engine supplier supplier	All games	hQUIC Kit	Accelerates game resource downloads to shorten game loading time.	Supports QUIC protocol, WLCC congestion control algorithm, and smooth network switching.
	Near-field interactive games	Near-field interactive games	Game developer/Game engine supplier supplier	Multiplayer online games	Nearby Service	Supports identification and quick grouping with high bandwidth and low latency.	Provides dual-channel transmission: Bluetooth and Wi-Fi

Aceleración de red

Servicios de alto rendimiento que combinan hardware y software



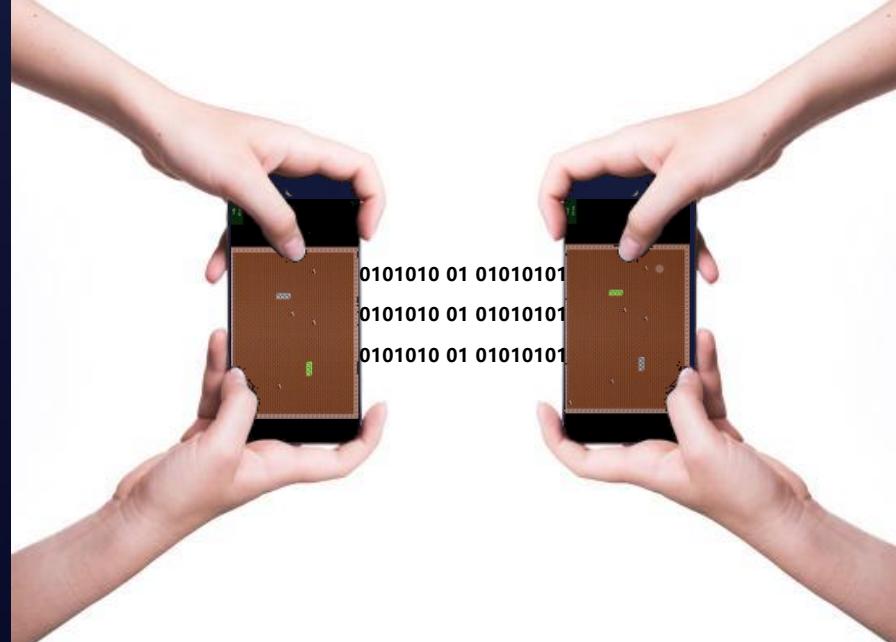
Juego interactivo near-field

Nearby Service

Cross-platform support	HMS Core (APK) requirement
Android 5.0 or later	Full SDK: not required Lite SDK: required

Habilita a los dispositivos a interactuar con otros dispositivos cercanos

1- Juegos de agrupacion

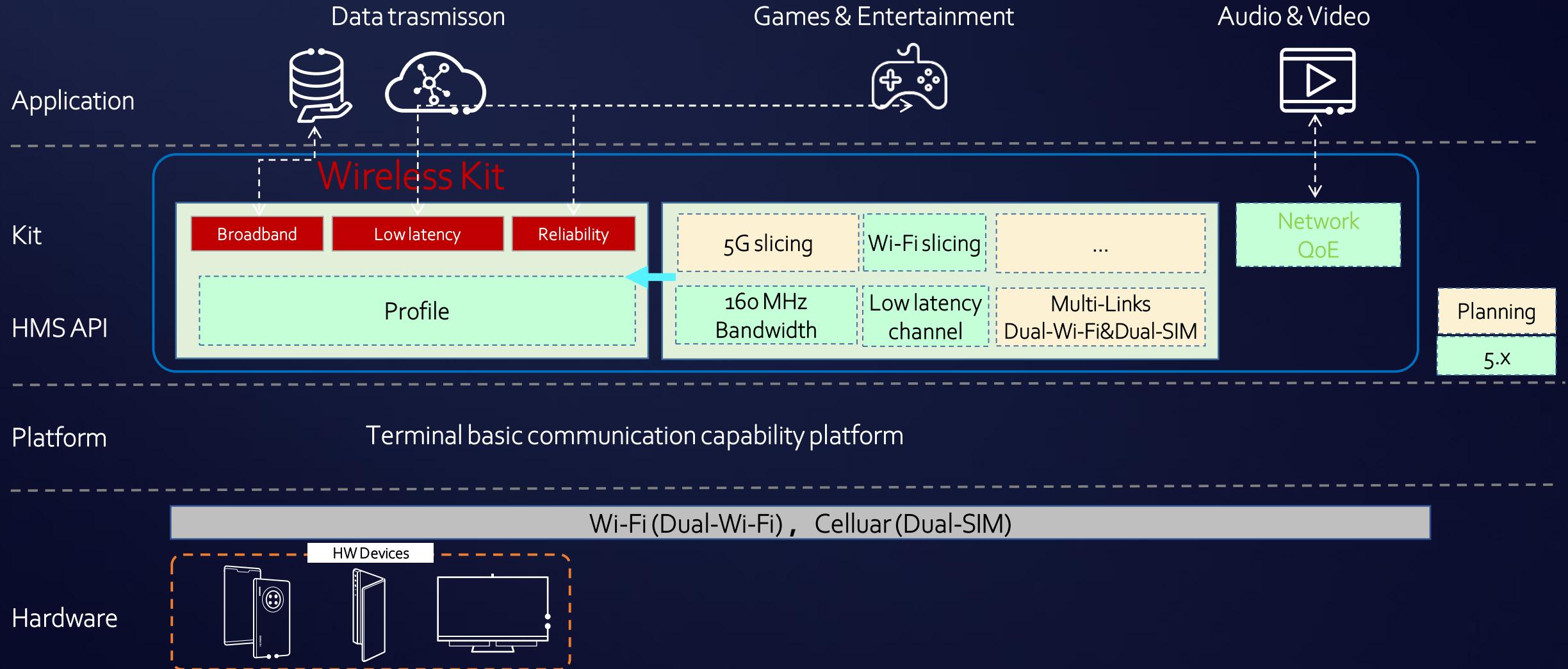


2- Juegos multijugador



Juego interactivo near-field Wireless Kit

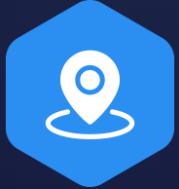
Cross-platform support	Chip support	HMS Core (APK) requirement
Huawei devices only	Kirin and MTK	Required



Soluciones para innovar en juegos

Category	Sub-scenario	Solution	Intended For	Game Category	Kit	Key Values	Key Capabilities
Game innovation	VR	Online/Offline joint marketing	Game developers/ Game carriers carriers	All categories	Nearby Service/ Location Kit	Launches online and offline game events jointly to build anticipation.	Bluetooth beacons and geo-fencing
		Responsiveness to the real world	Game developers	Sports and adventure games	Awareness Kit	Provides real-time weather, ambient light, locations, and player motion status, so games can create new gameplay modes.	Sensing of time, locations, weather, ambient light, behavior, and devices
	AR/VR games	AR game development	Game developers	AR/VR games	AR Engine	Improves the AR gaming experience.	Human body tracking, motion tracking, and environment tracking
	Game localization	Game UI translation	Game developers	Casual games	ML Kit	Frees developers from game game localization and improves the development efficiency.	Translation between 19 languages: Chinese, English, French, Spanish, Turkish, Arabic, Thai, Russian, Italian, German, Portuguese, Japanese, Japanese, Danish, Swedish, Polish, Norwegian, Finnish, Korean, and Malay
	In-game socialization	In-game voice-to-text conversion for multiple languages	Game developers	MMORPG and MOBA games	ML Kit	Helps players from different countries to communicate via voice on the same server.	Support for Chinese, English, French, Spanish, German, and Italian

Location Kit



El kit de ubicación proporciona a los desarrolladores cuatro capacidades básicas, que incluyen ubicación, geocercas, reconocimiento de actividad y semántica de ubicación.

Fused location



GPS + Wi-Fi + Base Station

Geo-fencing



Enter, Exits, Linger

Activity Identification



Walking, Running, Cycling, Driving, Still

Awareness Kit

HUAWEI Awareness Kit permite que las aplicaciones obtengan la situación actual de los usuarios y dispositivos, **incluida la hora, la ubicación, el comportamiento, el clima, la luz ambiental y estatus de los auriculares**. Con la ayuda de Awareness Kit, puede perfeccionar la experiencia del usuario de formas nuevas y eficientes.



Time

- Day of Week
- Weekday/Holiday
- Morning/Afternoon/Evening/Night
- Sunrise/Sunset



Location

- Longitude and latitude
- Geo-fence



Behavior

On foot, walking, running, in vehicle, on bicycle, still



Ambient light

- Senses the ambient light intensity of the device
- Sets a barrier based on specified light intensity



Weather

Queries the weather information including the temperature, humidity, wind direction, wind power, and UV light intensity



Headset

Connected/Disconnected

Motor de Realidad Aumentada

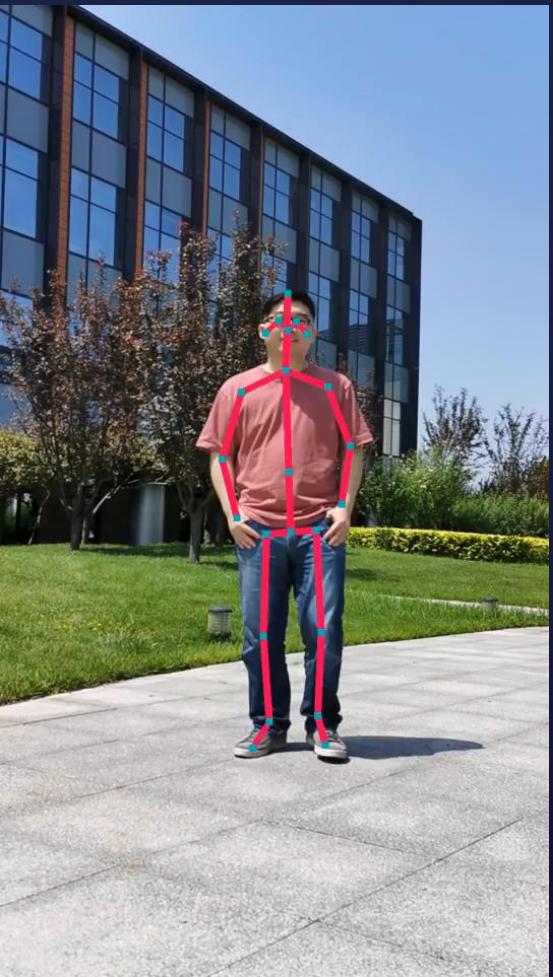
Feature	Cross-platform support	HMS Core (APK)
Awareness Kit: main functions	Android 7.0 or later	Required
AR Engine: full functions	Huawei devices only; Kirin chips required	Not required



- Light estimation: Enables the phone to estimate the lighting conditions of the surrounding environment. Currently, this feature only supports the estimation of ambient light intensity.
- Hit testing: Enables you to select points of interest in real-life environments through your phone screen.

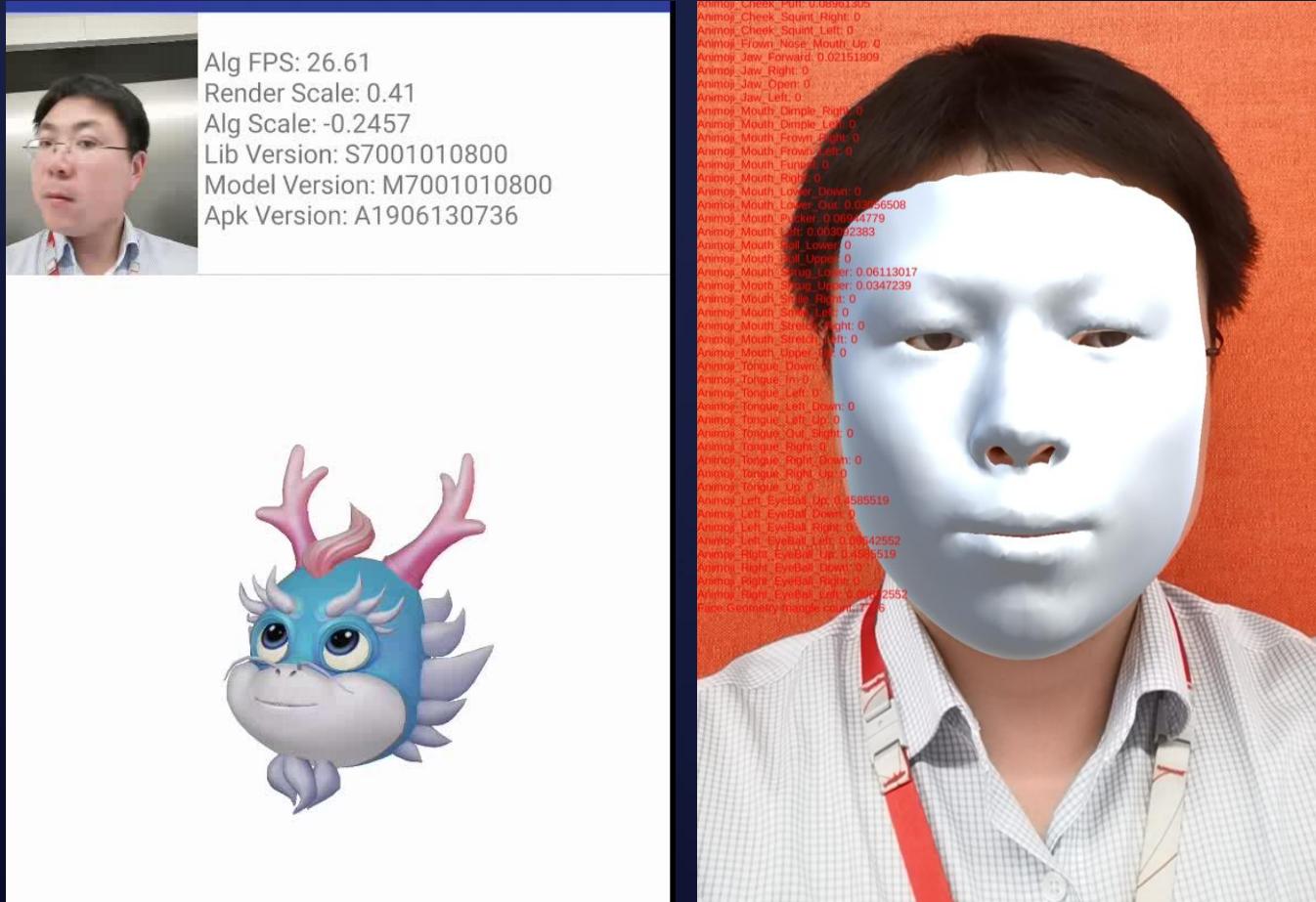
- Motion tracking: Continuously and stably tracks changes in the position and posture of the mobile phone, and simultaneously outputs three-dimensional coordinate information relative to the surrounding environment.
- Plane detection: Enables the phone to detect the size and position of horizontal and vertical planes (such as ground and walls).

Motor de Realidad Aumentada



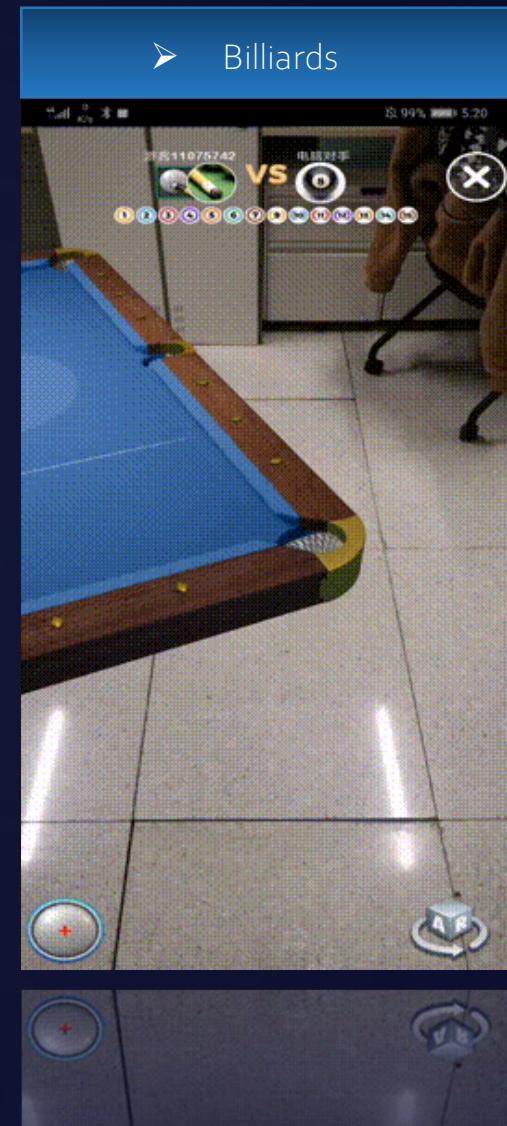
- Human body pose recognition: Identifies specific human body postures.
- Human body skeleton tracking: Identifies and tracks the positions and postures of 23 human body skeleton points to form a human skeleton diagram. This function supports single persons and multiple persons.
- Hand gesture recognition: Recognizes specific hand gestures and actions.

Motor de Realidad Aumentada



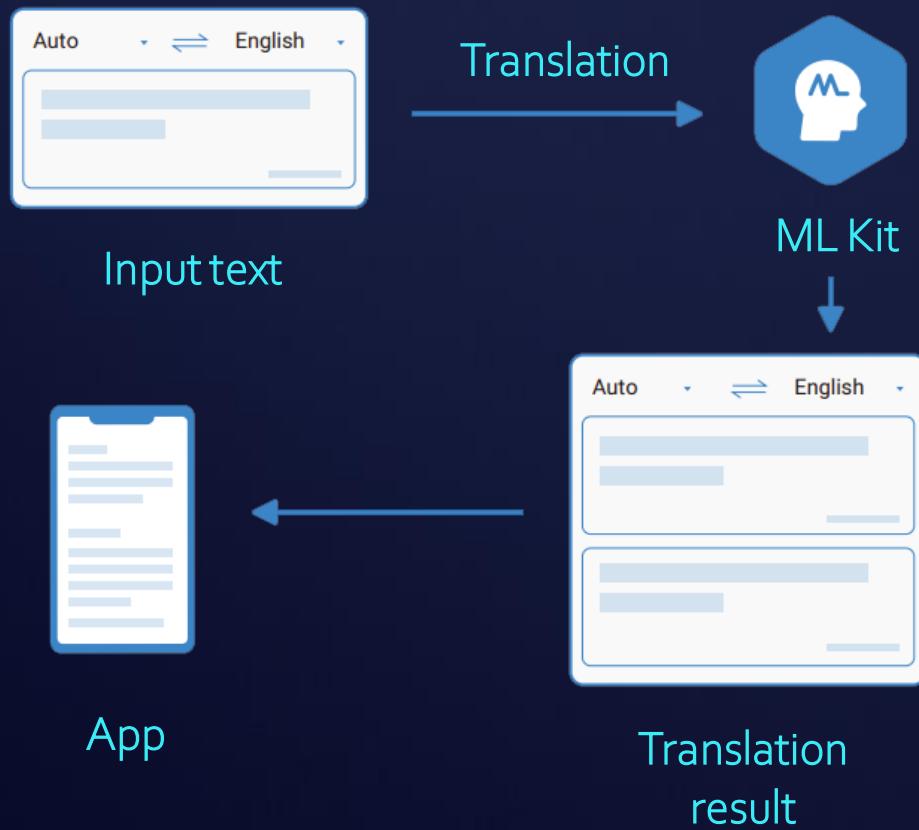
- Facial expression tracking: Real-time calculation of the parameter values corresponding to each expression of the face can be used to directly control the expression of the avatar.
- Face mesh: The Mesh model data of the face is calculated in real time, and the Mesh model data follows the face change and motion in real time.

Motor de Realidad Aumentada



ML Kit – Traducción

Cross-platform support	HMS Core (APK) requirement
Android 4.4 or later	Required



Traducir texto entre diferentes idiomas (por ejemplo, chino, inglés, francés, español, turco, árabe y tailandés)

- En la nube: soporte para la traducción entre 12 idiomas
- Latencia: 300 ms / 100 caracteres

ML Kit



Cross-platform support	HMS Core (APK) requirement
ASR/TTS: Huawei devices only	Required

Reconocimiento de voz en texto escrito con una potente tecnología de aprendizaje automático; fácil integración con la interfaz de usuario predeterminada

- Soporte para chino e inglés, francés, alemán .italiano y español
- Soporte para palabras populares personalizadas

Soluciones para monetización

Category	Sub-scenario	Solution	Intended For	Game Category	Kit	Key Values	Key Capabilities
Monetization operations	Game operations	Basic game operations service	Game carriers	Casual and mid-core games	Game Service	Provides basic game operations services to help small- and medium-sized developers quickly develop games.	Provides basic operations services such as account service, service, saved games, game gift gift packages, achievements, leaderboards, screen recording, recording, player statistics, and and game event reporting.
		Game account service	Game carriers	All categories	Account Kit		
		Collects and reports specific specific data, supports in-depth analysis of game operations data, and pushes pushes information based on precise analysis results and audiences.	Game carriers	All categories	Analytics Kit+ DTM + Push Kit Kit	Partially supported	Supports only basic data reports reports for user sign-ins, downloads, and purchases and and custom event reporting.
	Game monetization	IAP	Game carriers	All categories	IAP	Lowers the consumption threshold threshold for users and and helps monetize games.	Supports 78 languages, 170+ countries/regions, 47+ mainstream carriers, and local mainstream payment methods. methods.
		Ads	Game carriers	All categories	Ads Kit		

Game Service

- Game Service brinda un acceso conveniente a las funciones más populares del juego y brinda poderosas capacidades de análisis, lo que reduce de manera efectiva la carga de trabajo de los desarrolladores. Esto permite a los desarrolladores centrarse en mejorar la experiencia de juego y la innovación en el juego.

Cross-platform support	HMS Core (APK) requirement
Android 4.4 or later (achievements (achievements and leaderboards only for Huawei devices)	Required



Achievements



Leaderboard



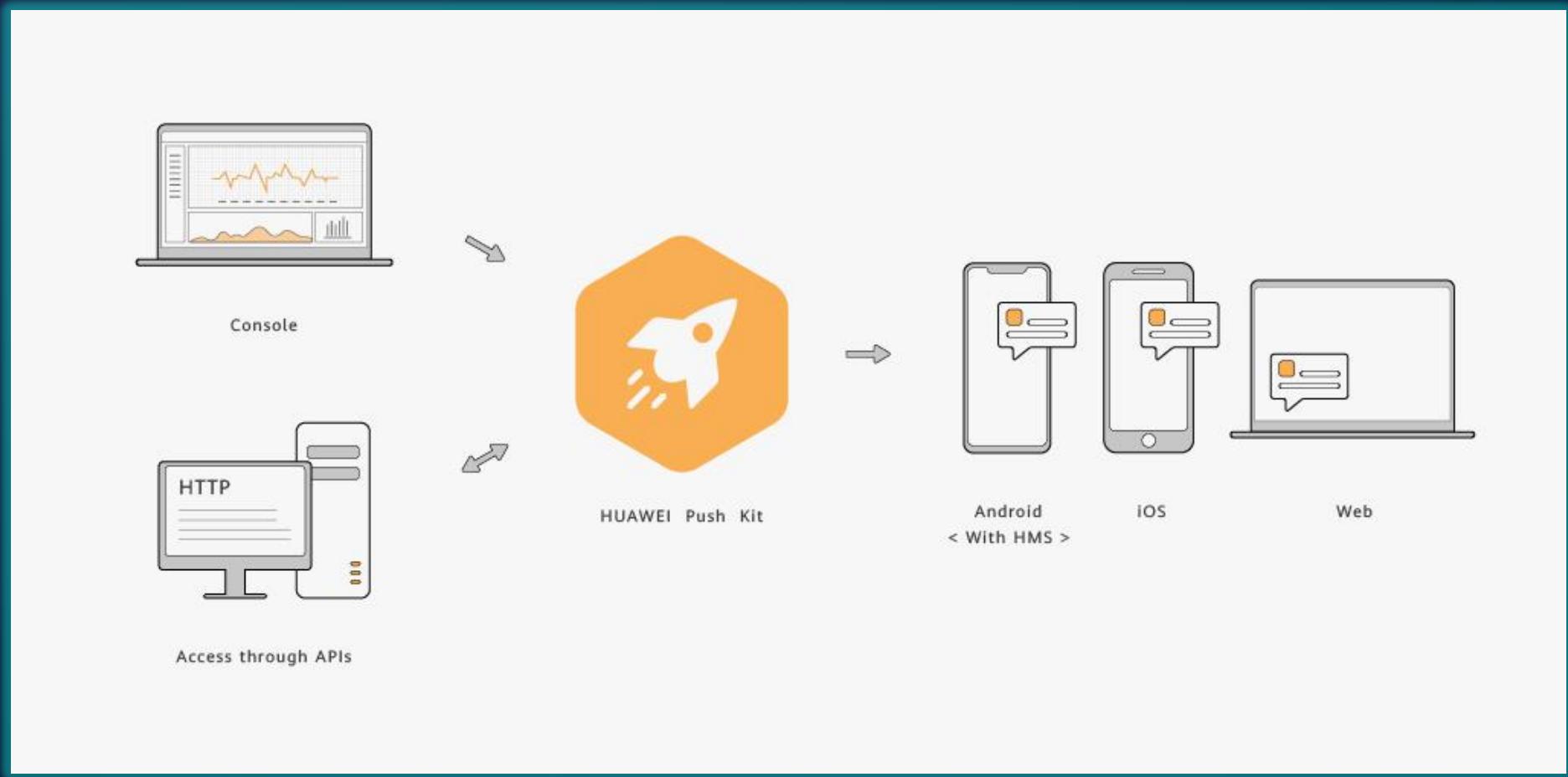
Saved games



Event

Push Kit

Cross-platform support	HMS Core (APK) requirement
Android 5.0 or later	Required



Analytics Kit

Cross-platform support	HMS Core (APK) requirement
Android 4.4 or later for main functions	Required



Tabla
Dashboard



Análisis de
Eventos



Análisis de
Audiencia



Análisis de
“Funnel”



Análisis de
Atribución



Análisis de
Comportamiento



Análisis de
Retención



Análisis en
Tiempo Real



Análisis de
Versión



Depuración
de App

In-App Purchases

Cross-platform support	HMS Core (APK) requirement
Android 4.4 or later	Required

Ayuda a los desarrolladores a realizar rápidamente la monetización de negocio global



Mainstream payment

- VISA/Mastercard/AMEX/JCB
- Carrier billing
- HUAWEI Points
- Local payment (FPX/Open banking)



Global coverage

140+ countries and regions

- Asia Pacific: 23
- Europe: 53
- Middle East and North Africa: 26
- Southern Africa: 16
- Latin America: 27

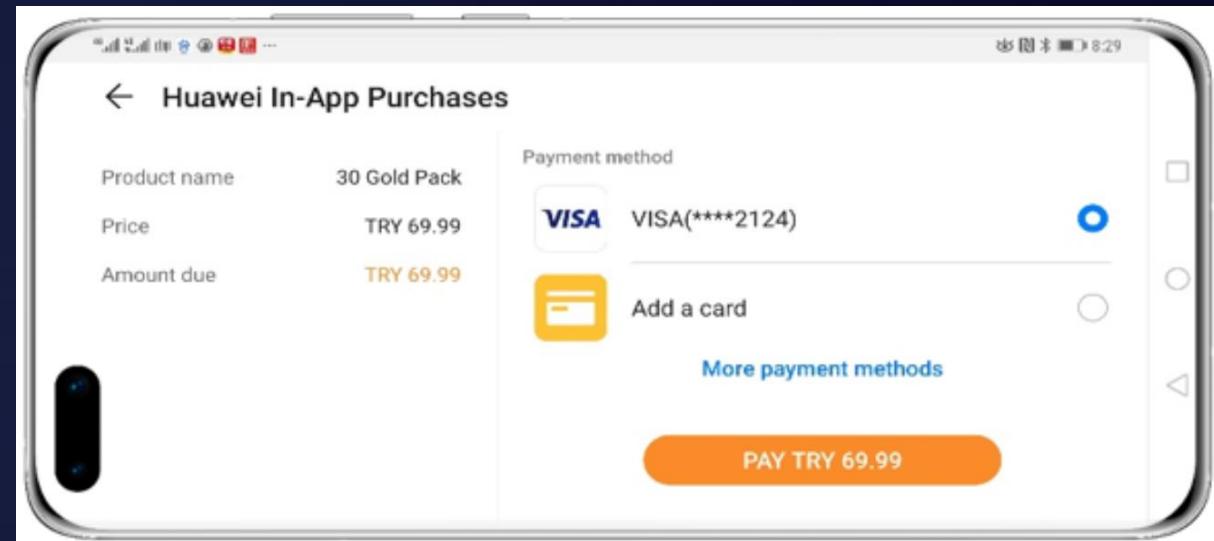


Convenient services

- Product management service
- Order service
- Subscription service
- Sandbox test service

- Complies with European GDPR.
- Gets the highest level of PCI-DSS certification.

In-App Purchases

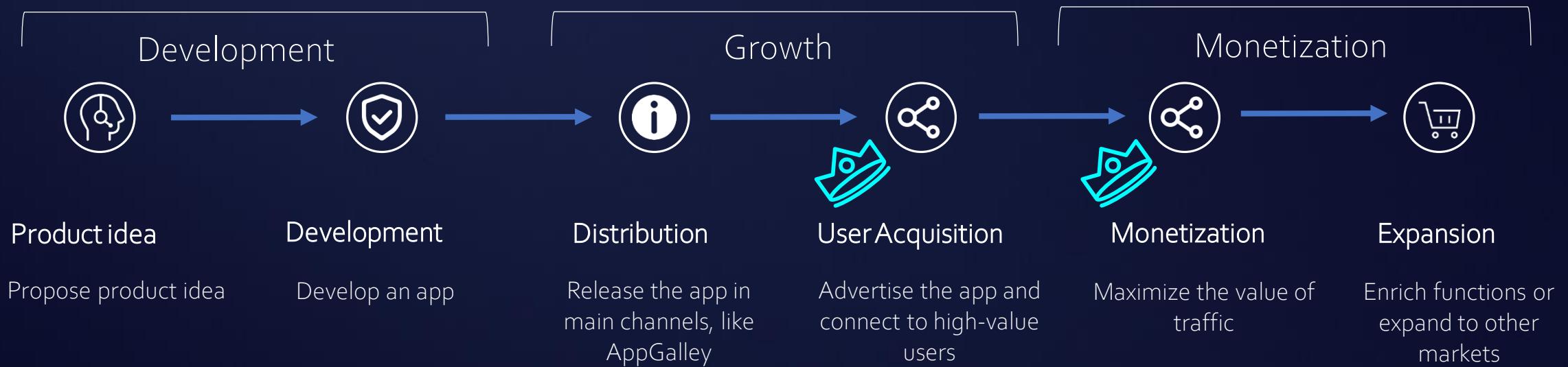


 ✓ Bank cards 177+ countries/regions	 ✓ DCB 63+ mainstream carriers	 ✓ HUAWEI Points 123+ countries/regions	 ✓ Local methods Mainstream payment methods
   	     		   

Ads Kit

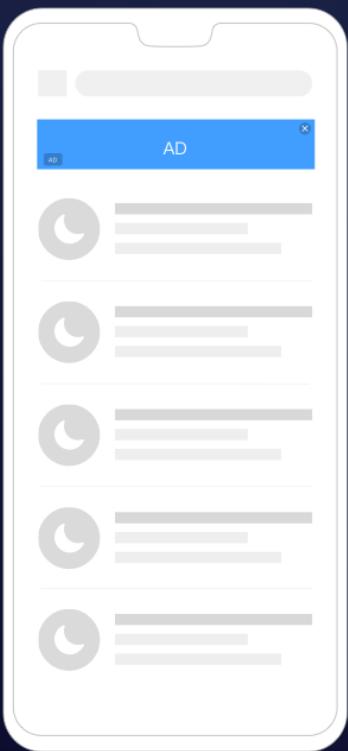
Cross-platform support	HMS Core (APK) requirement
Not required	Required

Una solución de monetización para desarrolladores
Una solución comercial para anunciantes

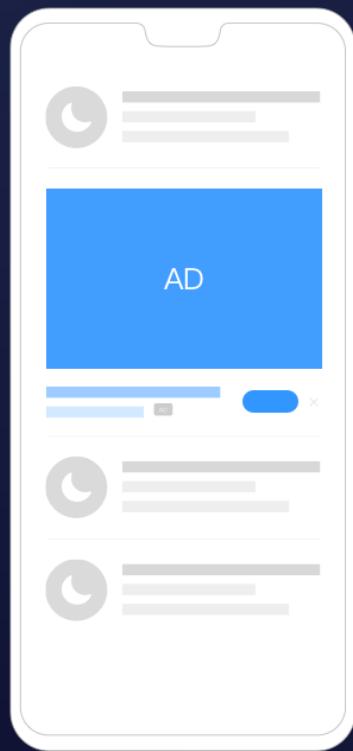


Formatos de publicidad

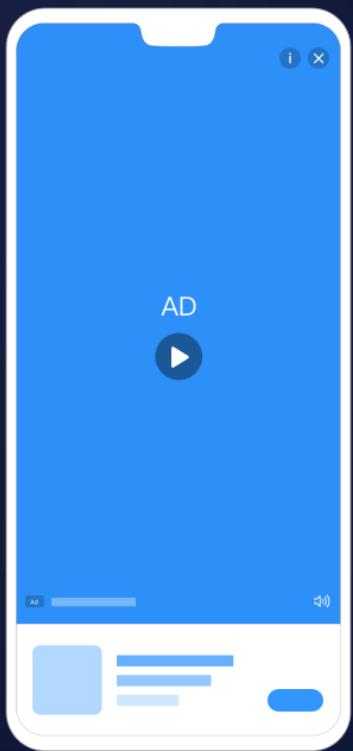
HUAWEI Ads provides banner, native, rewarded, interstitial, and splash ads for developers.



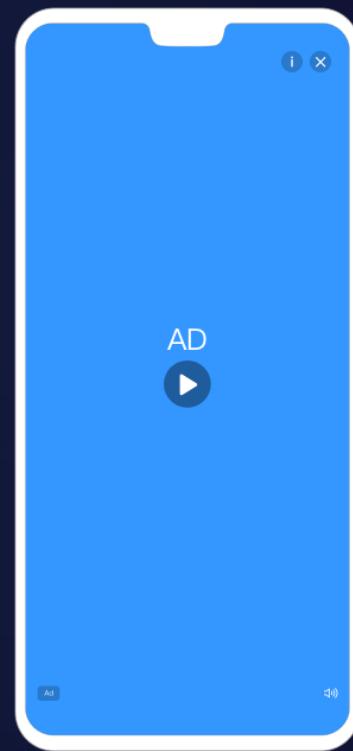
Banner



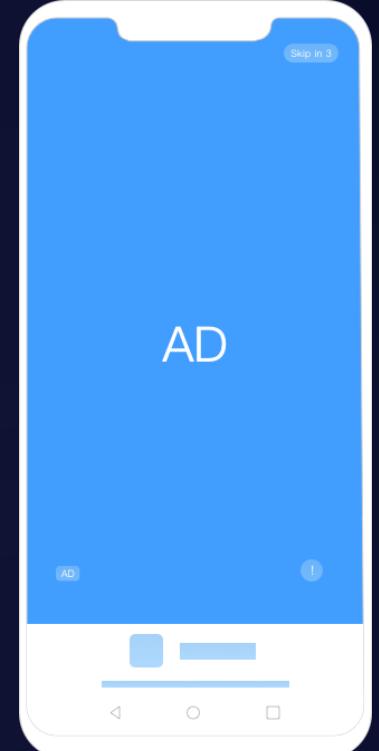
Native



Rewarded



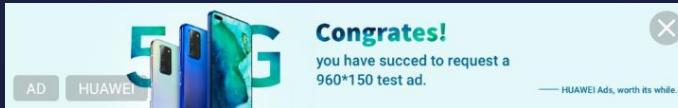
Interstitial



Splash

Integrando publicidad

Banner ad



Rewarded ad



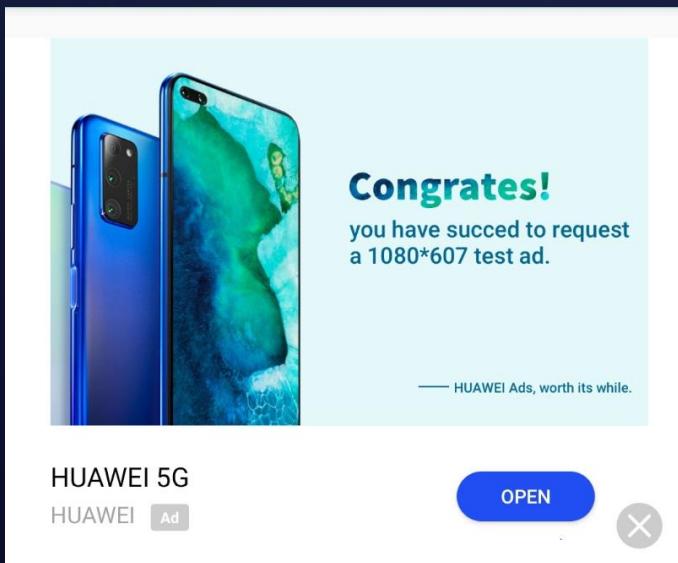
Interstitial ad



Splash ad



Native ad



Soluciones de seguridad

Category	Sub-scenario	Solution	Intended For	Game Category	Kit	Key Values	Key Capabilities
Game security	Anti-cheat	Provides system-level app security protection and malicious app identification capabilities.	Game carriers	All categories	Safety Detect	Provides basic security capabilities.	Checks whether the device system is rooted and whether a plug-in or simulator is running to decide whether to restrict gameplay behaviors.
	Anti-theft account	Checks app and environment security.	Game carriers	All categories	Safety Detect	Provides basic security capabilities.	Supports app security detection, malicious URL/Wi-Fi detection, and game environment security assurance. Currently, malicious Wi-Fi detection is supported only on Huawei devices.
		Account security protection	Game carriers	All categories	Account Kit	Prevents account loss.	Protects account security in the case of account leakage or mobile phone loss. Prompts for modifying key account information.
	Anti-boosting	Checks whether an app is interacting with a bot.	Game carriers	All categories	Safety Detect	Provides basic security capabilities to prevent boosting from using programs to gain profits.	Detects fake users based on the environment and behavior and verifies users using graphic verification codes.
	Minor protection	Restricts minors' accounts and payment behavior.	Game carriers	All categories	Account Kit, Game Service, IAP Kit	Complies with local laws, policies, and regulations.	Restricts the game duration, service hours, and consumption upper limit of minors.

Account Kit

Cross-platform support	HMS Core (API) requirement
Android 4.4 or later	Required

Seguro y confiable usando HUAWEI ID para ahorrar costos

Seguro y
confiable

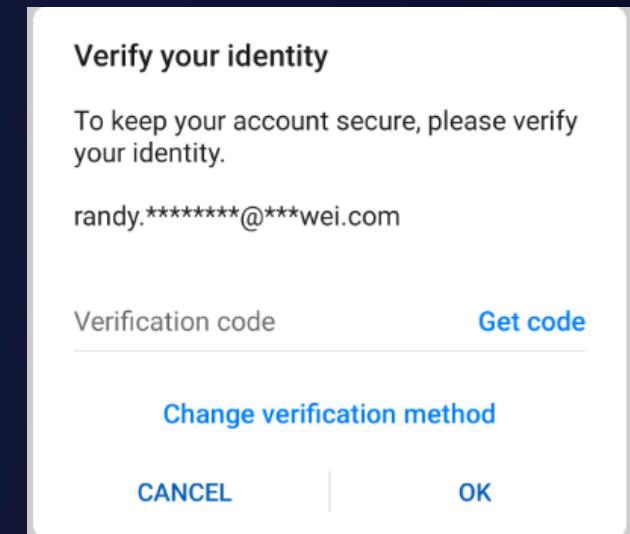


- ✓ Autenticación Dual-factor para proteger cuentas de usuarios
- ✓ Sistema de control de riesgo identifica riesgos de cuenta en tiempo real
- ✓ Soporte de ID Token o código de autorización

No te
preocupes por
la privacidad



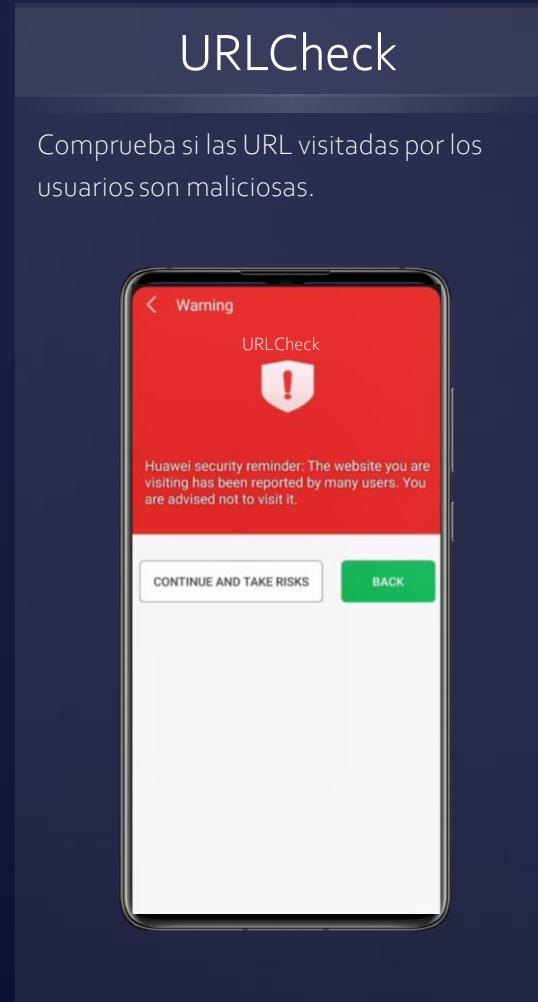
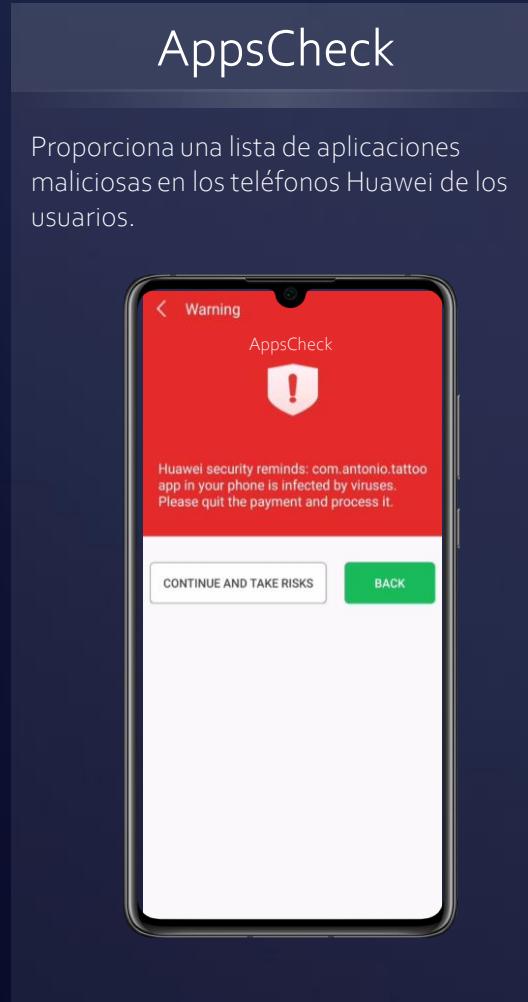
- ✓ Cumple con **estándares** de privacidad y seguridad como el GDPR, para proteger datos de usuario.



Ejemplo de validación
de identidad

Safety Detect

Feature	Cross-platform support	HMS Core (APK) requirement
AppsCheck and WifiDetect	Not required	Required
URLCheck	Android 4.4 or later	Required



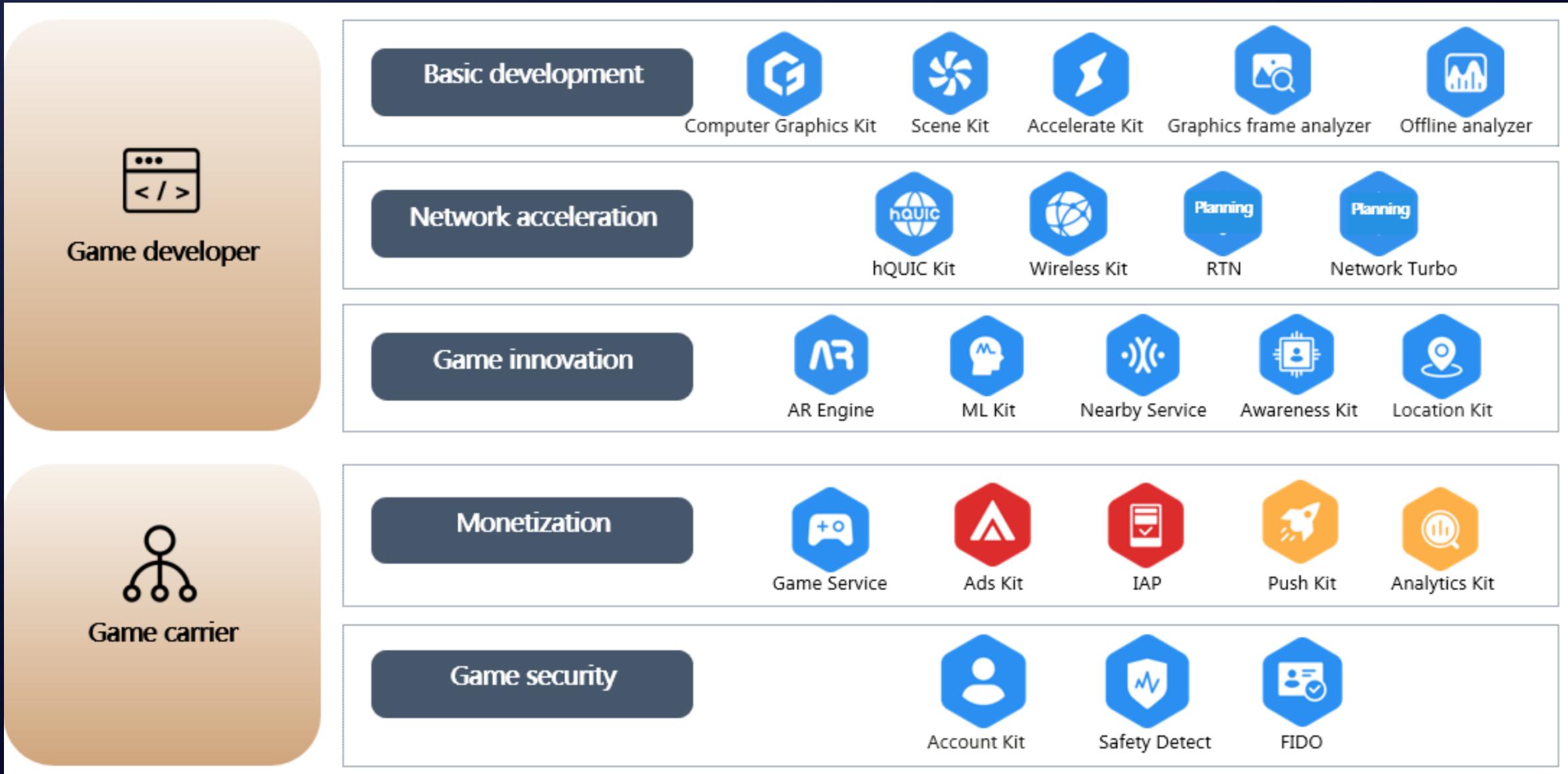
Robot behavior interception

Valid user

Protección a menores

 Identity verification	 Duration control	 Service hours control	 Game rating	 Consumption permission/upper limit
Identity verification is mandatory for all users ID card binding Facial recognition	Daily accumulation on legal holidays No more than 3 hours	From 22:00 to 8:00 on the next day, minors are forbidden to sign in.	Rating by regulations Prohibit sign-in of unauthorized players	Age group No more than CNY400 per month
Account Kit Scan Kit ML Kit	Game Service	Game Service	AppGallery	IAP

Resumen de las funcionalidades HMS en 5 categorías





Preguntas y respuestas



Codelab