

# 9. Huawei Open AI Platform for Smart Devices

## 9.1 AI Industry Ecosystem and Huawei HiAI Platform

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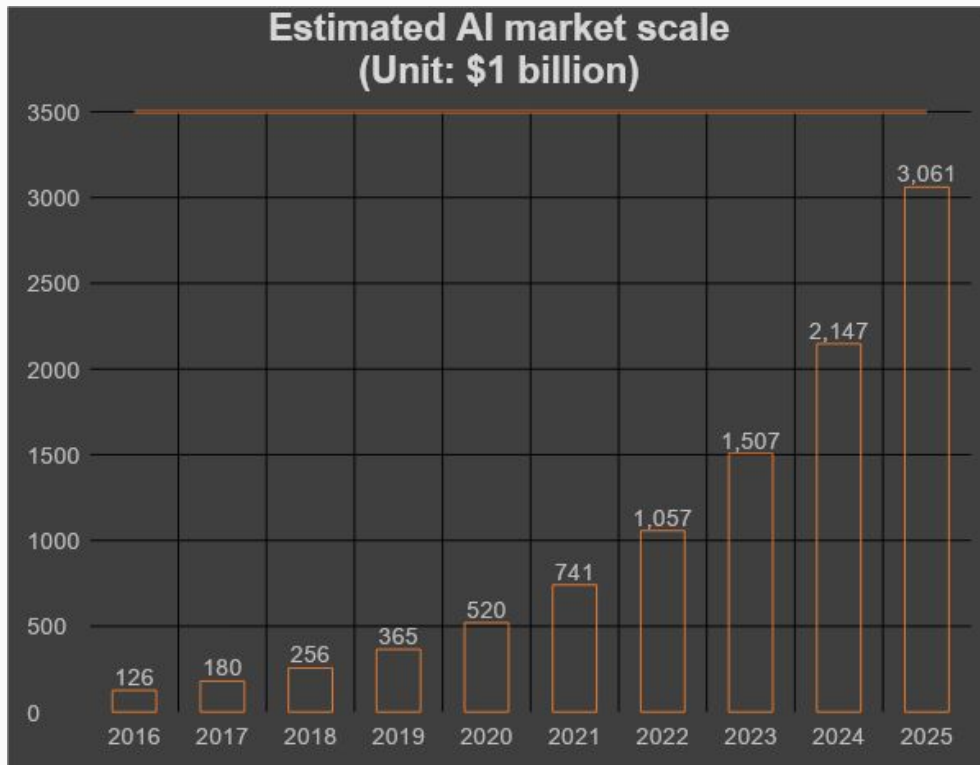
# 1. **AI Industry Ecosystem**

2. Huawei HiAI Platform

3. Developing Apps Based on Huawei HiAI Platform

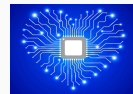


# Huge Opportunities: Foreseeable AI Ubiquity in a \$3 Trillion Market



Involved industries: automobile, finance, consumer goods and retail, medical care, education, manufacturing, communications, energy, tourism, culture and entertainment, transportation, logistics, real estate, and environmental protection

Computing power breakthrough



Algorithm breakthrough



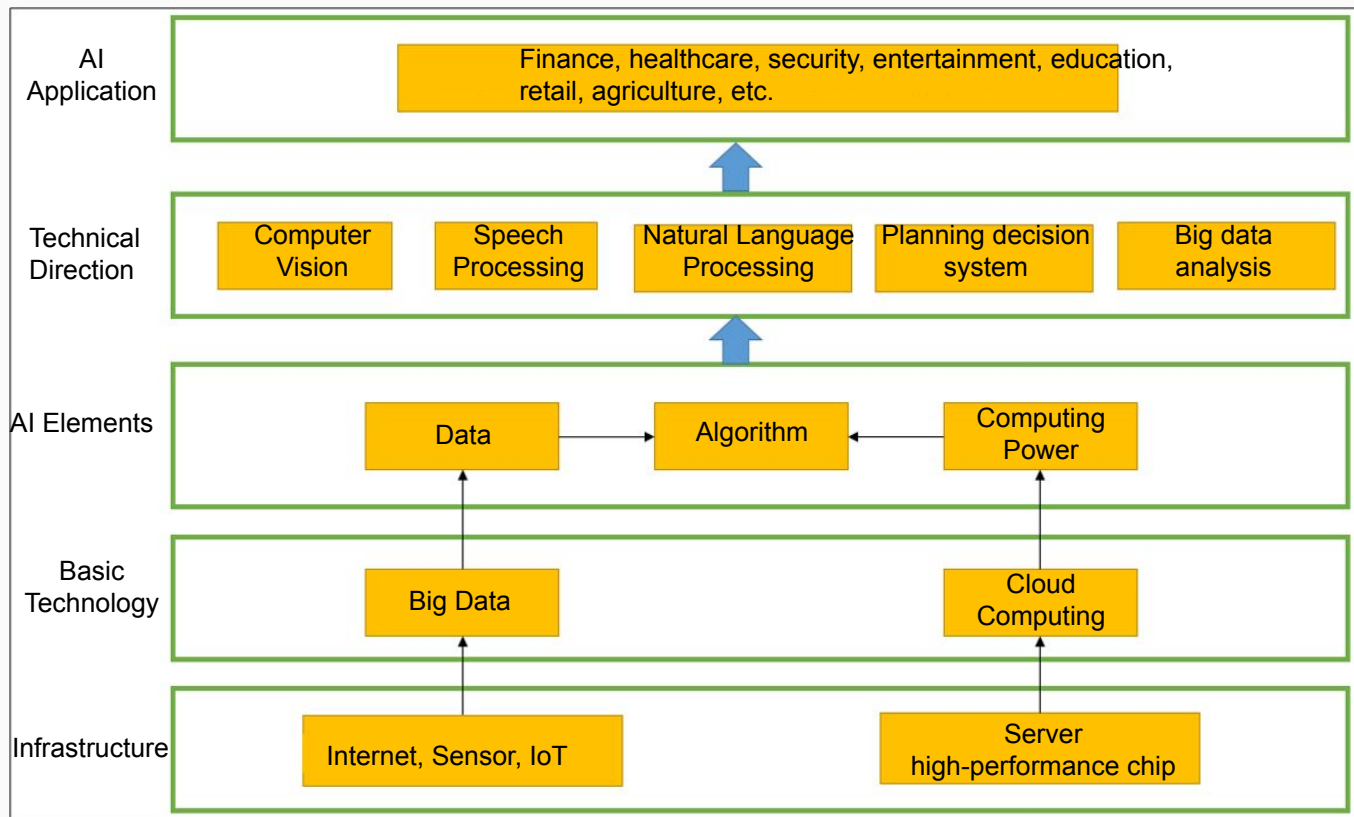
Data breakthrough



Data source: Forrester, Transparency Market Research, Chinese Association for Artificial Intelligence, and Roland Berger



# Architecture of the AI Application Platform



# Challenges in AI Capability Development and Application

## High thresholds

Demanding requirements



6 months: ML & DL  
2 months: Statistics  
4 months: Linear algebra  
3 months: Calculus

15 months

## Low efficiency

Long training cycles



Data collection and cleansing  
Model training and optimization  
Customized experience improvement

3–8 months

## Diverse requests

Fragmented experience



The entire training cycle must be repeated for each scenario.  
Lack of inheritability or transferability

N-fold workload

## Slow iteration

Limited capability enhancement



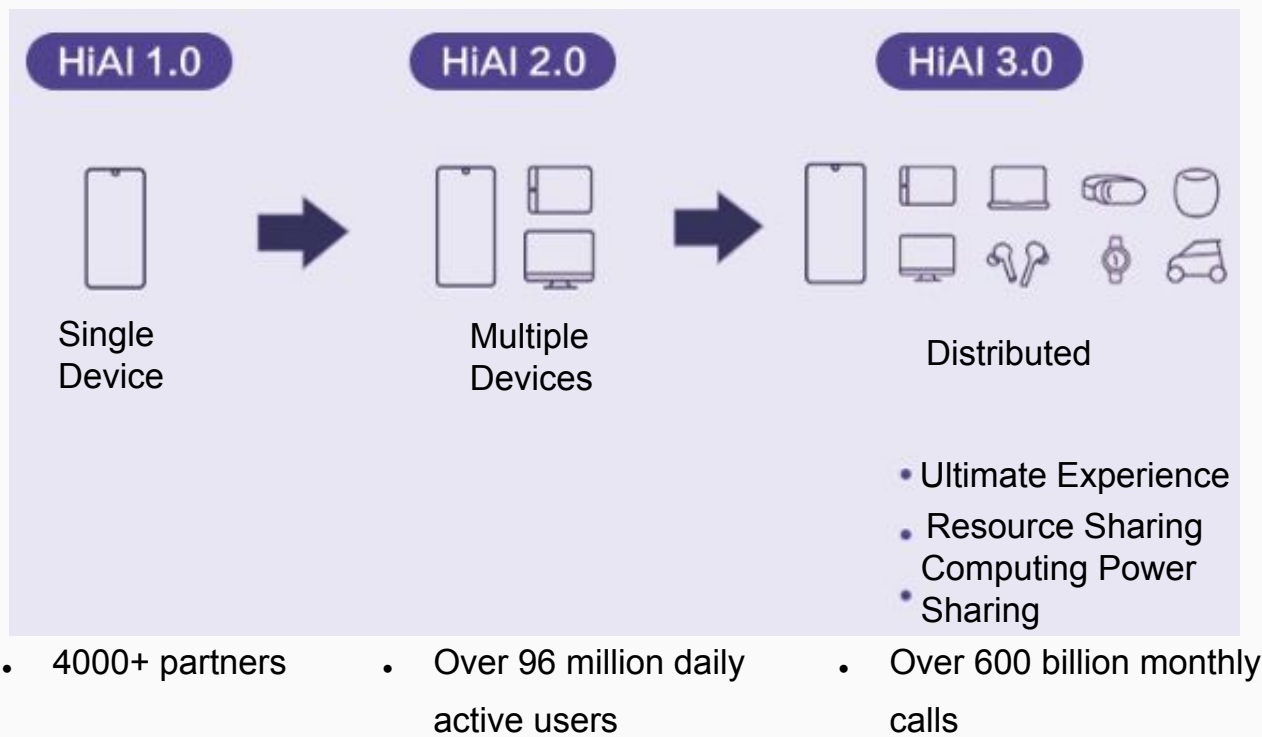
Difficulties in model upgrade  
Difficulties in valid data acquisition



1. AI Industry Ecosystem
- 2. Huawei HiAI Platform**
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# HiAI 3.0 — Enabling Ultimate Experience in All-Scenario Smart Life



# Huawei HiAI 3.0: Enabling Distributed AI Scenarios by AI



Cloud **1000+ atomized services**

## Huawei HiAI Service

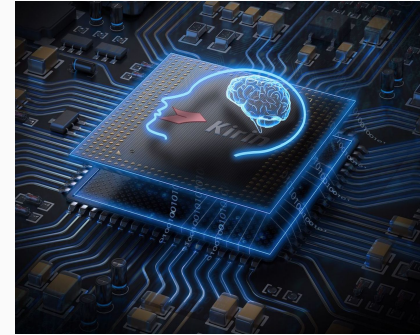
Service capability openness for mutual benefits  
Push services based on user requirements  
in an active manner.



Device **40+ application programming interfaces (APIs)**

## Huawei HiAI Engine

AI capability openness for simplicity  
Integrate multiple AI capabilities into  
apps simply, making apps smarter and  
more powerful.



Chip **300+ operators**

## Huawei HiAI Foundation

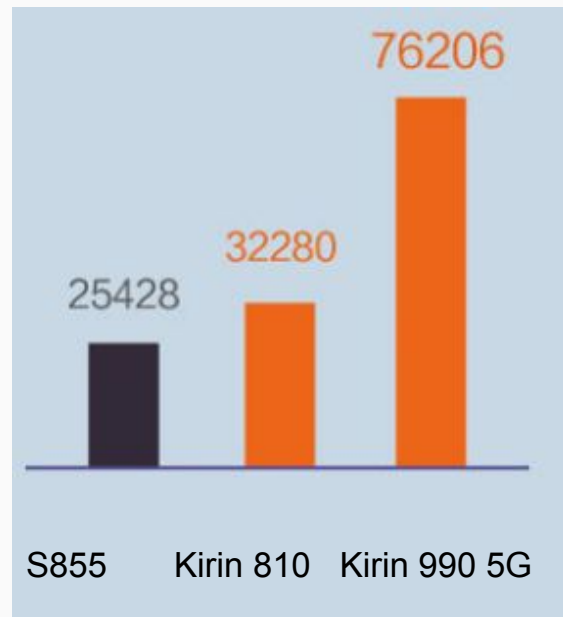
Chip capability openness for high efficiency  
Quickly convert and migrate existing models  
to obtain optimal performance based on  
heterogeneous scheduling and network process  
unit (NPU) acceleration.





# HiAI Foundation APIs

- HiAI Foundation APIs constitute an AI computing library of a mobile computing platform, enabling developers to efficiently compile AI apps that can run on mobile devices.
  - Leveraging high performance and high precision of Kirin chips, better device-end AI performance will be delivered by more powerful computing power.
  - Support the largest number of operators (300+) in the industry and more frameworks, greatly improving flexibility and compatibility.
  - The Honghu, Kirin, and AI camera chips enable AI capabilities for more devices.



AI running score data



# HiAI Engine

- HiAI Engine opens app capabilities and integrates multiple AI capabilities into apps, making apps smarter and more powerful.
  - Provide handwriting recognition and dynamic gesture recognition capabilities, with 40+ underlying APIs.
  - Computer vision and speech recognition will develop toward a distributed mode, assisting developers in delivering more all-scenario smart life experience.



Distributed AI helps sports healthy  
and safe driving

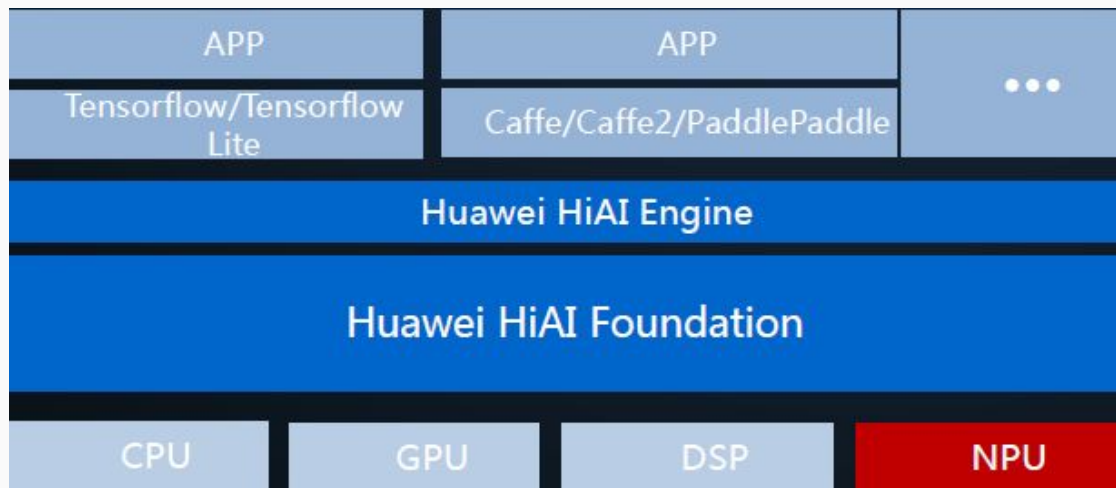


# HiAI Service

- HiAI Service enables developers to reuse services on multiple devices, such as mobile phones, tablets, and large screens, with only one service access, efficiently implementing distribution.



# Architecture of the HiAI Mobile Computing Platform



Supports diverse mainstream front-end frameworks.

Provides various upper-layer function service APIs to ensure efficient running on mobile devices.

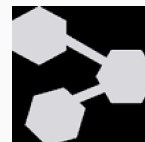
Allows flexible scheduling of heterogeneous resources, meeting developers' demand to accelerate neural network model computing and operator computing



Tool chain



Comprehensive documents



Different types of APIs



Source codes enabling quick start



# What can apps benefit from Huawei HiAI?



# Huawei HiAI + Ctrip Help You Take Poetic Photos



# Real-time NPU AI Image Segmentation



# NPU+AI Human Image Matting for Flexible Switchover in Multiple Scenarios

- <https://www.bilibili.com/video/av66898567/>

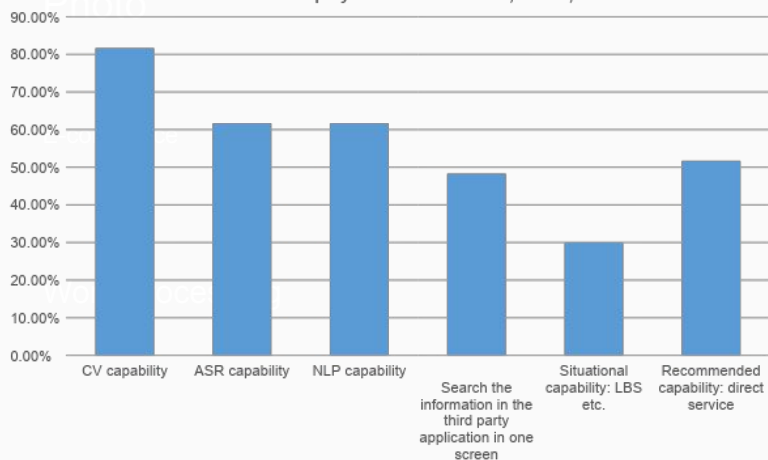




# AI Capability Provider, Accelerating Application Development

Live streaming

Research results of developers' demands for HiAI capabilities:  
more than 60% pay attention to CV, ASR, NLU



Social media

Short video and live streaming	Social media	Augmented reality (AR)	Photo taking and retouching	Shopping	Translation and text processing
Facial recognition Gesture recognition Portrait segmentation Posture recognition Video style Voice control Intelligent depth of field control Image scene recognition	Photo categorization Image recognition Image super-resolution (SR) Sensitive data recognition	Contextual awareness Voice control Depth estimation Light estimation	Beautification Image enhancement Aesthetics scoring Album generation Photographing by voice Photographing by gesture	QR code scan Direct service delivery and recommendation ID card recognition Bank card recognition Product identification	Translate by taking a photo Optical character recognition (OCR) Word splitting Named entity recognition Text emotion recognition Intelligent text reply Text and image SR
Computer vision (CV), automatic speech recognition (ASR)	CV, natural language understanding (NLU)	ASR, CV	CV	CV	NLU, CV, ASR



# Comprehensive Tools for Developers

The screenshot displays the Android Studio IDE with the `MainActivity.java` file open. The code defines a `TEST_PCM_PATH` and a `mHandler` for handling asynchronous storage permission requests. The `onCreate` method initializes the `ASrEngine` and sets up the UI.

```
private String TEST_PCM_PATH = "/sdcard/hihi";

private Handler mHandler = new MyHandler( activity: MainActivity);

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    StoragePermission.getAllPermission( activity: this);
    getWindow().addFlags(WindowManager.LayoutParams.FLAG_KEE
    setRequestedOrientation(ActivityInfo.SCREEN_ORIENTATION

    makeResDir();
    initView();
    if (isSupportAsr()) {
        initEngine(AsrConstants.ASR_SRC_TYPE_RECORD);
    } else {
        Log.w(TAG, msg: "not support asr!");
    }
}
```

The right-hand pane shows the **HiAI Engine** SDK & Dev Tools interface, which includes a search bar and a list of available APIs:

- Face Detection** (Computer Vision)
- Aesthetic Score**: The aesthetic score interface provides an interface that automatically evaluates the score of t...
- Image Category Label**: The label detection interface can classify pictures intelligently by object construction, label detection...
- Scene Detection**: Scene detection can classify the input images. By identifying the scenes which the image conte...
- Image Super-Resolution**: The super resolution interface converts

The bottom status bar indicates that the **Gradle sync** finished in 2 s 204 ms (from cached state) (4 minutes ago).

