



HUAWEI CLOUD Enterprise Intelligence Application Platform



Objectives

- On completion of this course, you will be able to:
 - Understand the HUAWEI CLOUD Enterprise Intelligence (EI) ecosystem and EI services.
 - Understand the Huawei **ModelArts** platform and know how to use it.
 - Understand the application fields of HUAWEI CLOUD EI.



Contents

- 1. HUAWEI CLOUD EI Overview**
2. EI Intelligent Twins
3. AI Services
4. Case Studies of HUAWEI CLOUD EI



HUAWEI CLOUD EI

Industry wisdom

Industry **know-how** and deep understanding of industry pain points, driving AI implementation

Algorithms

Extensive algorithm and model libraries, general AI services, and one-stop development platform

Data

Conspicuously-defined data sovereignty standards, ensuring clear service and data access boundaries

HUAWEI CLOUD

EI

Computing power

Simplified enterprise-grade AI applications



HUAWEI CLOUD EI

General APIs



Advanced APIs



Pre-integrated solutions



Essential platform services

ModelArts



ExeML



GES



DLS



MLS



Batch



UPredict



RLS

[M]^s MindSpore



TensorFlow

mxnet

PyTorch

K Keras

Ascend



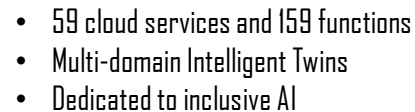
Ascend 310



Ascend 910



Kunpeng





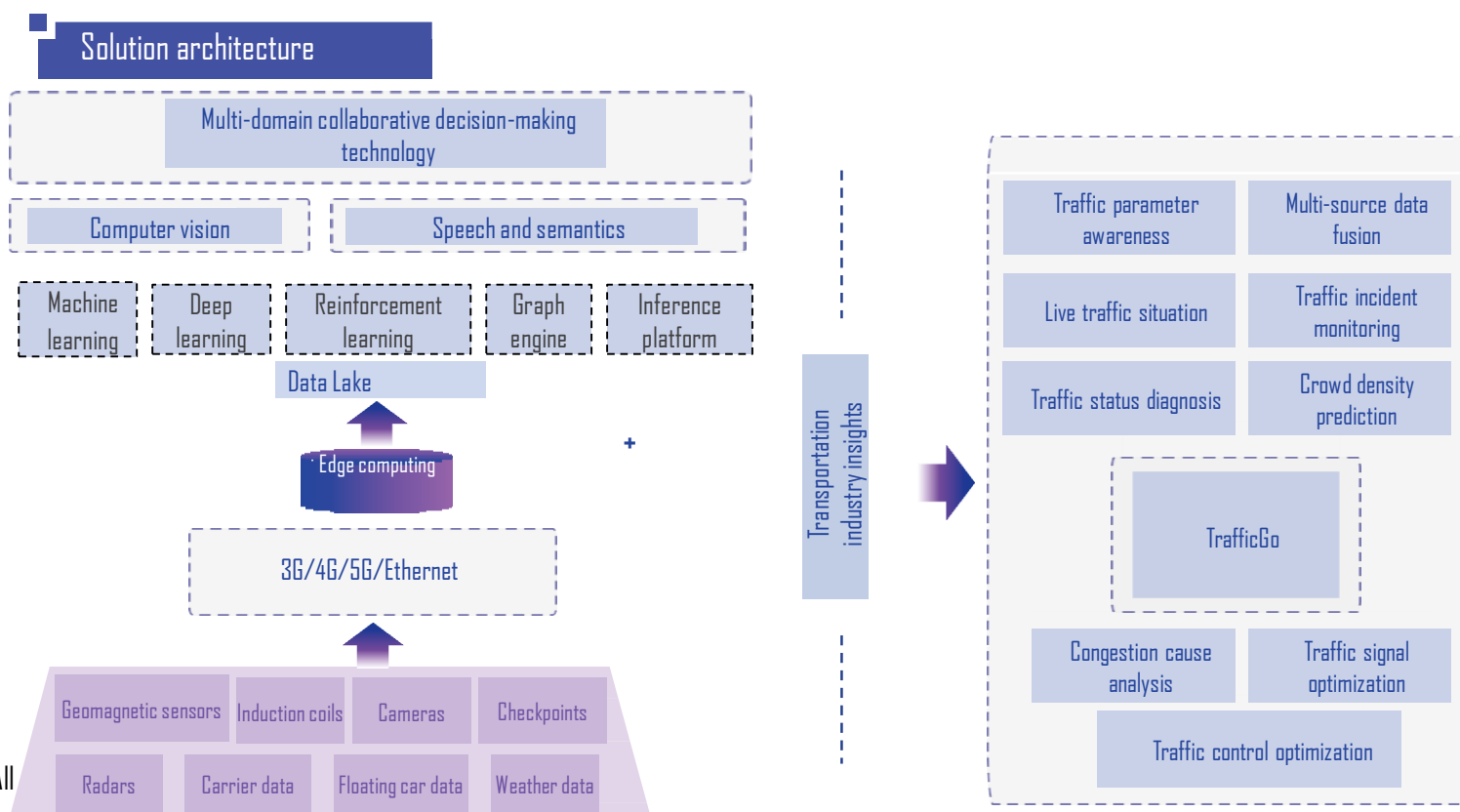
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TrafficGo

- **Traffic Intelligent Twins** (TrafficGo) is a comprehensive **urban traffic governance solution**. Powered by the big data platform, AI algorithms, and expert experience in the transportation industry, TrafficGo builds a network for urban traffic governance to implement intelligent awareness, diagnosis, and optimization in all domains. TrafficGo enables 24/7 traffic condition monitoring in all areas, traffic incident detection, real-time regional traffic signal scheduling, traffic situation display, and key vehicle management. This makes transportation more efficient and safer while yielding new levels of energy-efficiency.



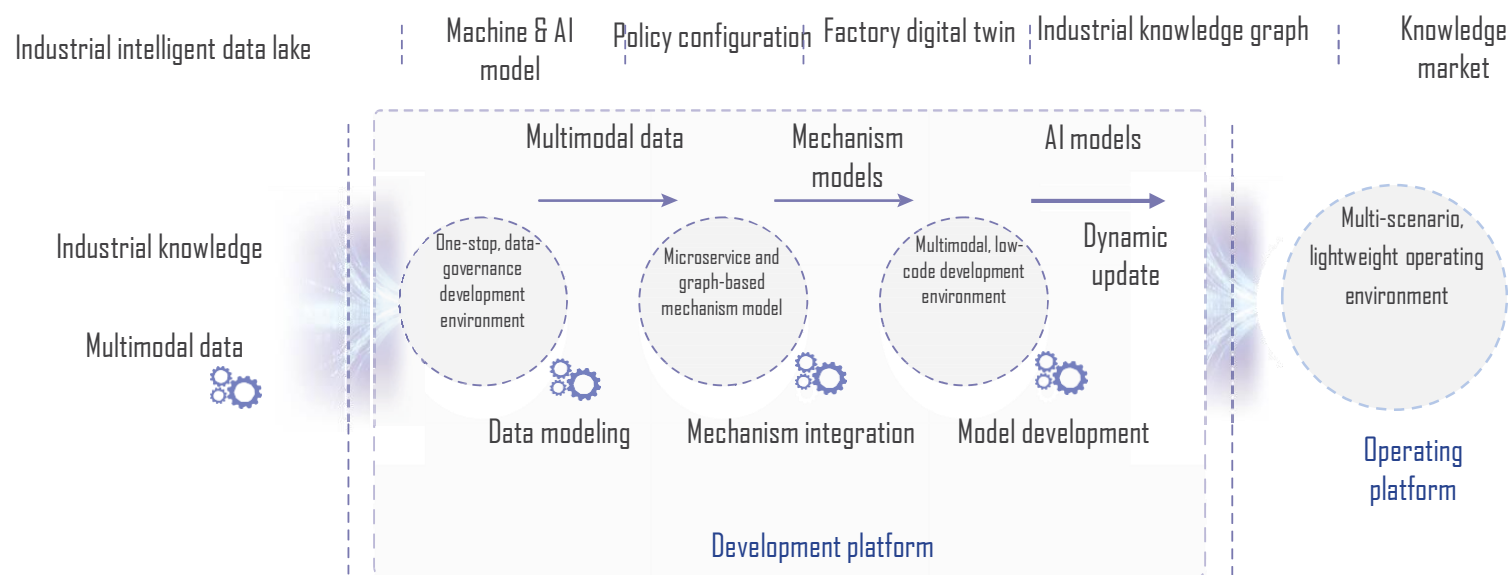


Industrial Intelligent Twins

- **HUAWEI CLOUD Industrial Intelligent Twins** builds an industrial intelligent platform that deeply integrates industrial knowledge and AI to adapt to frequent changes of working conditions and break the application limit of the industrial mechanism. In addition, Huawei works with industry-leading know-how customers and partners to build an open and win-win industrial intelligent ecosystem to make enterprises more intelligent and promote industrial upgrade.

Solution architecture

A simple and efficient platform for industrial AI development





EIHealth

- HUAWEI CLOUD EIHealth covers **genome**, **clinical research**, and **drug discovery**. It focuses on people's health and promotes the combination of AI and healthcare to improve the service capability and coverage of healthcare. With Huawei's powerful computing, storage, and AI algorithms, EIHealth enables the genome, disease diagnosis, and pharmaceutical fields.



1 + 3 + X: 1 EIHealth cloud platform + 3 sub-domain platforms + X enterprise/organization customized platforms (delivered with ISVs)

	Platform applications					
	Gene database	Multi-omics analysis	AI-assisted patient screening	Medical image modeling	Computer-aided drug discovery	AI drug discovery
	Genome		Clinical research		Drug discovery	
	Genome AutoML	DeepVariant	GROMACS Molecular dynamics	AI model for patient screening	Virtual screening of drugs	Drug combination prediction
EIHealth components	Data management	Process management	Development environment	Service management	Knowledge graph	AI Gallery
AI	ModelArts			GES	OCR	KGS
Big data	DLI	DLF	DIS	CSS	MRS	DWS
PaaS	CCE	SWR	ADM	RDS	DCS	APIG
IaaS	Atlas	Kunpeng	x86	OBS	SFS	LB



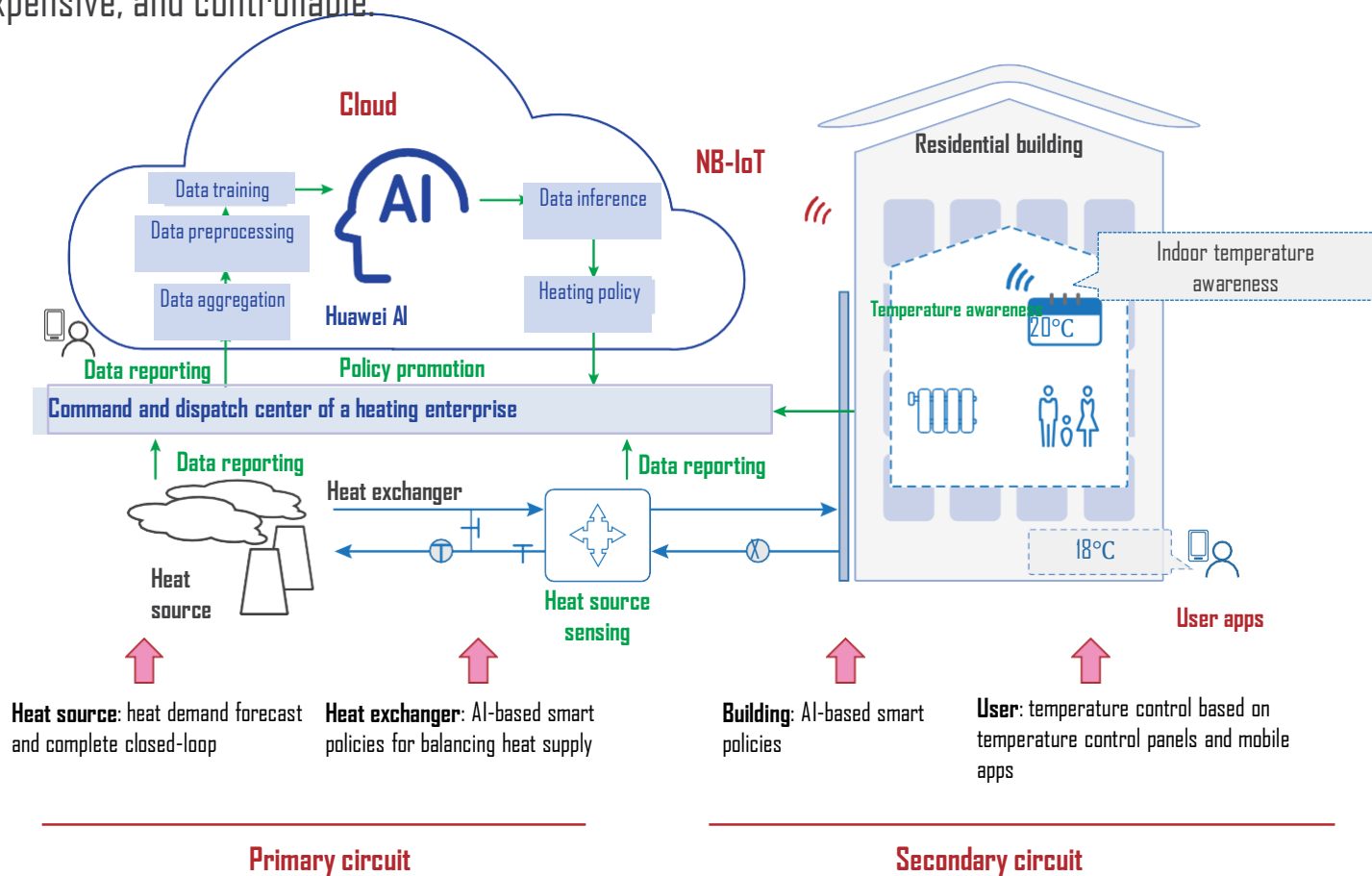
HeatingGo

Based on the existing auto control facilities and technologies, HeatingGo uses technologies such as AI and big data to implement intelligent heat supply supervision, operations, and control for heat sources, networks, stations, and users.

It provides a heating system that is inclusive, inexpensive, and controllable.

Solution architecture

Management and control
apps of heating enterprises

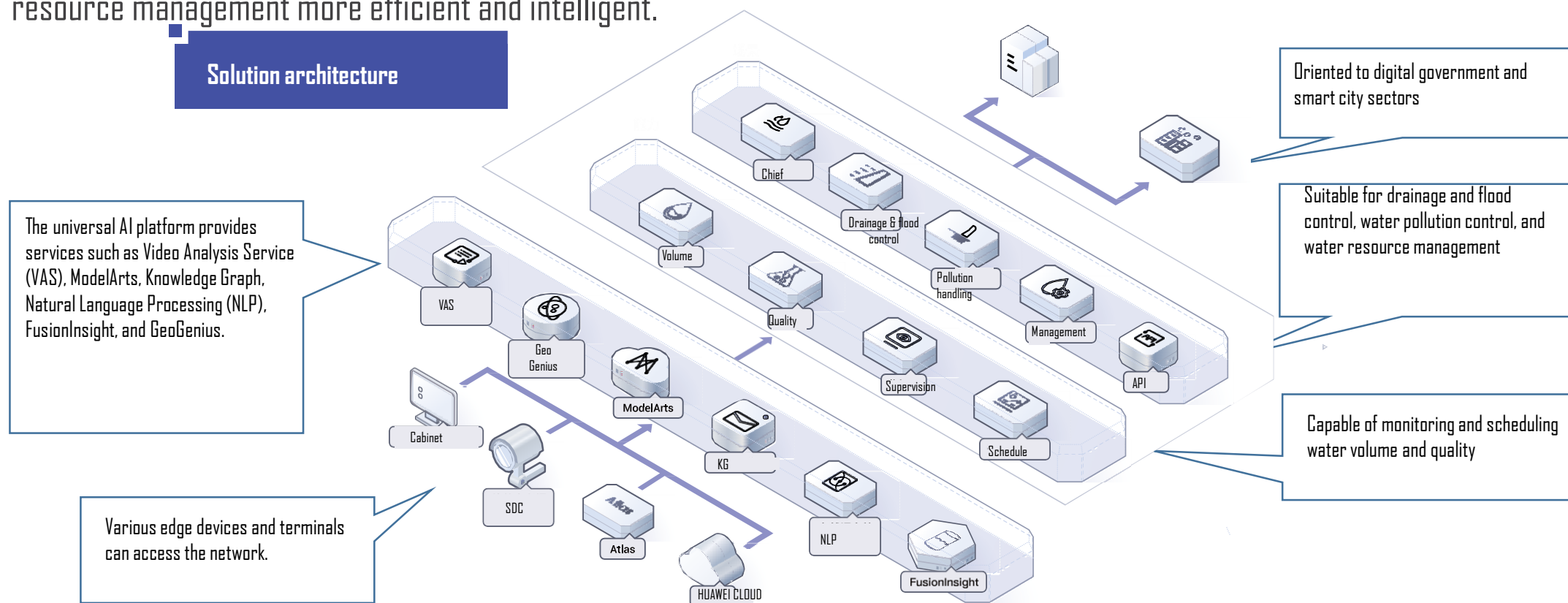




WaterGo

With technologies including AI and edge computing, Huawei is transitioning cameras into universal sensors capable of sensing all elements related to water, such as its volume and quality, making them "eyes" for river and lake monitoring. The cameras are widely distributed, intelligent, and responsive. Leveraging AI technologies, they improve the existing prediction and scheduling system, making water resource management more efficient and intelligent.

Solution architecture





GeoGenius

Powered by HUAWEI CLOUD's accumulation in cutting-edge technologies such as AI and big data, GeoGenius builds a one-stop, full-process intelligent development cloud platform for remote sensing. This cloud platform functions as both a data platform and an intelligent computing platform to help you focus on mining core values of data and developing application algorithms. It enables rapid application innovation in the industry and provides technical support for key tasks such as investigation, monitoring, evaluation, supervision, and law enforcement of natural resources, ecology, meteorology, environmental protection, and oceans.

Natural resource survey



Weather forecast



Ecological environment monitoring



Marine conservation



Agriculture and forestry monitoring



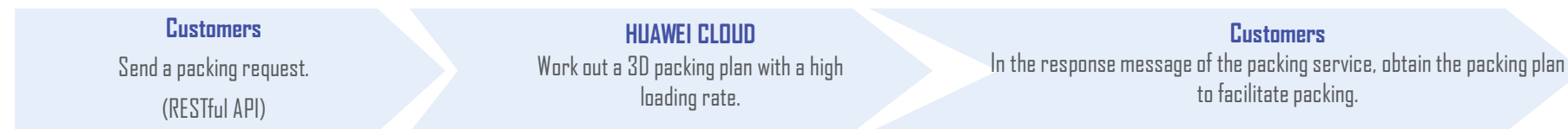
Emergency response and disaster prevention





Smart Logistics Solution

The smart logistics solution provides AI-enabled 3D packing services to improve container loading rate. In addition, it provides the vehicle route optimization service to reduce customers' transportation costs.



Customer API requests

1. Container information
2. Goods information

		*	
	*		
			*

**Improve container space utilization,
reduce the number of boxes**

HUAWEI CLOUD

3D packing service

**Reduce the operational
cost**

Customers Packing plan

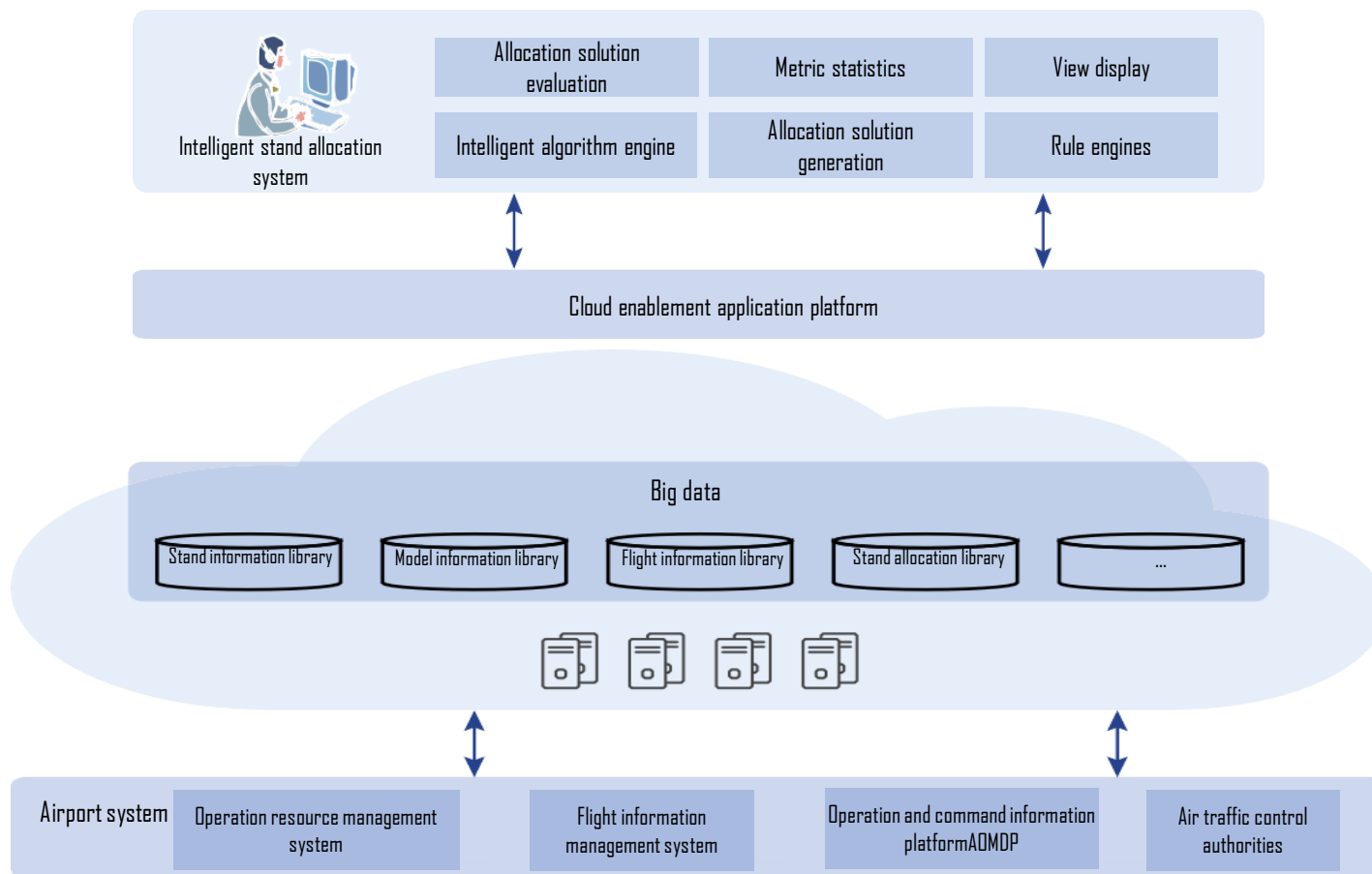


**Improve the overall logistics operation
efficiency**



Intelligent Stand Allocation Solution

Based on AI algorithms and scenario understanding, the intelligent stand allocation system provides the optimal stand allocation solution powered by Huawei big data platform and ModelArts, improving the docking rate, passenger experience, and airport operation efficiency.





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Essential AI Platforms

ModelArts (AI development)

One-stop AI development platform

Huawei HiLens

Multimodal AI development application platform
featuring device-cloud synergy

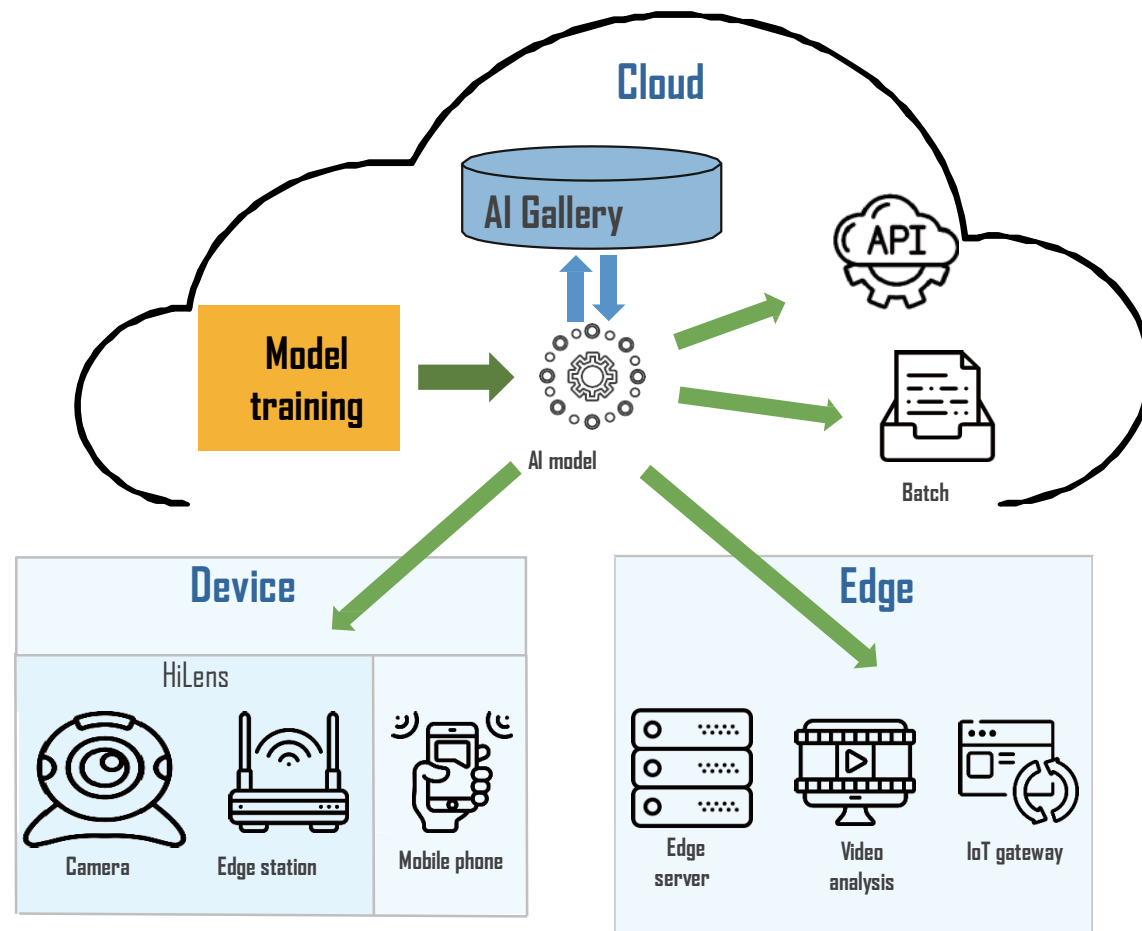
Graph Engine Service (GES)

China's first commercial distributed native graph
engine with independent intellectual property rights



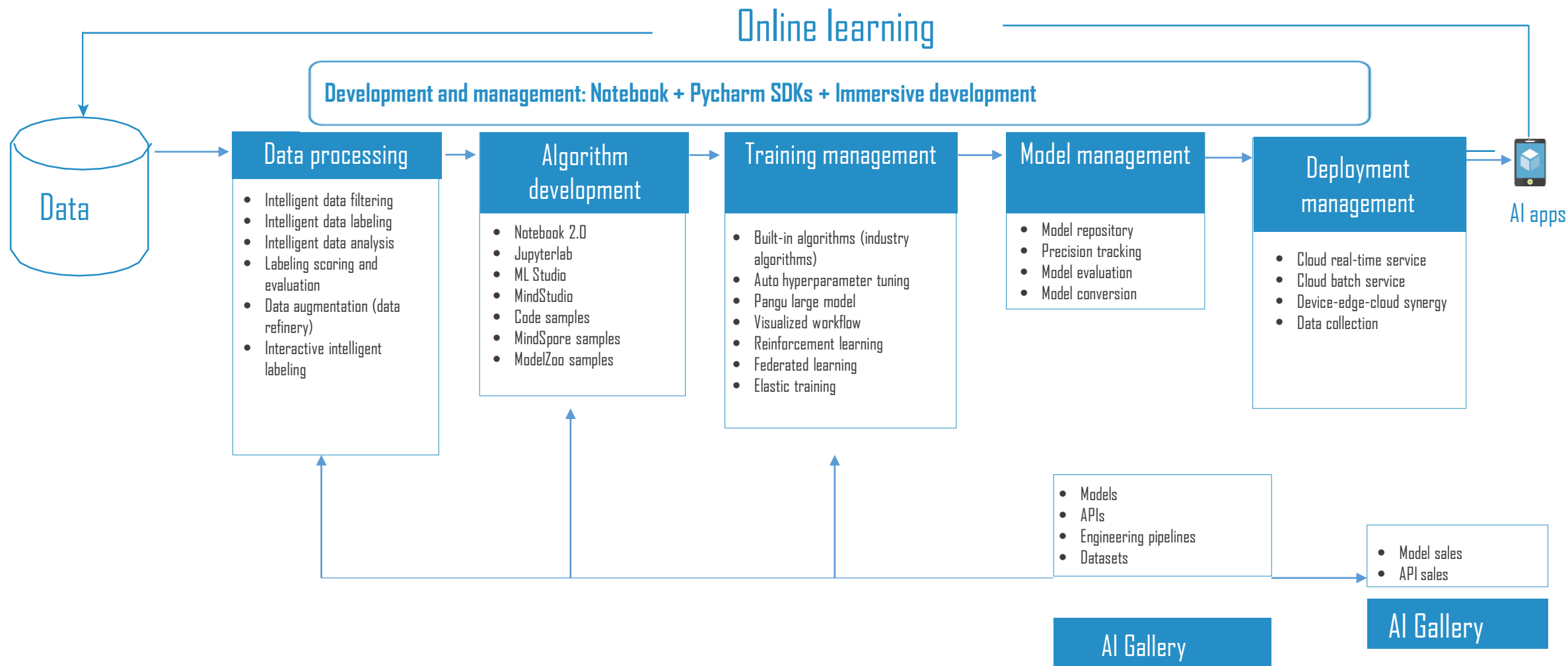
ModelArts

- ModelArts is a one-stop AI development platform. It provides data preprocessing, semi-automated data labeling, distributed training, automated model building, and model deployment on the device, edge, and cloud to help AI developers build models quickly and manage the AI development lifecycle.





ModelArts Functions





ExeML

ExeML is an entry-level service provided by ModelArts for beginners. Powered by the ExeML engine, ExeML enables even beginners to build, train, verify, and publish models.



Image Classification

Identify classes of objects in images.

Create Project



Object Detection

Identify the position and class of each object in images.

Create Project



Predictive Analytics

Classify or predict structured data.

Create Project



Sound Classification **New!**

Identify classes of sounds in audio files.

Create Project



Text Classification **New!**

Identify classes of text in text files.

Create Project

Zero coding

No AI experience required

Step 1:
**Upload data and
label it.**

Step 2:
Train the model.

Step 3:
**Check and publish the
model.**



Data Management

A wide range of data formats

- Five types of data (image, audio, video, text, and table)
- Custom data formats

Team labeling

- Great for ultra-large-scale labeling

Iterative intelligent labeling framework

- Adaptive to data and algorithm changes
- Intelligent data filtering and auto pre-labeling

Intelligent data filtering

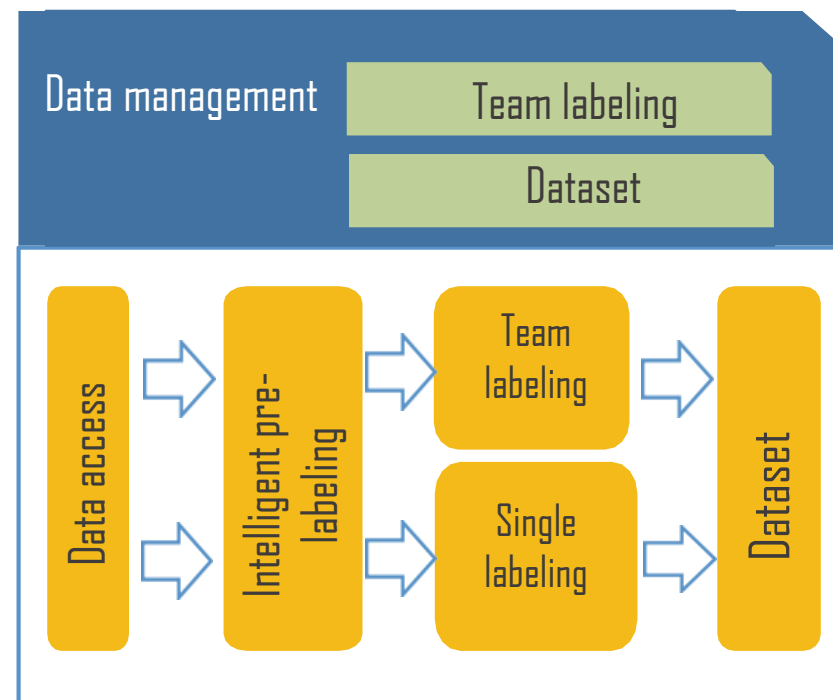
- Automatic image clustering
- Recognition rate of invalid images > 80%

Automatic pre-labeling

- Iterative semi-auto data pre-labeling
- Labeling efficiency up by 5 times

Auto feature mining

- In-depth data optimization suggestions in 30+ dimensions
- General models for various scenarios





Training Platform

Flexible, high-efficiency and cost-effective

- Multiple built-in algorithms, import of partner algorithms, custom training logic and images, and quick switchover between heterogeneous resources
- Linearly improved parallel training capability, auto parameter tuning, and a wide array of development modes
- Elastic training, economical mode, self-developed chips and software, and ultimate cost-effectiveness

Built-in training models, accelerating AI implementation

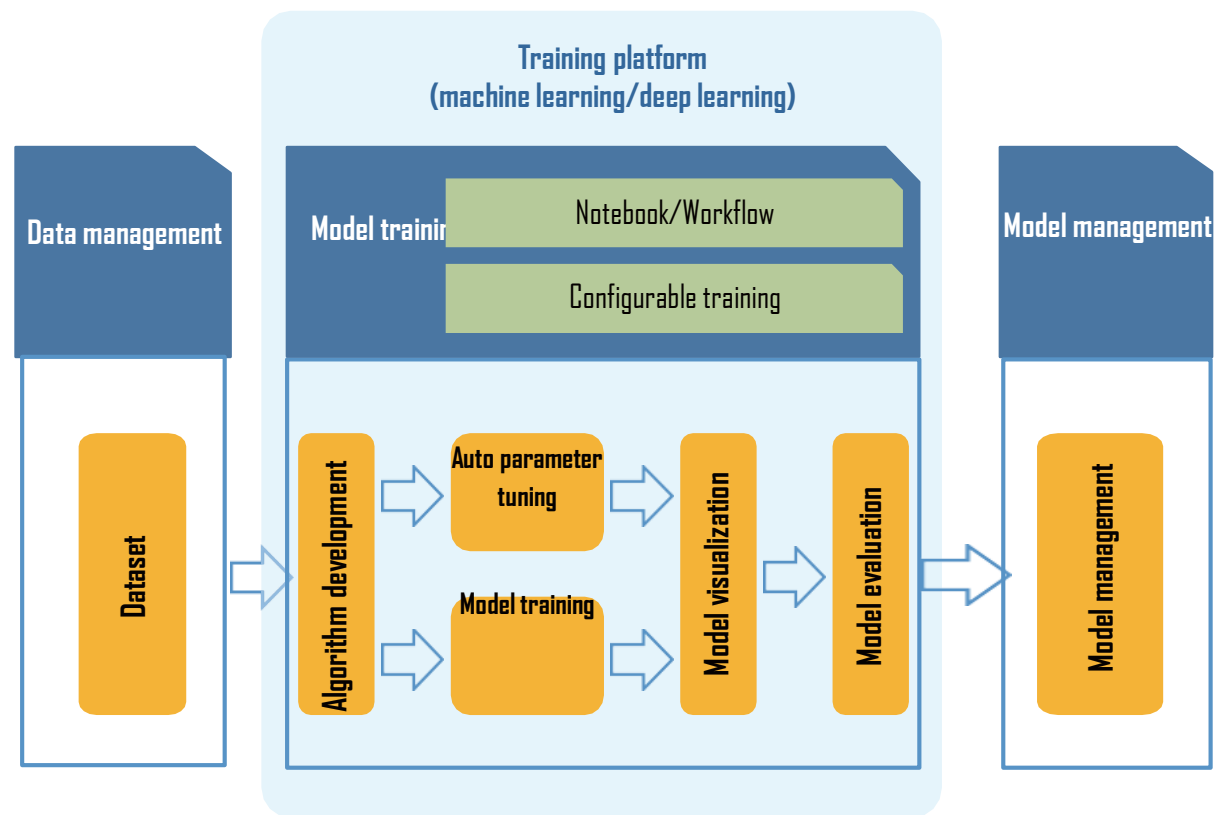
- 100+ algorithms, including image, text, time series, and reinforcement learning algorithms
- One-click training requiring only data source configuration

Multiple development modes, meeting different requirements

- In-cloud development (Notebook+SDK)
- On-premises development (IDE+PyCharm ToolKit)

Elastic training, improving training efficiency

- Turbo mode: Resources are automatically expanded during off-peak hours, accelerating the training speed by 10 times (from 2 hours to 10 minutes).
- Economic mode: Optimized scheduling reduces the training cost by 30%.





Inference Platform

Unified management

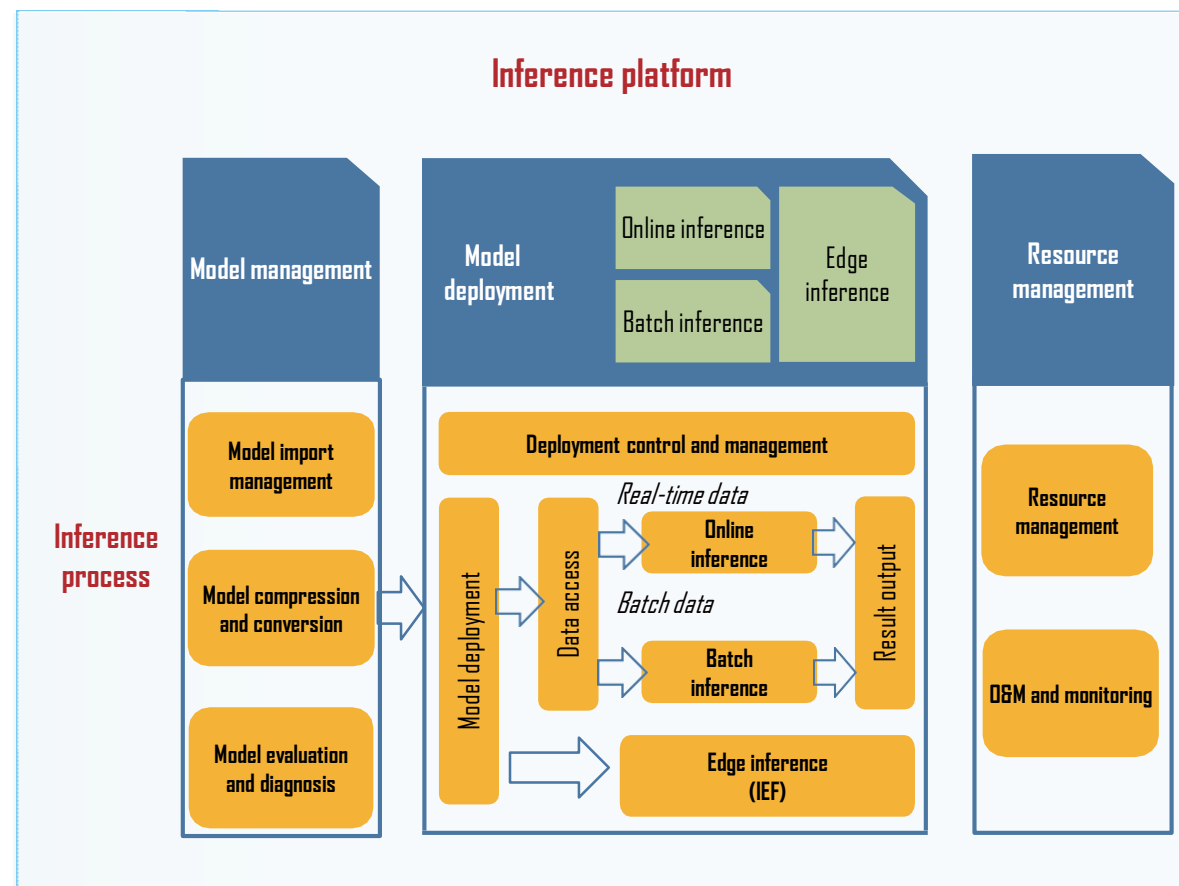
- Unified management of models of different vendors, frameworks, and functions
- High-concurrency model deployment, low-latency access, auto scaling, grayscale release, and rolling upgrade

Flexible deployment

- Models can be deployed as real-time and batch inference services on the cloud, edge, and devices.

Iterative model update

- Hard example mining, automatic identification of hard examples, and quick adaptation to data changes





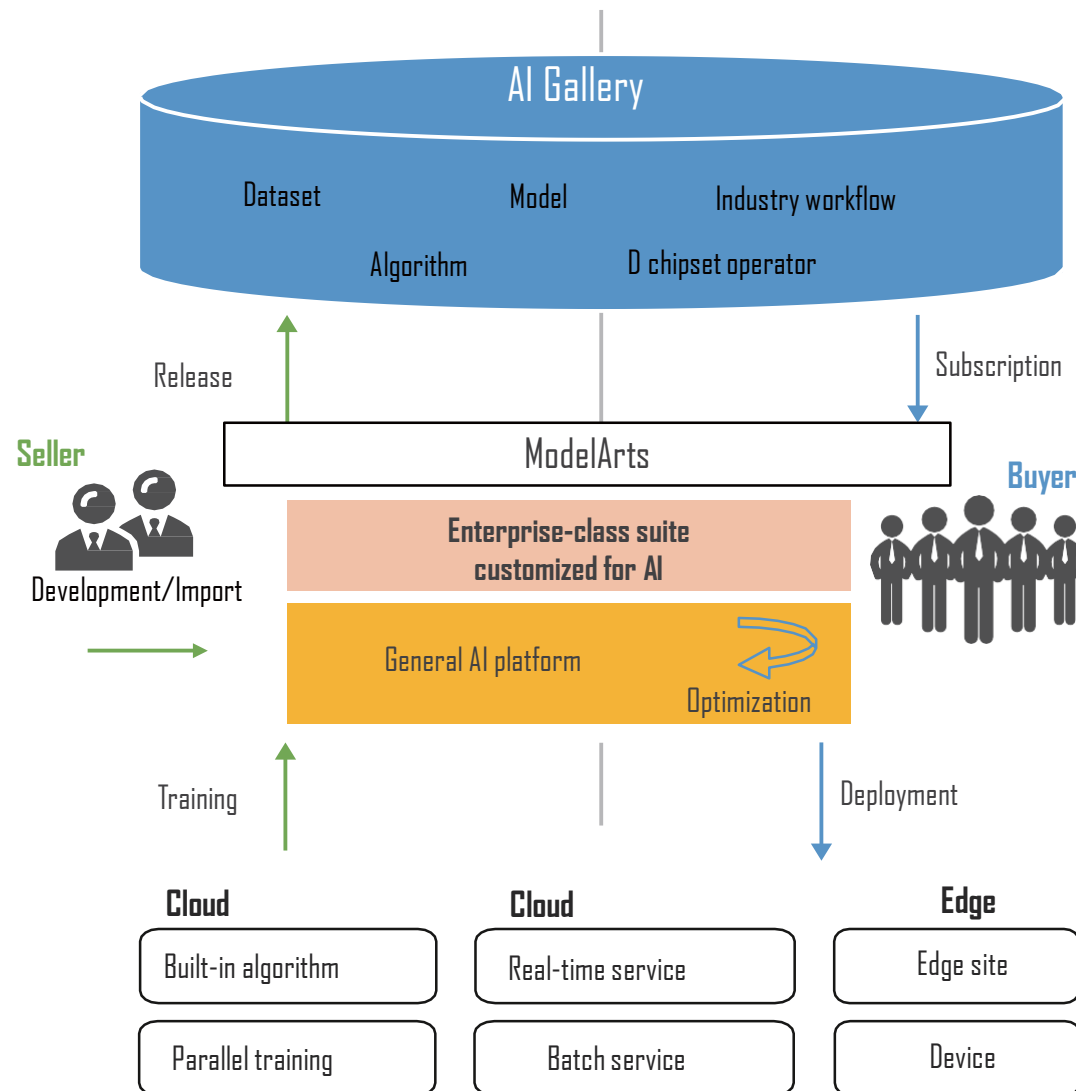
AI Gallery

Publishing at zero cost

- No fees for sellers to publish a model because no resources are consumed

Model finetuning

- Portfolios of cloud models and algorithms for buyers to optimize models based on differentiated data



On-demand subscription and quick deployment

- On-demand subscription, deployment, and charging for buyers
- Quick service deployment and low-cost O&M because of a full set of deployment capabilities

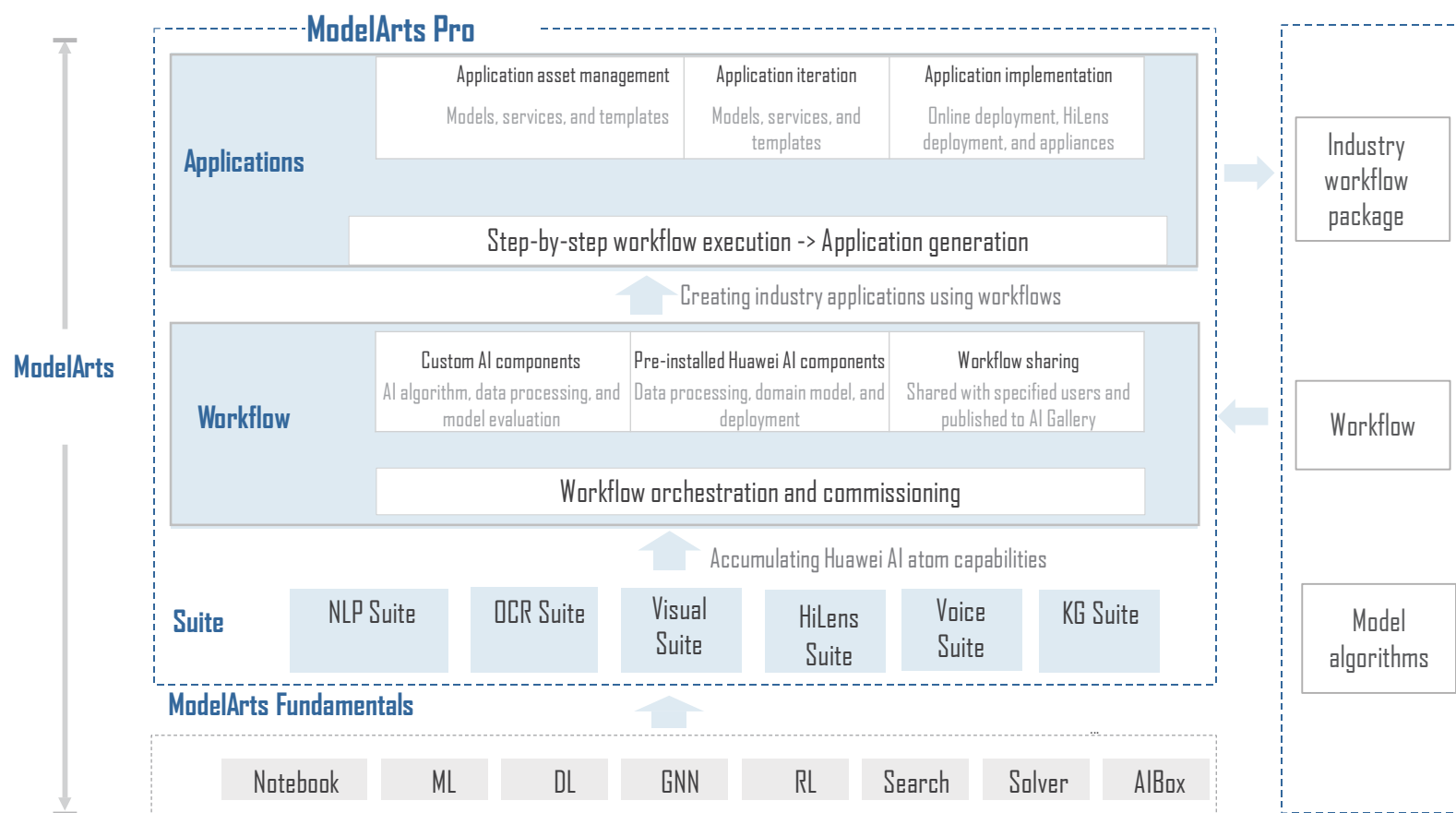
Encrypted deployment

- Confidentiality of container deployment protects intellectual property



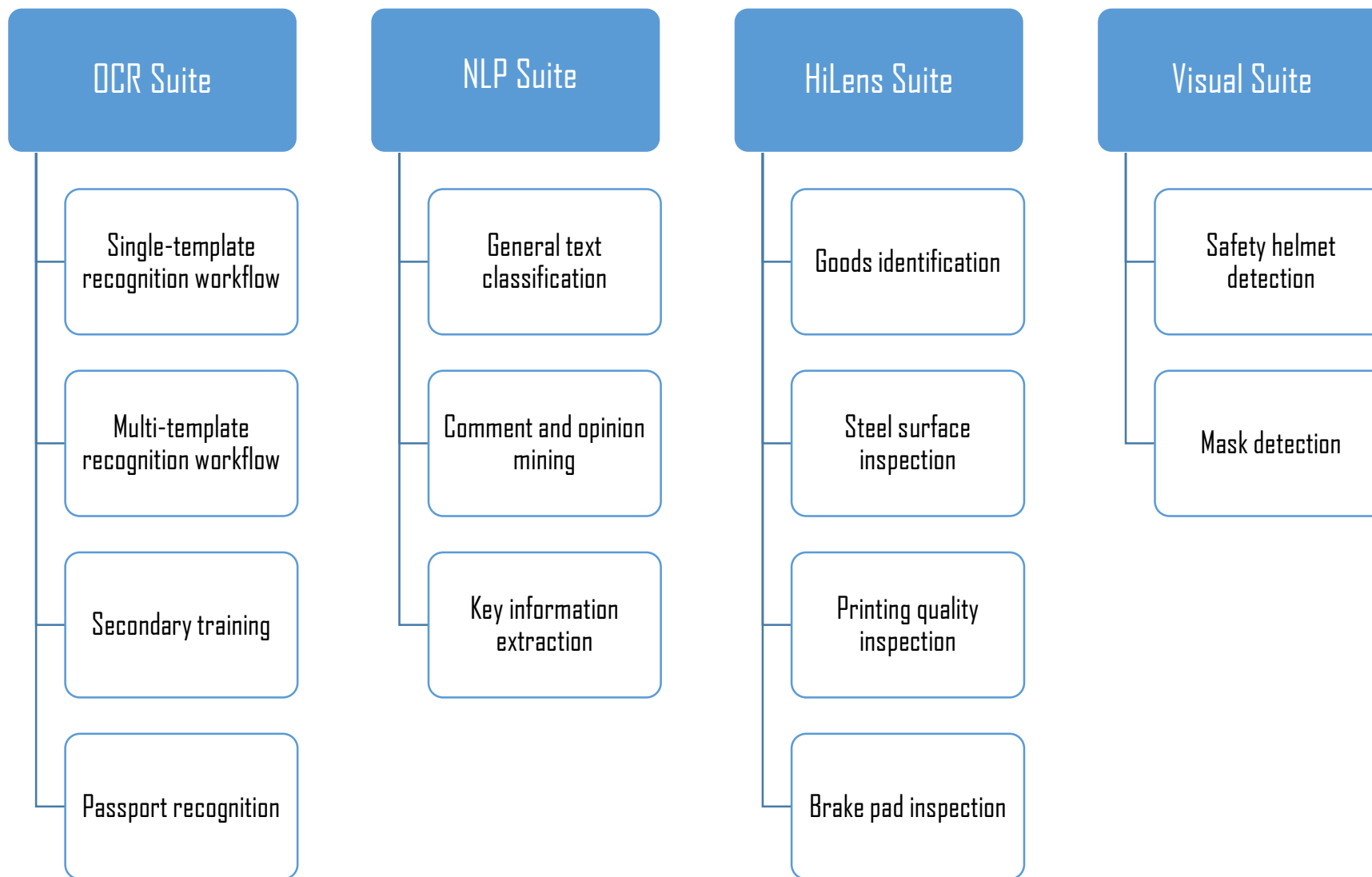
ModelArts Pro

ModelArts Pro is a professional development suite for enterprise-class AI applications. AI development is simplified with the advanced algorithms, quick training, and built-in workflows and models provided by HUAWEI CLOUD. In addition, customers can quickly develop, share, and launch applications through custom workflow orchestration. With these, HUAWEI CLOUD aims to create an open AI ecosystem for Inclusive AI. The ModelArts Pro suite consists of NLP Suite, OCR Suite, and Visual Suite, which allows it to meet AI implementation requirements in different scenarios.





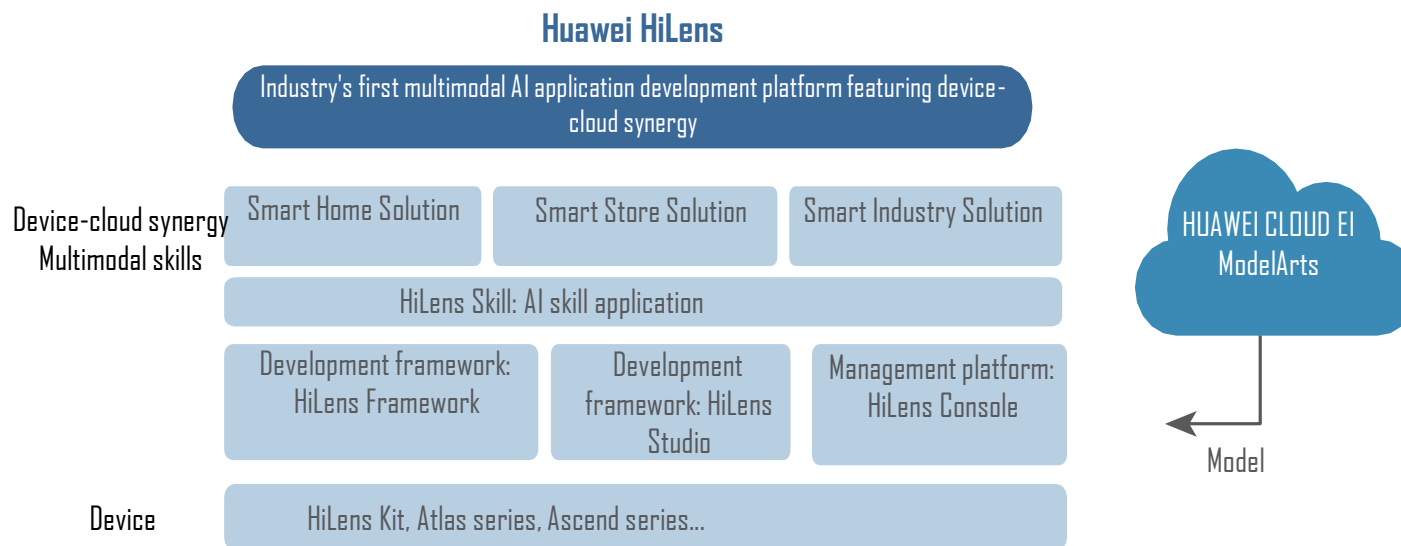
Built-in Workflows of OBT Suites





Huawei HiLens

- Huawei HiLens, featuring device-cloud synergy, enables you to develop AI applications in multiple modes. It has an easy-to-use development framework, with an out-of-the-box development environment. It also boasts a skill market with extensive sets of AI skills and a cloud management platform. Connecting to various computing devices, Huawei HiLens allows you to develop visual and auditory AI applications, deploy AI applications in real time, and manage a large number of devices.

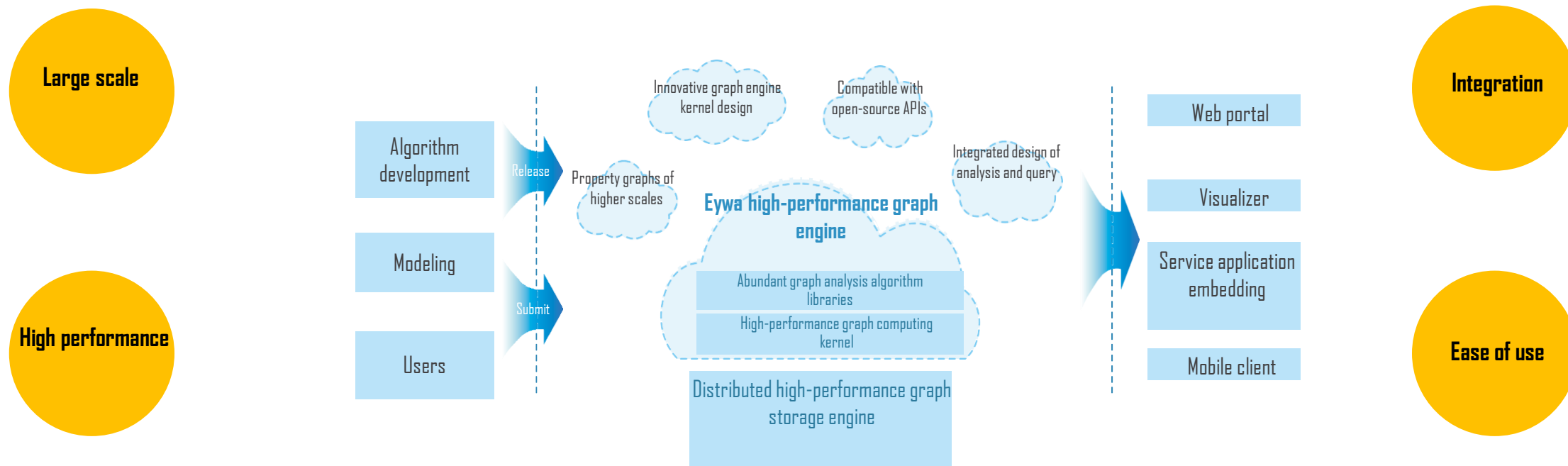


The HiLens platform has advantages such as device-cloud synergy for inference, rich skill market, convenient development, and powerful developer ecosystem.



Graph Engine Service (GES)

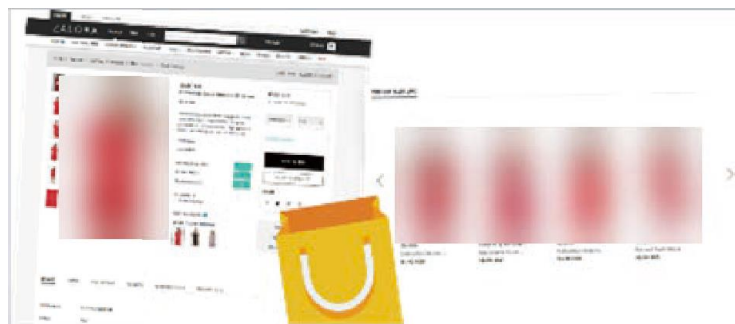
- GES is the first commercial distributed native graph engine with independent intellectual property rights in China. It facilitates query and analysis on graph structure data based on relationships. It is specifically suited for scenarios involving social applications, enterprise relationship analysis, knowledge graph, risk control, and recommendations.



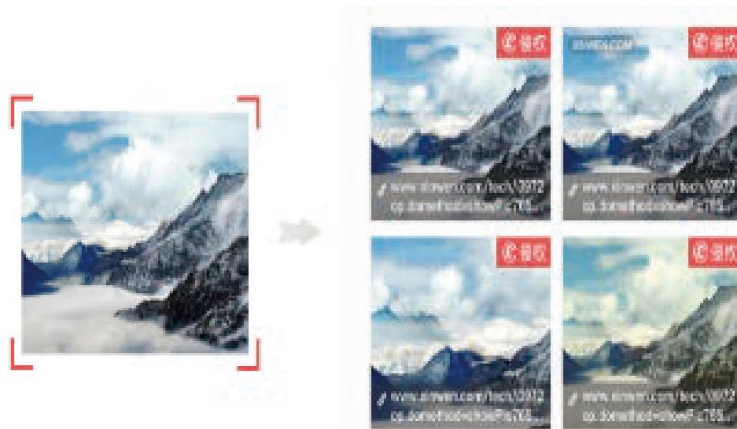


ImageSearch

Clothing search and recommendation



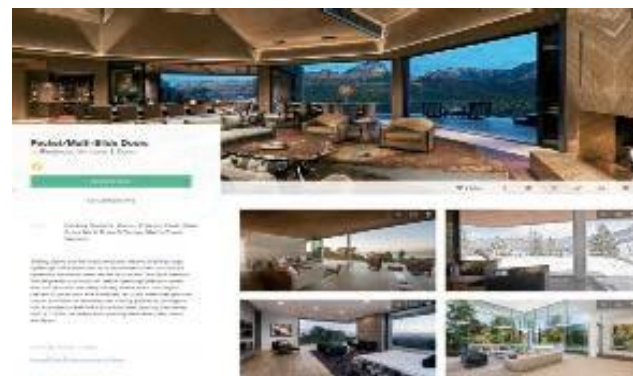
Piracy identification and copyright protection



Parts search and boost efficiency



Design search and comparison





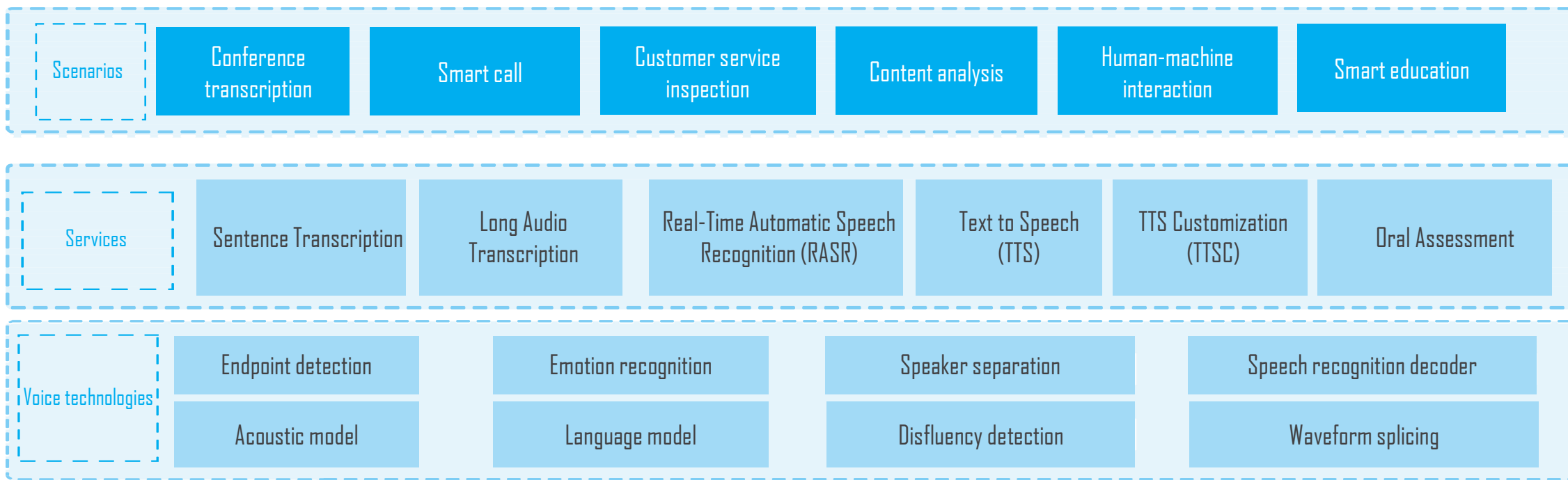
Speech Interaction Service (SIS)

Intelligent algorithms

- The speech interaction engine uses innovative algorithms and integrates traditional algorithms and deep learning models to achieve high recognition accuracy.

Self-service optimization

- The hot word function allows you to import hot words by yourselves to optimize the recognition effect in specific domains.





Natural Language Processing (NLP)

- NLP provides users with APIs related to natural language processing, including word segmentation, named entity recognition, sentiment analysis, and machine translation. It can be used in multiple application scenarios, such as intelligent Q&A, semantic search, public opinion analysis, and intelligent quality inspection.

Scenarios

Intelligent Q&A

Public opinion analysis

Semantic search

Machine translation

Intelligent quality inspection

NLP technologies

Word segmentation

Syntax analysis

Named entity recognition

Text similarity

Keyword extraction

Entity linking

Sentiment analysis

Intent understanding

Text classification

Text generation

Text summarization

Machine translation



Object Storage Service
(OBS)



Relational database service
(RDS)



Elastic Cloud Server
(ECS)

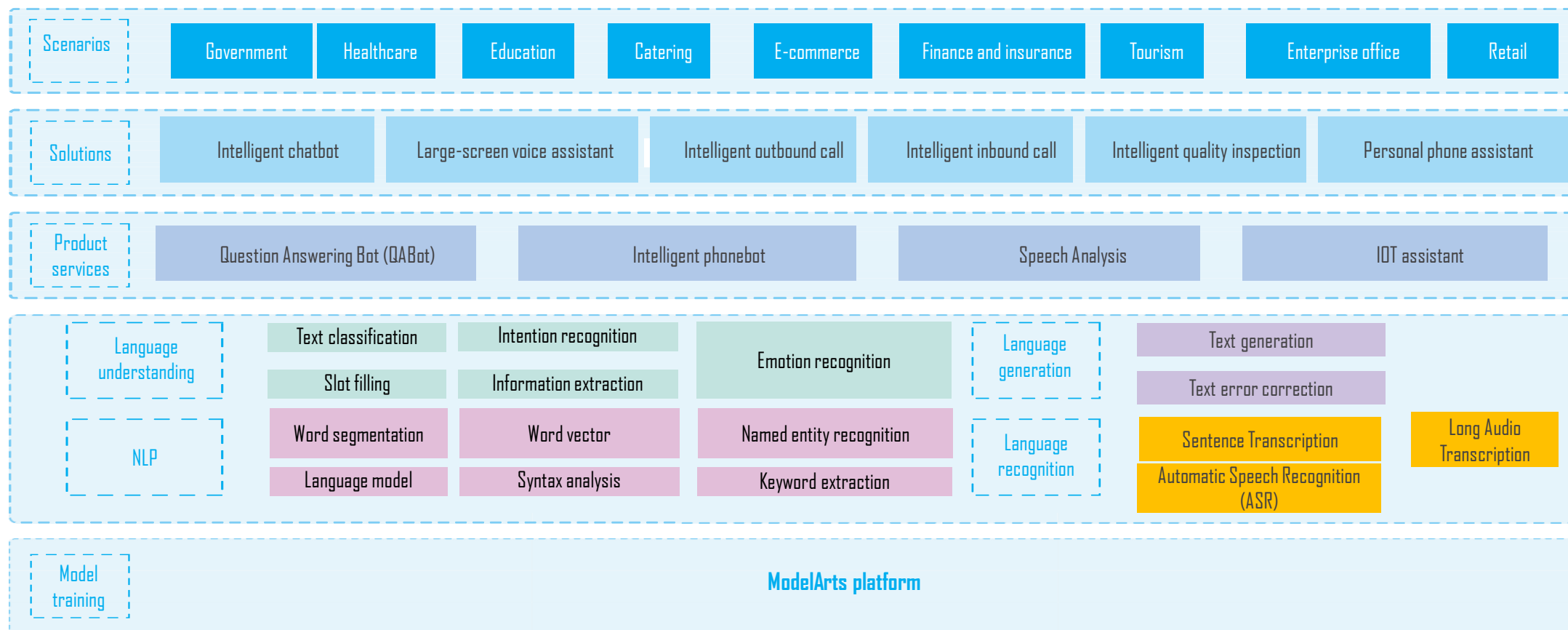


AI development platform
(ModelArts)



CBS Customization (CBSC)

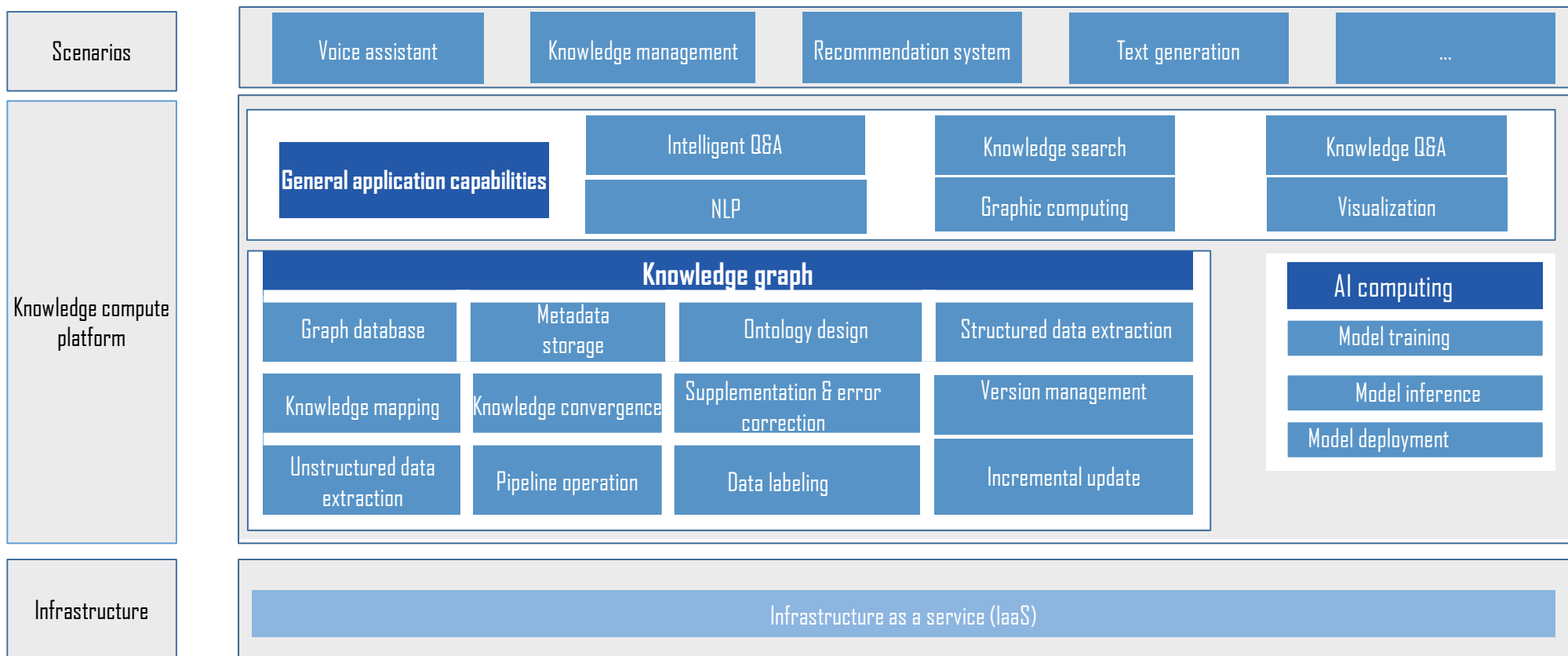
- Conversational Bot Service (CBS) is a cloud service based on NLP technology and enables dialog AI for different scenarios. With speech recognition, CBS enables product services to upgrade from graphical user interface (GUI) to voice interaction (VUI) to improve interaction efficiency and enhance interaction experience.





Knowledge Graph

Knowledge Graph is a one-stop knowledge graph building platform that provides functions such as ontology design, information extraction, knowledge mapping, multi-source convergence, and incremental update.





Optical Character Recognition (OCR)

OCR is an online character recognition service that recognizes characters in images or scanned copies and converts them into editable text. OCR supports certificate recognition, receipt recognition, custom template recognition, and general table text recognition.

General OCR	Receipt OCR	Card OCR	Domain OCR	Custom OCR
General Text OCR	VAT Invoice OCR	ID Card OCR	Electronic Waybill OCR	User-defined templates
General Table OCR	Vehicle Sales Invoice OCR	Driving License OCR	Insurance Policy OCR	Dedicated API customization and development
Web Image OCR	Taxi Invoice OCR	Vehicle License OCR		
Auto Classification OCR	Train Ticket OCR	Passport OCR		
Handwritten Letters & Digits OCR	Quota Invoice OCR	Bank Card OCR		
Signature & Seal OCR	Toll Invoice OCR	Business License OCR		
	Flight Itinerary OCR	Transportation License OCR		
	Chinese and English Customs Form OCR	Plate Number OCR		
		Business Card Recognition		
		Vehicle Identification Number OCR	Available	
		Document Check Classification OCR	Coming Soon	



AI Experience Center

The AI Experience Center allows you to experience AI. It is dedicated to lowering the expertise requirements for using AI and making AI ubiquitous.

Gander at More Black Techs

Add Intelligence to the Broad Range of Popular Application Scenarios

ModelArts

ModelArts is a one-stop development platform for AI developers. With data preprocessing, semi-automated data labeling, distributed training, automated model building, and model deployment on the device, edge, and cloud, ModelArts helps AI developers build models quickly and manage the lifecycle of AI development.

[Explore More](#)



Huawei HiLens >

One-stop platform for the development, distribution, deployment, and management of AI applications



Optical Character Recognition >

Optical Character Recognition (OCR) recognizes and converts characters in images and scanned copies into editable...



AI Training Camps

AI Activities



21-Day Training Camp for AI Novices

Coming soon

Become an AI developer with ease with the help of HUAWEI CLOUD.



21-Day Training Camp for Big Data Enterprise Application

Coming soon

Learn how to get the most out of big data through lessons from eight typical enterprise scenarios.

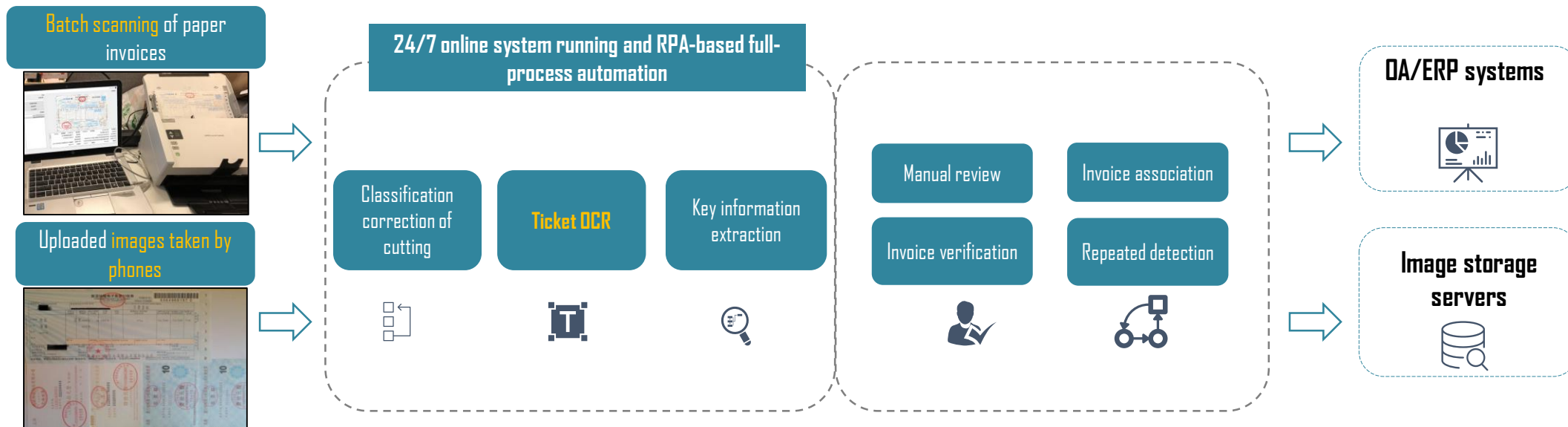


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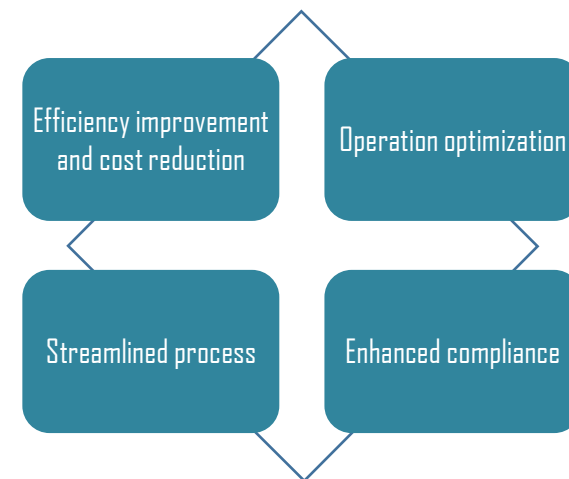
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Financial Reimbursement

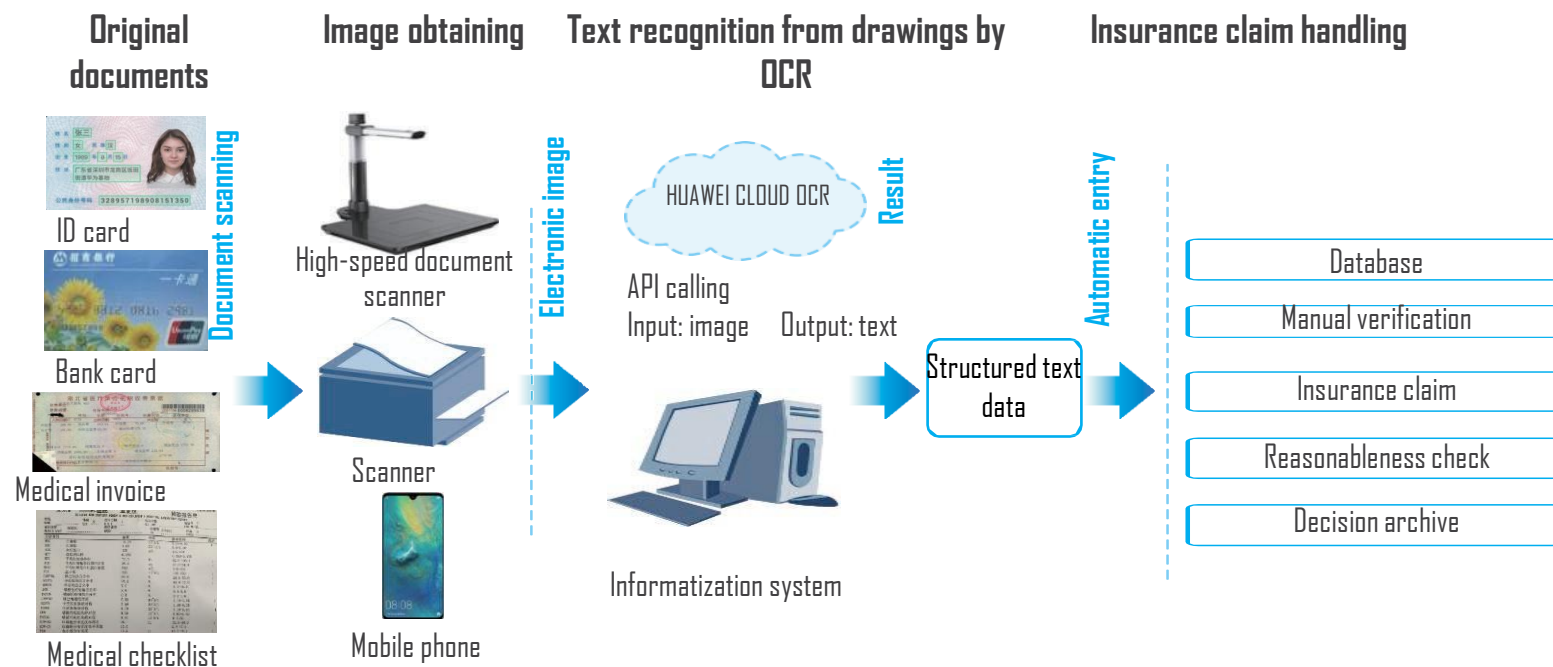


- **Multiple access modes:** Automatically connects to scanners, high-speed document scanners, and mobile phones to obtain images in batches.
- **Flexible deployment:** Supports multiple deployment modes, such as public cloud, HCS, and appliance, and provides unified standard APIs.
- **Support for various invoices:** VAT invoices/special invoices/electronic invoices/ETC invoices/bills, taxi invoices/train invoices/travel invoices/fixed-amount invoices/toll invoices
- **Multiple invoices in an image:** Automatically classifies and recognizes multiple types of invoices.
- **Visualized comparison:** The location information is returned and converted into an Excel file for statistics and analysis.





Medical Insurance Claims



- Greatly accelerates data recording and verification, improves user experience, and reduces labor costs.
- Extracts structured information about images, such as the car sales invoice and effectively handles the image rotation, error line, blur, and deformation issues. The accuracy rate is higher than 98%.
- Automatically detects contract signatures to ensure compliance.



Intelligent Customer Service Solution

Machines assisting humans

- The robot preliminarily filters user problems and transfers the problems that cannot be solved to the customer service personnel to reduce the workload of the customer service personnel.

Robots replace humans to answer questions

- The robot answers questions more accurately, comprehensively, and quickly, reducing the training workload of customer service personnel.

Intelligent routing

- The robot identifies the department or business line corresponding to a specific problem through dialogs with users, and then transfers the call to the target manual service or invokes the target sub-robot to facilitate subsequent customer service data statistics.

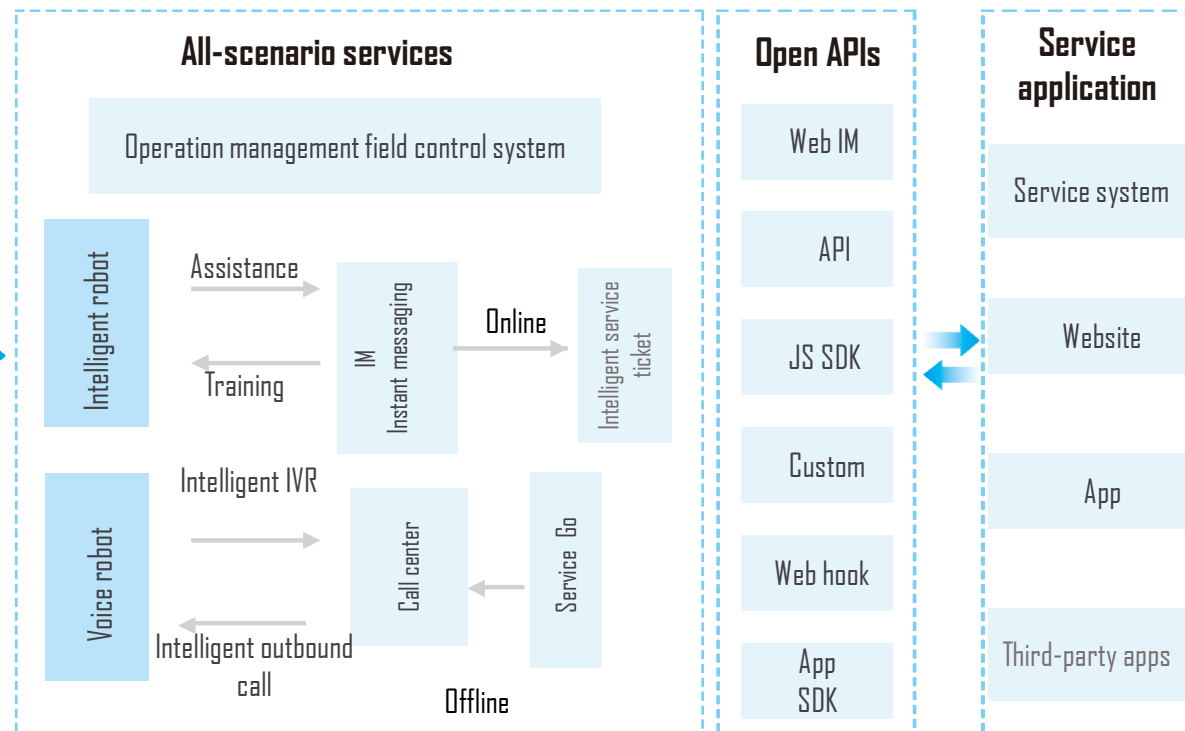
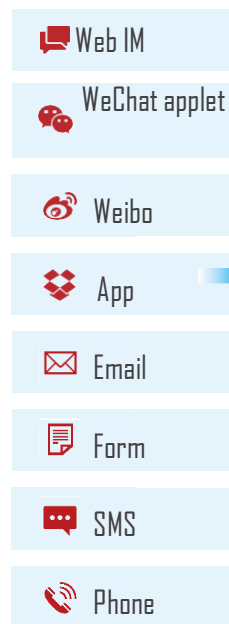
Intelligent quality inspection

- The robot performs offline inspection on the service quality of the manual customer service in batches to identify user emotions and help seize the blind spots of the customer service to effectively improve the service quality.

Hot issue mining

- Based on the questions raised by users, the robot clusters the questions, calculates the frequency, and sorts out hot questions to learn about user feedback in a timely manner.

Multi-channel access





Large-Screen Voice Assistant in Longzihu, Zhengdong New Area

Challenges

- On the large screen, it is complex to select the content to display.
- It is difficult to quickly extract required information from a large amount of data.
- Onsite presentation and large-screen interaction cannot be automated.

Solution

- The large-screen voice assistant solution combines the large-screen control system with bot data.
- Voice navigation is used to display specific pages on the large screen through conversations.
- Voice Q&A is available, so you can interact with the big screen to query metrics and trends through conversations.

Benefits

- Frees your hands and simplifies operations. You do not need to operate the large screen on your computer;
- Data can be queried in a more timely manner without manual sorting and searching.





Return Visits to the Insurance Industry

Recognition rate

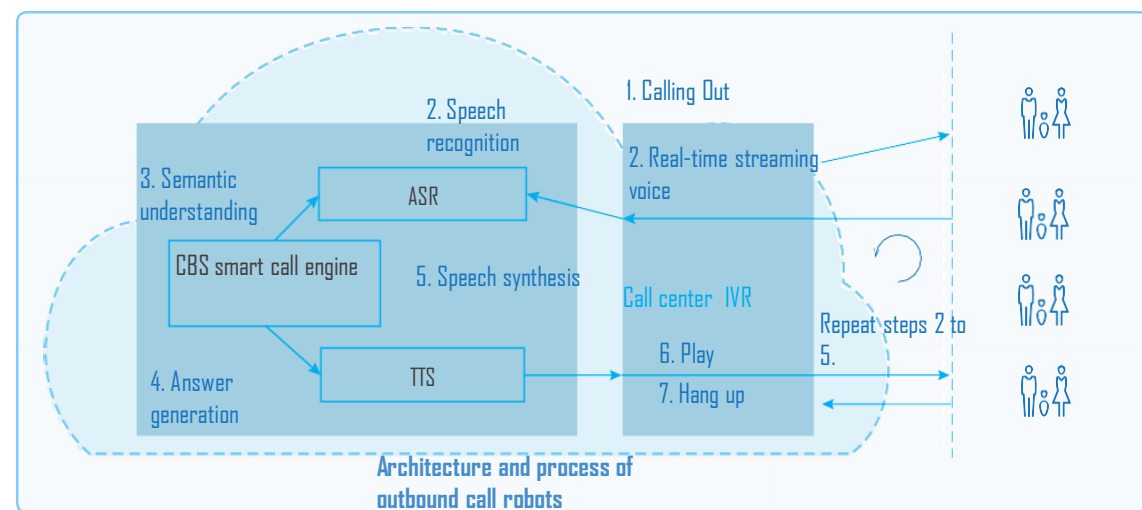
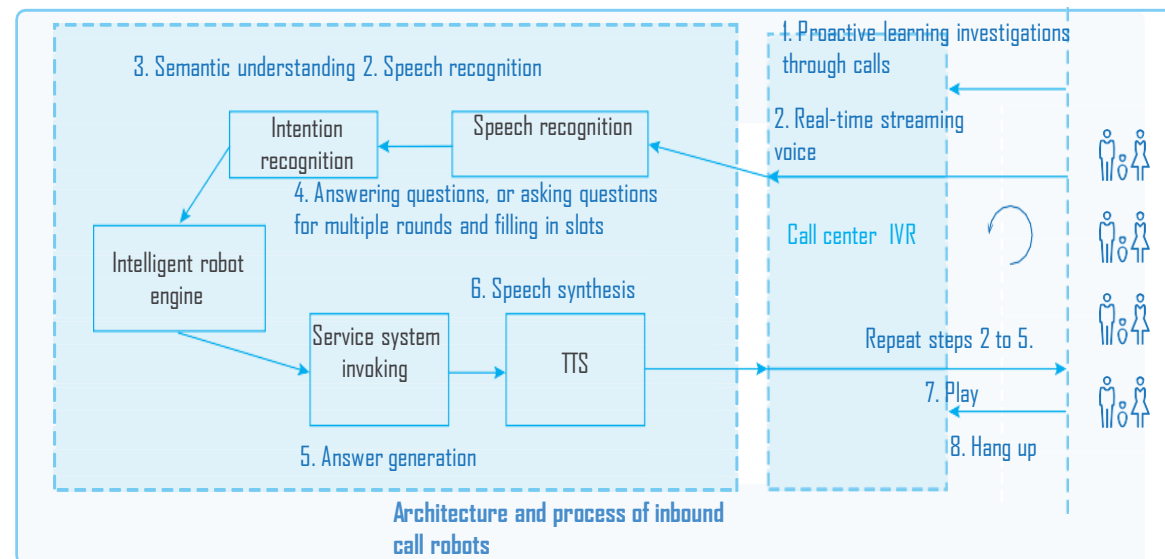
- High recognition accuracy and voice recognition technology that has been verified on a large scale.

Hot words

- Use hot words to improve the recognition accuracy of professional words.

High concurrency and low latency

- Background services can be elastically scaled to meet high concurrency requirements.
- Real-time stream identification has a low delay and low IVR process customization.
- Multiple concurrent calls are supported, and the response time is within milliseconds.





AI-Assisted Diagnosis of COVID-19

Scenario

CT imaging is an important means to evaluate the condition of COVID-19 patients. Manual screening takes at least 12 minutes, and expert resources are scarce.

HUAWEI CLOUD works with Huazhong University of Science and Technology and BlueNet to launch the AI-assisted COVID-19 screening service to deliver AI medical image analysis capabilities, improving the quality and efficiency of auxiliary diagnosis.

Solution advantages

- Second-level response: Outputs screening results in seconds, improving doctors' image reading efficiency;
- 3D reconstruction of lesions: Detects the lesions and their affected positions, automatically measures the volume, and outputs anatomy and location through 3D reconstruction.
- Comparison of follow-up positioning: Helps doctors effectively evaluate the progress of patients' illnesses and the efficacy of medication.





Summary

- This course first introduces the HUAWEI CLOUD EI ecosystem, helping you understand HUAWEI CLOUD EI services. Then, it focuses on ModelArts and AI services, helping you quickly understand ModelArts. Finally, it introduces success stories of EI.



Quiz

1. Which of the following scenarios is EI suitable? ()

A. Smart government

B. Smart city

C. Smart manufacturing

D. Smart finance



More Information

- Huawei Talent Online

<https://e.huawei.com/en/talent/#/>

- WeChat official accounts:



EMUI



Huawei Device Open Lab



Huawei Developer



Contact Huawei Talent
Online

The image features a blue-tinted background with silhouettes of several business professionals in a modern office environment. The silhouettes are arranged in groups, some standing and talking, others holding documents or devices. The background shows a glass-walled office with a city skyline visible through the windows. The floor is highly reflective, mirroring the silhouettes of the people. The overall tone is professional and corporate.

Thank You

www.huawei.com