



**Asia-Pacific  
Economic Cooperation**

---

**2025/SOM3/SCCP/010**

Agenda Item: 5.2

## **Generative Artificial Intelligence (AI) Empowers Modernization of Customs Work: New Practice of Smart Customs Driven by Large Language Models**

Purpose: Information

Submitted by: China



**Second Sub-Committee on Customs  
Procedures Meeting  
Incheon, Korea  
30 July–01 August 2025**



# Generative AI empowers modernization of customs work

—*New Practice of Smart Customs Driven by  
Large Language Models*

Director Jun XU  
From International  
GACC



# CONTENTS

01

Challenges faced by customs

---

02

Large Language Models in China Customs

---

03

Large Language Models Empower Customs  
Law Enforcement and Supervision

---

04

Large Language Models Enhance  
Administrative Operations

---

05

Large Language Models Boost  
Enterprise-Oriented Customs Services

---

01

## Challenges faced by customs



# Challenges Faced by Customs

Enterprises are intensifying their demands for maximized customs clearance efficiency, reduced trade costs, and assured import-export quality, creating mounting pressure on regulatory coordination.

## Regarding Enterprise Services



1

### In Terms of Customs Law Enforcement

Infiltration through border ports has become increasingly diverse and covert, significantly heightening the difficulty of effectively preventing and controlling security threats.

2

### On Customs Transformation

At the same time, artificial intelligence is undergoing a qualitative breakthrough from "perception and comprehension" to "creation". AI is undoubtedly providing new solutions for the digital transformation and intelligent upgrading of customs.

3

## 02

# Large Language Models in China customs



# Large Language Models in China customs

01

## AI Computing Infrastructure

General-Purpose Server  
GPU Accelerated Server

02

## Platforms

Computing Power Orchestration  
Model Governance  
Knowledge Base Curation  
Agent Deployment

03

## LLMs

DeepSeek R1  
DeepSeek V3  
Qwen  
.....

04

## Knowledge Bases

Document Repository  
Regulation Database  
Knowledge Base  
.....

05

## AI-Powered Applications

Intelligent Document Verification  
AI-Based Classification  
Intelligent Deployment  
.....

06

## AI Agent

Intelligent Assistant  
Intelligent Translator  
.....

# Customs Large Language Models Cluster

## 1.Text Processing Center



providing text generation, machine translation, semantic parsing, intelligent dialogue capabilities

## 2.Visual Analysis Center



Offering image classification, object detection, and high-precision segmentation capabilities

## 3.Voice Interaction Center



Enabling multilingual recognition, verification, and response capabilities

## 4.Decision Support Center



Delivering risk prediction, dynamic recommendations, and knowledge reasoning capabilities.

03

# Large Language Models Empower Customs Law Enforcement and Supervision



# Intelligent Document Review

人工智能平台 智能文字识别

控制台

图片解析

上传文件

图片解析

提取文档内容 识别文档类型

版式类型: 请选择版式 版式管理

模型版本: cwcrl.5lite-ocr-241025

出口国家, 主管部门

9 / 4096

提交任务

输出结果

```
{
  "question": "主管部门",
  "answer": [
    "DEPARTMENTOFAGRICULTURE,FOODANDTHEMARINE"
  ],
  "roi_box": [
    {
      "x": 295,
      "y": 789
    },
    {
      "x": 795,
      "y": 807
    }
  ]
}
```

人工智能平台

人工智能平台 智能文字识别

控制台

图片解析

图片解析

图片解析

上传文件

要素提取

提取文档内容

识别文档类型

版式类型:

请选择版式

版式管理

模型版本:

cwcrl.5lite-ocr-241025

出口国家, 主管部门

9 / 4096

提交任务

输出结果

```
{
  "question": "主管部门",
  "answer": [
    "DEPARTMENTOFAGRICULTURE,FOODANDTHEMARINE"
  ],
  "roi_box": [
    {
      "x": 295,
      "y": 789
    },
    {
      "x": 795,
      "y": 807
    }
  ]
}
```

证书号码:  
Certificate Number: A018757

VETERINARY HEALTH CERTIFICATE FOR THE EXPORT OF MEAT FROM IRELAND TO CHINA  
爱尔兰输华肉类兽医卫生证书

Information of Issuing Unit  
证书出具机构信息

Exporting Country:  
出口国家: Ireland

Competent Authority:  
主管部门: DEPARTMENT OF AGRICULTURE, FOOD AND THE MARINE

Issuing Organization:  
证书出具机构: VPHIS (VETERINARY PUBLIC HEALTH INSPECTION SERVICE)

Administrative Areas: VPHIS SOUTH WEST  
所属行政区域:

Information of Production:  
生产信息:

Name(s), address(es) and approval number(s) of the approved slaughterhouse(s)  
屠宰厂名称、地址和官方注册编号:  
QUEALLY FPG SLAUGHTERING LTD.  
TIA BAWN PORK AND BACON, GRANNAGH, WATERFORD, IRELAND EC 332

Name(s), address(es) and approval number(s) of the approved cutting plant(s)  
分割/加工厂名称、地址和官方注册编号:  
FPG SLAUGHTERING LTD.  
GRANNAGH, WATERFORD, IRELAND

Name(s), address(es) and approval number(s) of the approved cold store(s)  
储存冷库名称、地址和官方注册编号:  
TIA BAWN PORK AND BACON, GRANNAGH, WATERFORD, IRELAND EC 332

Identification of the product:  
产品信息:

Animal Species  
来源动物种类: PORKCINE

Animal Source Country of Origin  
来源动物国家: IRELAND

Name of the product  
产品名称: FROZEN PORK SPARERIBS

Type of the package  
包装方式: CARDBOARD CARTONS

Number of packages  
包装数量: 2147 CARTONS

Net weight (kg)  
净重 (千克): 28004.89 KGS

Date of slaughter  
屠宰日期: 16.08.2023 To 14.07.2023

Date of production  
生产日期: 19.08.2023 To 17.07.2023

Shelf life  
保质期: 18.06.2025 To 16.07.2025

第1页 第2页 第3页 第4页

# Intelligent Document Review

## Traditional Document Review Process

01

Under the traditional mode, customs officers manually compare declared information with scanned paper certificates, taking about 20 minutes on average and prone to errors and omissions.

## AI-Driven Document Review

02

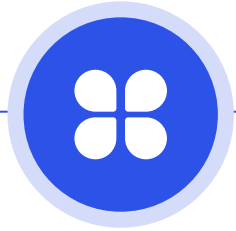
An intelligent certification model using multimodal large models and OCR technology has been developed, with an accuracy rate of over 95%. It compresses the document review time to about 2 minutes.

## Generalization Ability of Large Model

03

The large model has excellent generalization ability, not requiring manual annotation for specific certificate types, greatly improving the efficiency of algorithm development.

# Customs Commodity Classification



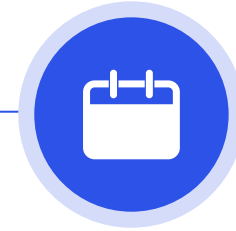
## Complexity of Classification

Customs classification is a highly specialized task with significant technical barriers.



## Application of LLMs

For automatically cleared documents, LLMs are used to double-check declared product information, conduct step-by-step classification reasoning, and automatically assess classification risks.



## Efficiency Improvement

The classification model can review 30,000 to 50,000 customs declarations daily, improving efficiency by 60 to 100 times compared to manual processing.

# Customs Enforcement and Supervision

## Traditional Inspection Methods

Traditional on- site inspections require sampling and sending specimens to specialized laboratories, resulting in high costs and difficulty in meeting the demands of rapid port clearance.



## AI-Assisted Identification

AI is used to identify plants, insects, and wood at direct customs offices such as Shanghai and Nanjing, leveraging multimodal large models and neural network algorithms.



## Identification Accuracy and Efficiency

The system can effectively recognize various types of quarantine weeds, invasive alien weeds, insect species, and wood, with an average identification accuracy of over 90%, reducing on- site inspection time by more than 90%.



# Customs Enforcement and Supervision

紫茎泽兰 (zǐ jīng zé lán)

*Ageratina adenophora* (Spreng.) R. M. King & H. Rob.

俗名：破坏草

异名：Eupatorium coelestinum Eupatorium adenophorum Eupatorium glandulosum



紫茎泽兰 Ageratina adenophora



紫茎泽兰 Ageratina adenophora



紫茎泽兰 Ageratina adenophora

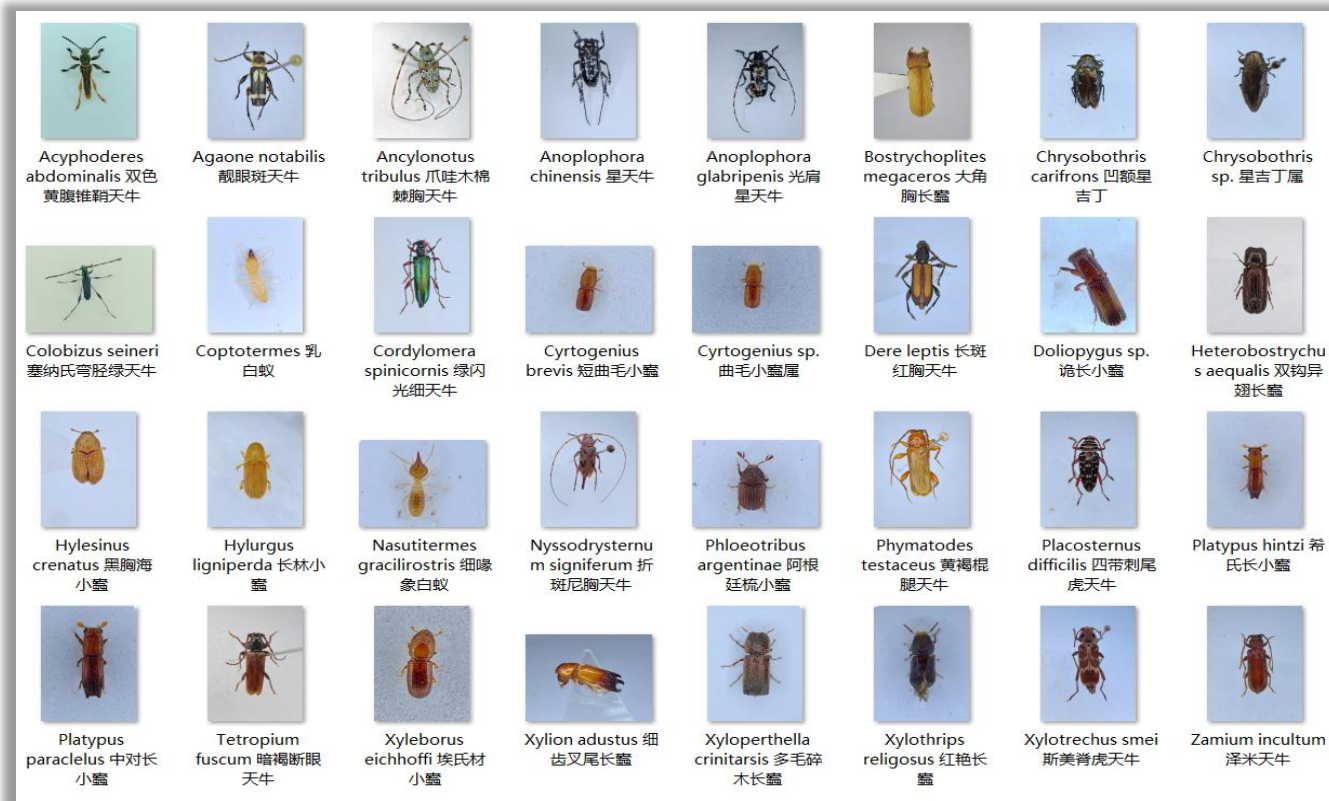
Total sample size: 1028448

## 1. Identifying harmful weed species



The system can now effectively recognize **57** types of quarantine weeds and **33** types of invasive alien weeds, with an accuracy rate exceeding **93%**.

# Customs Enforcement and Supervision



## 3. Identifying insects

The second is to detect pests such as pine woodnematodes.

Real-time identification of *32 insect species* is currently supported.

# Customs Enforcement and Supervision



## 3. Identifying Wood

The third is to develop an intelligent recognition model for "identifying wood", which currently supports real-time recognition of **145** common types of imported and exported wood.



# Customs Enforcement and Supervision

## Traditional Inspection Methods

Traditional on- site inspections require sampling and sending specimens to specialized laboratories, resulting in high costs and difficulty in meeting the demands of rapid port clearance.



## AI-Assisted Identification

AI is used to identify plants, insects, and wood at direct customs offices such as Shanghai and Nanjing, leveraging multimodal large models and neural network algorithms.



## Identification Accuracy and Efficiency

The system can effectively recognize various types of quarantine weeds, invasive alien weeds, insect species, and wood, with an average identification accuracy of over 90%, reducing on- site inspection time by more than 90%.



# 04

## Large Language Models Enhance Administrative Operations



# Traditional Office Challenges

1

## Fragmented Knowledge

Under the traditional model, customs authorities face challenges such as fragmented knowledge and difficulties in knowledge transfer.

2

## High Technical Barriers

Data querying and application involve high technical barriers, and the efficiency of customs officers is often heavily dependent on their work experience and individual capabilities.

3

## Need for Improvement

There is a need to improve the efficiency and effectiveness of administrative office operations.

# Intelligent Assistant of China Customs



## PART 01 Document Processing Support

The assistant offers document drafting, intelligent proofreading, text refinement, automated summarization, and AI- powered translation, improving office efficiency.

## PART 02 Intelligent Q&A

intelligent assistant integrates policy think-tank capabilities and supports natural language interaction-based queries, effectively addressing industry pain points of customs.



## PART 03 Data Querying and Analytics

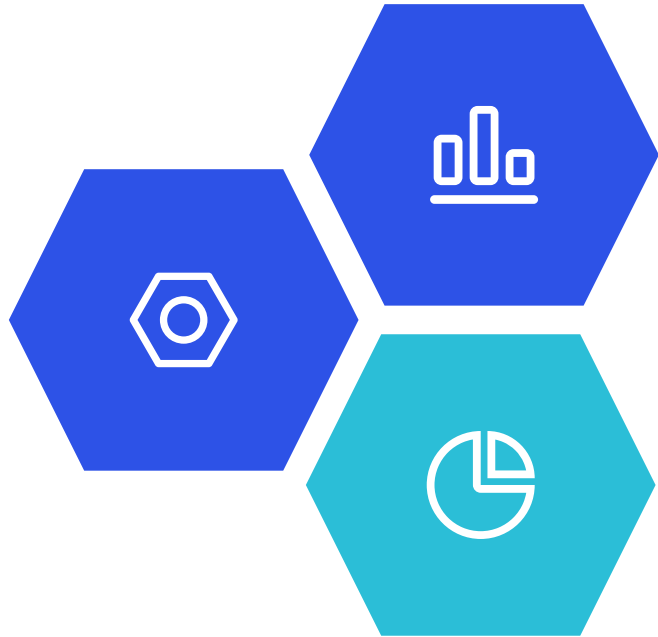
It enables smart data querying and analytics, automating document processing and statistical analysis, extracting key insights from data, and supporting decision- making processes.

05

# Large Language Models Boost Enterprise-Oriented Customs Services



# Traditional Customer Service Issues



## Manual Service Limitations

As global trade digitalization accelerates and customs operations grow increasingly complex, traditional manual customer service struggles to cope with the surging demand for cross- customs- zone inquiries and policy interpretation.

## Common Problems

Prominent issues such as delayed responses, outdated knowledge bases, and inconsistent service standards have become increasingly apparent.

## Need for Improvement

There is a need to enhance customer service efficiency and quality to meet the growing demands of businesses.

# Implementation of Intelligent Customer Service



## System Overview

The '12360 Intelligent Customer Service' system has been developed, leveraging large language models and integrating Customs- specific knowledge bases and regulatory documents.



## Deployment and Functionality

Deployed on select Customs official websites and WeChat public accounts, the system provides 24/7 service, rapidly interpreting user intent to offer accurate, real- time responses.



## Benefits for Enterprises

It significantly enhances service efficiency and user experience for businesses, providing timely policy clarification, operational guidance, and procedural navigation.

# Current Progress





# Thanks for listening

xujun@customs.gov.cn

