Exploration of Data-Driven Intelligent Customs

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Action Guideline for Promoting Big Data Development, China, 2015

China Government
- streamline government functions and administration
- delegating powers while improving regulations

China Society
- new-type industrialization
- Urbanization
- agricultural modernization

big data & cloud computing
Agenda

- progress China Customs made in the field of reform
- exploration of big data application in China Customs
- building of data-driven smart customs
1. Integration of customs clearance nationwide

Multi-step processing of a single declaration

- Risk targeting centers
- Revenue collection centers

Declaration

Traders

Customs: step 1

Customs: step 2
2. support cross-border e-commerce

- Shopping website
- Commodity registration
- Release
- Entry declaration
- Tax refund
- Direct-post export
- Payment
- Information
- Foreign consumers
- Bonded export
- Bonded warehouse
- Domestic consumers
- China customs
- Domestic logistics
- Delivery
- That day
- 1-2 days
- International logistics
- Air flight
- Export processing zone
- CIQ
- Bonded warehouse
- Overseas shipping
- Shipping
- EPZ
- DHL shipping

- Goods
- Bonded warehouse
- Domestic logistics
3. fighting against smuggling and protecting IPR

precise targeting by use of big data

mobile intelligent identification system

using free search engine for trader’s relevant information

using image to search for image, to achieve smart matching
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- progress China Customs made in the field of reform
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1. Intelligent law enforcement

- Customs data
- Police data
- Internet data

ID-Mapping

Data be relevant

Intelligent search

Algorithm & intelligence sharing

Intelligence

Sharing

Experts

Algorithm
2. intelligent risk control

**Input:**
- Past declaration forms & inspection data (> 100 million records)
- Past manifest data (> 100 million records)

**Process:**
- Machine learning
- Deep learning, NLP

**Output:**
- Risk score model
- Association model

**Application:**
- Risk targeting and inspection

Seizure rate: intelligent model VS manually-set rules
3. intelligent revenue collection

**Input**
- Customs import and export tariff of the PRC
- Past declaration information (Commodity name, brand, specification, HS code, etc.) (> 100 million records)

**Process**
- NLP, machine learning

**Output**
- Classification prediction model (CPM)

**Pre-examine**
- Pre-examine the classification of goods and pick up high risk ones for manual examination.

**Audit Mode**
- Manual, 2015-2016: 0.86%
- CPM, 2017: 4.40%

*Increased by up to 5 times*
Agenda

- progress China Customs made in the field of reform
- exploration of big data application in China Customs
- building of data-driven smart customs
architecture of data-driven smart customs
1. smart customs operation system
2. Smart Customs Analysis System

- **Customs Brain**
  - Application Interface
  - Intelligent Algorithm Bank
    - Speech Recognition
    - Image Recognition
    - Pattern Recognition
    - OCR
    - Machine Learning
    - Graph Calculation
    - Intelligent Retrieval
    - NLP

- **Data Resource Platform**

- **Cloud Computing Platform**

- **Data Collection**

- **Intelligent Applications**
  - Safety Access
  - Revenue Collection
  - Anti-Smuggling

- **Intelligent Applications**
3. smart customs service system

I want to...
- declare
- query
- browse
- quest
- assess

internet + customs service platform

online services

offline procedures
4. big data application environment

- Big Data Center: data collection, data mining, and data analysis
- Operation and Maintenance System
- R&D Center: platform-based
- Data Governance

big data application environment
Thank You!