Customs Control in E-commerce with
New Technologies

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KOREA CUSTOMS SERVICE 1878

Guarding Customs Borders for 50 years
Protecting People's Safety for 100 years

Contents

Guarding Customs Borders for 50 years
Protecting People's Safety for 100 years

1. E-Commerce Overview

Process: E-commerce goods delivered by express carriers

Arrival

Submit Manifest

Clearance with Good List:
Value ≤ $150 **and** Personal use **and** OGA permission NOT needed

Simplified Declaration:
$150 ≤ Value ≤ $2000

General Declaration:
Value > $2000 **or** Commercial Use **or** OGA permission required

Express Cargo

Clearance with Goods List

Simplified Declaration

General Declaration

Document examination & 100% X-ray Inspection

Inspection exemption

Release

Intrusive Inspection

Investigation

Not eligible for Clearance with Goods List

1. E-Commerce Overview

Statistics

Case (Thousands): 15,531 (`14), 15,838 (`15), 17,377 (`16), 23,952 (`17), 32,255 (`18), 42,988 (`19), 63,575 (`20)

Values (Million USD): 1,545 (`14), 1,513 (`15), 1,622 (`16), 2,110 (`17), 2,755 (`18), 3,143 (`19), 3,754 (`20)

Goods

Edible preparations (Ch. 21)	21%
Electronic appliances (Ch. 85)	12%
Miscellaneous manufactures (Ch. 96)	9%
Cosmetics (Ch. 33)	8%
Clothes – knitted (Ch. 61)	6%
Clothes – not knitted (Ch. 62)	5%

Origin

- United States 33%
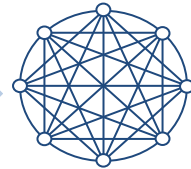- China 42%
- HongKong 7%
- Japan 4%
- Others 15%

2. Innovation in E-Commerce

❖ **Background & Groundwork for Adopting New Technologies**

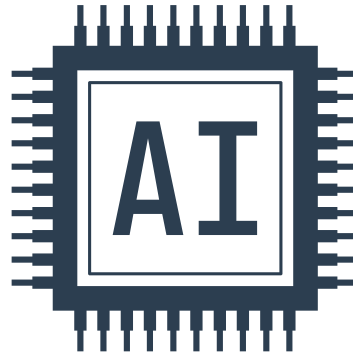Continuous informatization building on the trade statistics system in 1970s

Vast data accumulation

(e.g. Finance and customs duties data)

Customs administration based on data Analysis

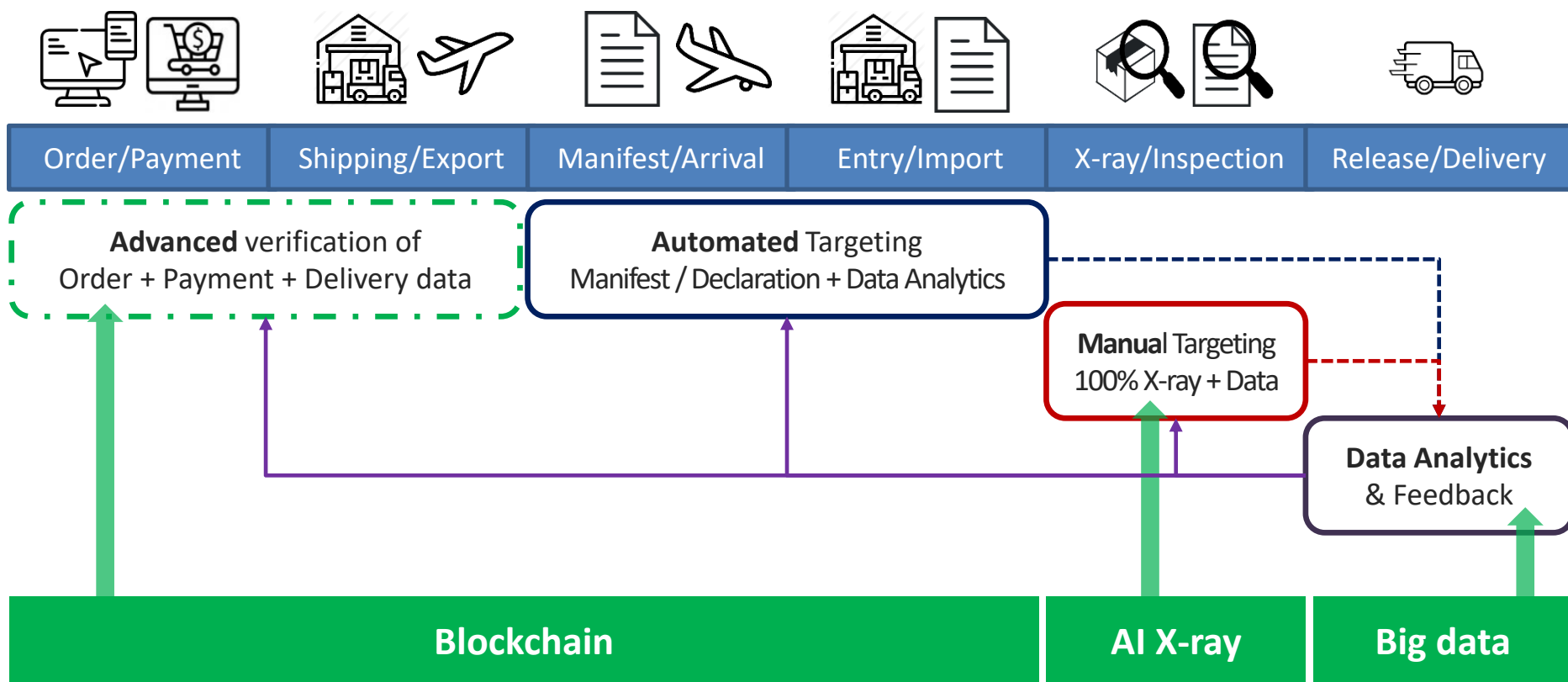(e.g. Cargo selectivity)

Accumulated IT infrastructure

New technology trends in the 4th Industrial Revolution Age

BIG DATA

AI
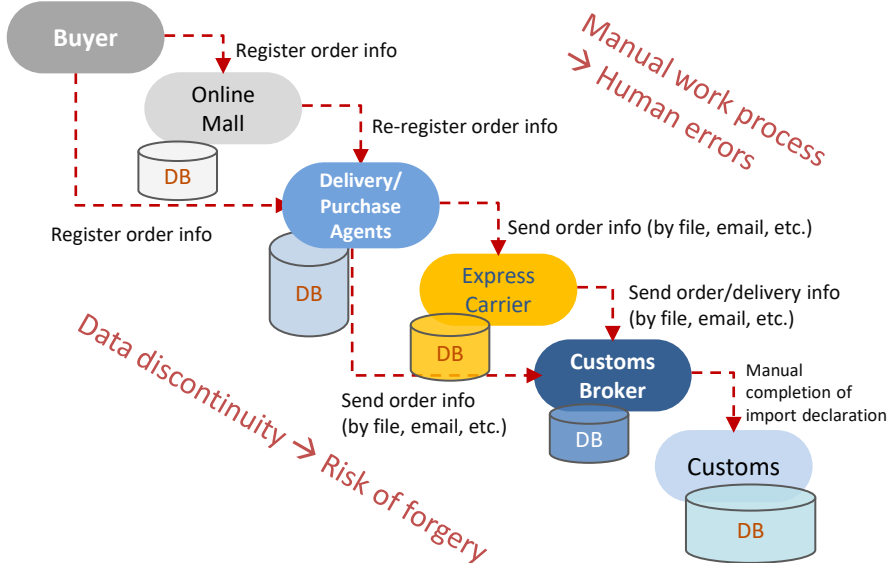

Blockchain

Active adaption for new technologies since 2017

2. Innovation in E-Commerce

| Order/Payment | Shipping/Export | Manifest/Arrival | Entry/Import | X-ray/Inspection | Release/Delivery |

Advanced verification of
Order + Payment + Delivery data

Automated Targeting
Manifest / Declaration + Data Analytics

Manual Targeting
100% X-ray + Data

Data Analytics
& Feedback
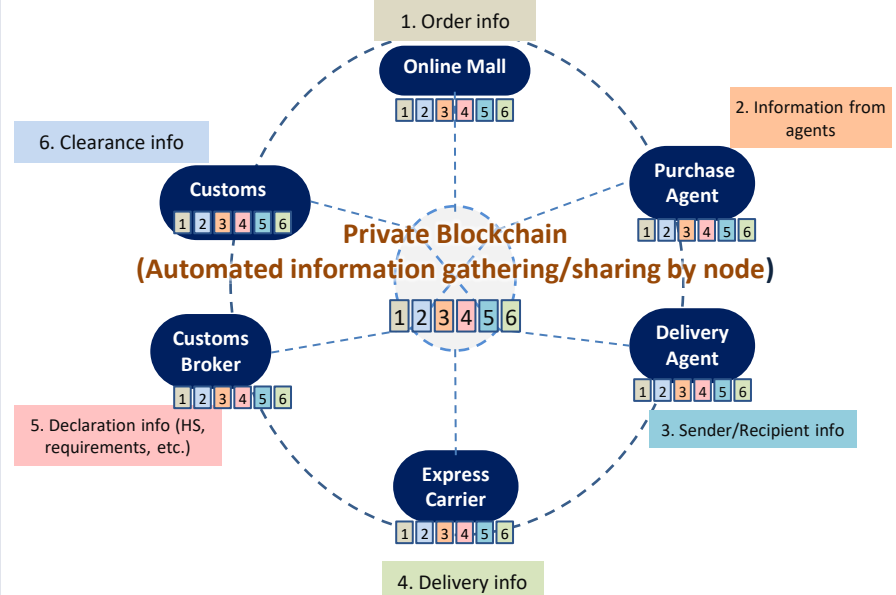
Blockchain

AI X-ray

Big data

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3. Blockchain in E-commerce

AS-IS

◆ Vertical, step-by-step processing flow

◆ Manual work is needed at each step due to data discontinuity

Buyer

Register order info

Online Mall

DB

Re-register order info

Register order info

Delivery/ Purchase Agents

DB

Manual work process → Human errors

Send order info (by file, email, etc.)

Express Carrier

DB

Send order/delivery info (by file, email, etc.)

Send order info (by file, email, etc.)

Customs Broker

DB

Manual completion of import declaration

Data discontinuity → Risk of forgery

Customs

DB

TO-BE

◆ Horizontal, multiple links

◆ Elimination of repetitive/duplicate work, minimized human errors & forgery-prone links

1. Order info

Online Mall
1 2 3 4 5 6

2. Information from agents

6. Clearance info

Customs
1 2 3 4 5 6

Purchase Agent
1 2 3 4 5 6

Private Blockchain
(Automated information gathering/sharing by node)

1 2 3 4 5 6

Customs Broker
1 2 3 4 5 6

Delivery Agent
1 2 3 4 5 6

5. Declaration info (HS, requirements, etc.)

3. Sender/Recipient info

Express Carrier
1 2 3 4 5 6

4. Delivery info

# 3. Blockchain in E-commerce

Accomplishments of Blockchain Pilot Projects

1. Customs as an active participant in cross-border E-commerce supply chain.

2. Authenticity between Import declaration data and purchase detail secured.

3. Fundamental change in the data exchange process

   : Submission of declarations with finalized data → real- time sharing of live data

4. More efficient and facilitated e-commerce consignment clearance process.

   - Less inspection on low-risk packages (purchase detail = import declaration)

   - Focus workforce on high-risk packages (items purchased through non-participating supply chains or with non-corresponding data)

Improvements to Make for Pilot Project

1. Initial cost for connecting the blockchain and maintenance cost are high.

   : Blockchain DB server & special experts to maintain blockchain system are required. → This increased the maintenance cost.

2. It is not feasible to obtain 100% system stability.

   - The blockchain is based on open source, and with continuously upgraded versions for bugs or system errors.

3. Emergence of new technologies related to the blockchain.

   - A newly established system may be more efficient than reusing the existing system that was previously developed.

4. AI X-Ray Scanner

• Final selectivity of goods for inspection after the 2nd screening by officers in charge of X-ray image interpretation of the primarily targeted high-risk goods by the AI.

• It provides clues to the officers to intensively focus on the goods which may not be targeted with the naked eye.
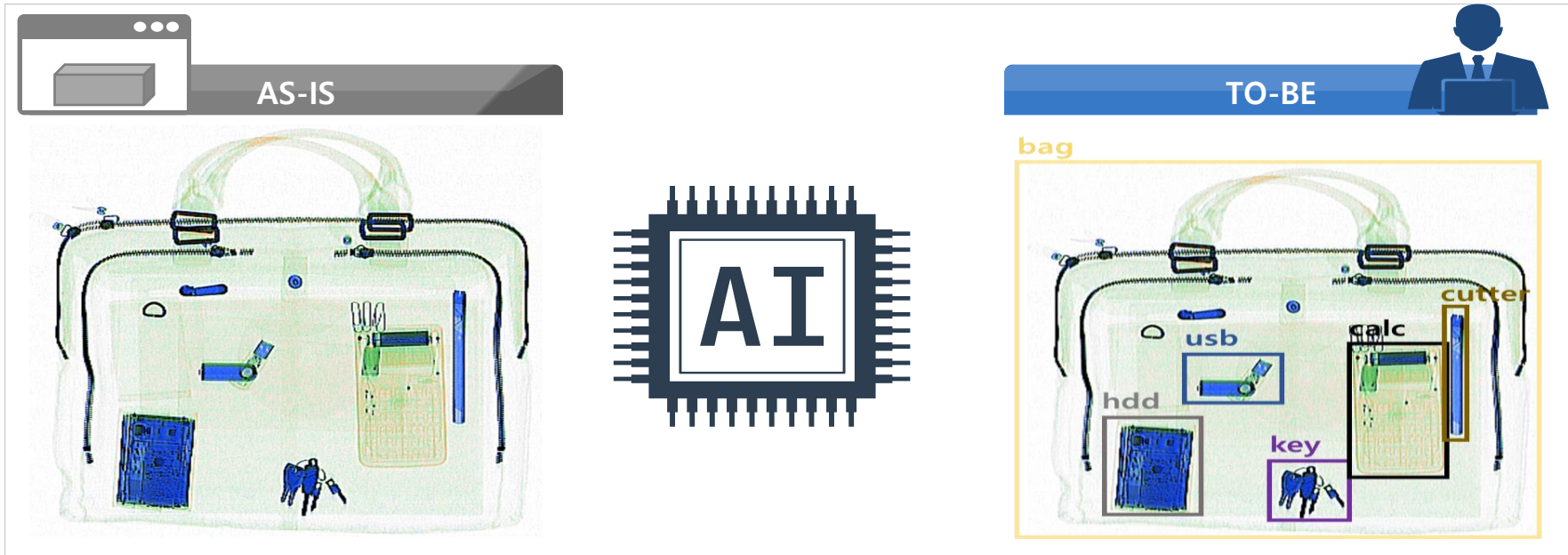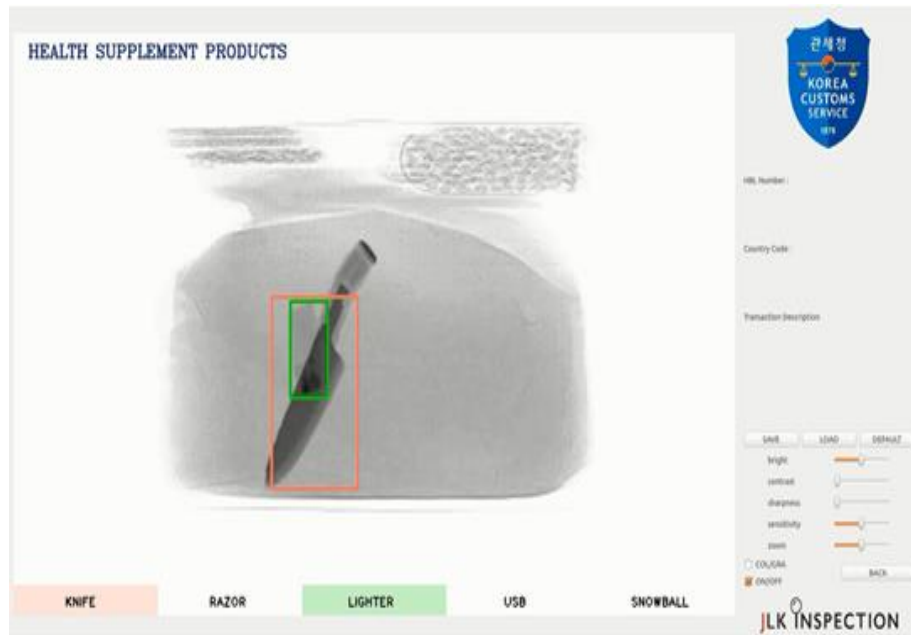
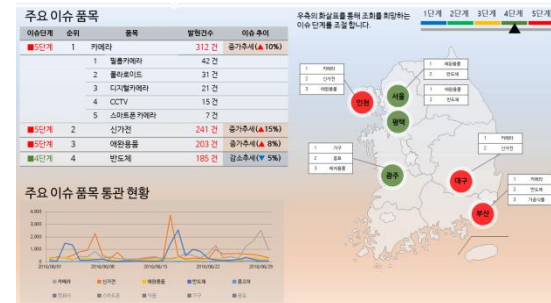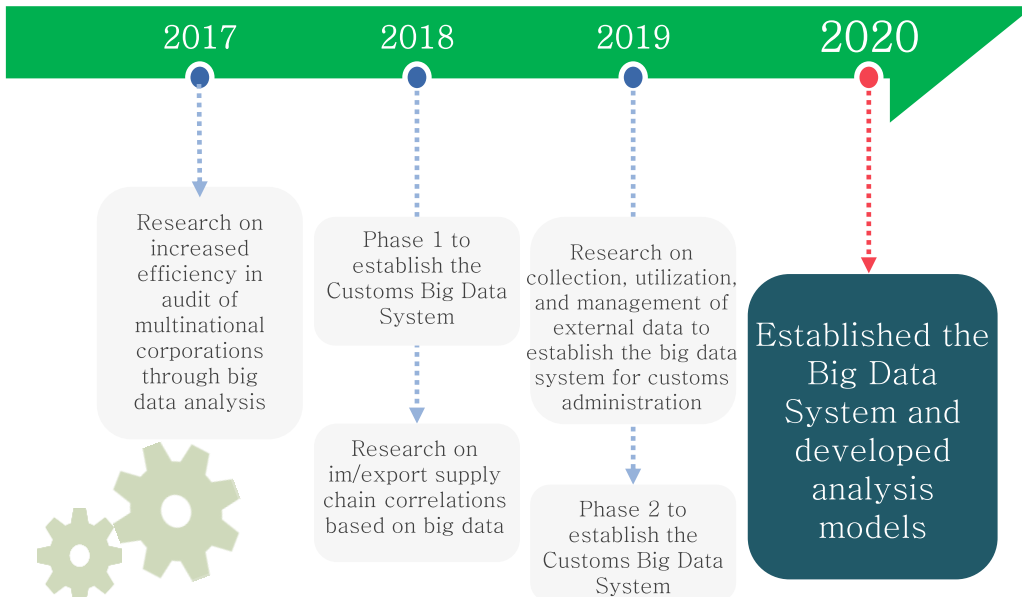# 4. AI X-Ray Scanner

Image from the research in 2018

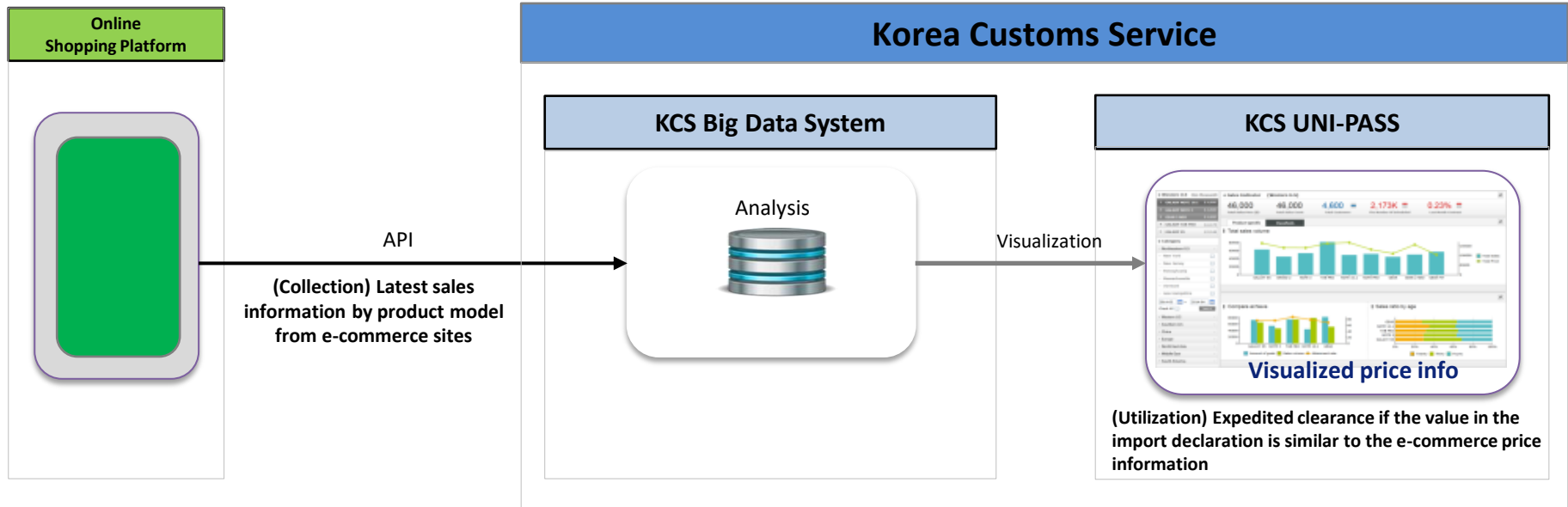Image from the development project in 2020

◆ **Background of the system development**

To utilize the big data analysis technology in customs areas and prepare for data-based   digitalization of customs administration, the system was developed in phases considering the urgency, frequency, and scalability.

2017

Research on increased efficiency in audit of multinational corporations through big data analysis

2018

Phase 1 to establish the Customs Big Data System

Research on im/export supply chain correlations based on big data

2019

Research on collection, utilization, and management of external data to establish the big data system for customs administration

Phase 2 to establish the Customs Big Data System

2020

Established the Big Data System and developed analysis models

4. Big Data

◆ **E-Commerce Big Data Case – Prices Comparison by marketplaces**

Online Shopping Platform	Korea Customs Service

KCS Big Data System

KCS UNI-PASS

Analysis

API

(Collection) Latest sales information by product model from e-commerce sites

Visualization

Visualized price info

(Utilization) Expedited clearance if the value in the import declaration is similar to the e-commerce price information

5. Conclusion

✓ **Prerequisites** are **data** and **data analysis capability.**

✓ **Keys** to **the success** are **data, technological maturity**, and **needs from work fields** (Customs & private sector).

✓ **Essential elements** are **persistent interest of the executive management, seamless collaboration** among **divisions within the organization,** and **cross-border cooperation.**

Thank You