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Korea Customs Service

10.27. Oct 2021

Big data Strategy of KCS

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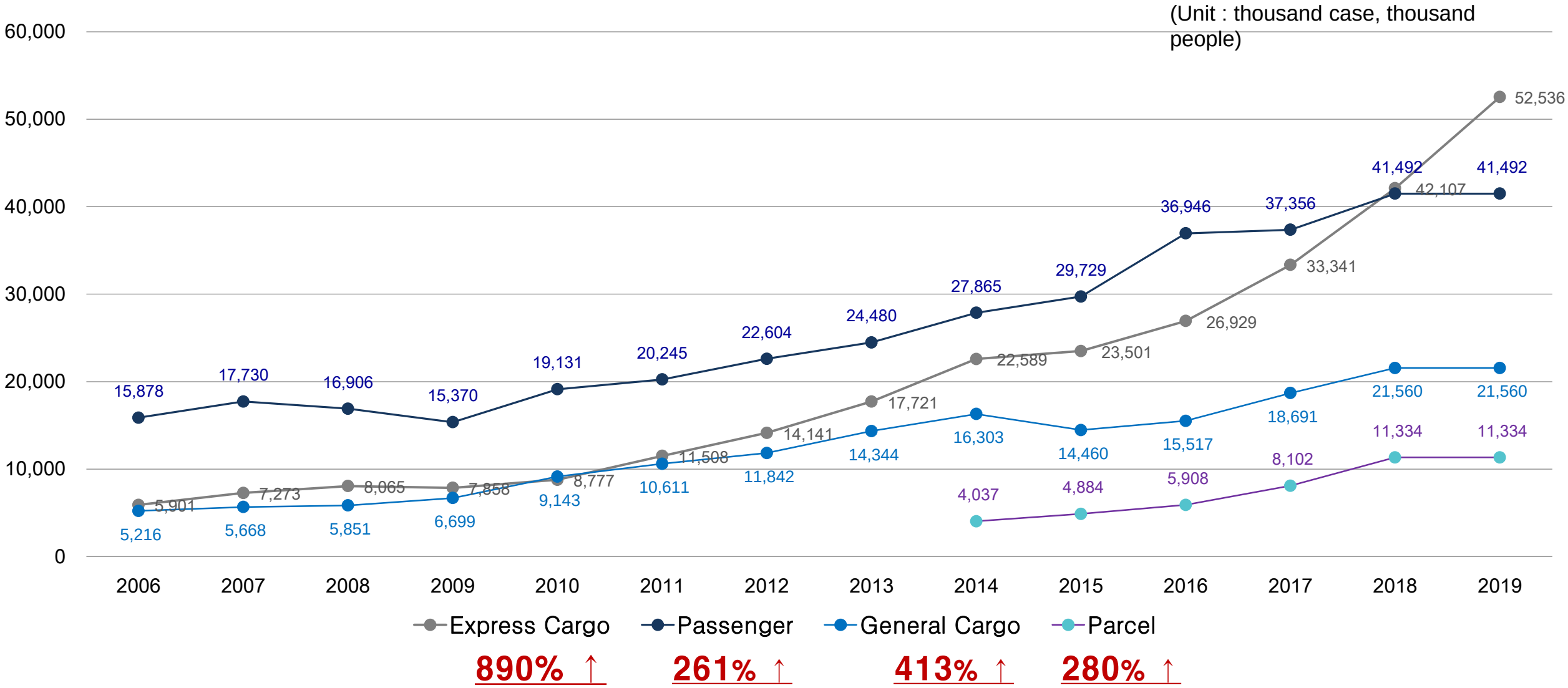
Korea Customs Workload (2006-2019)



(~2016) Structured Data-driven

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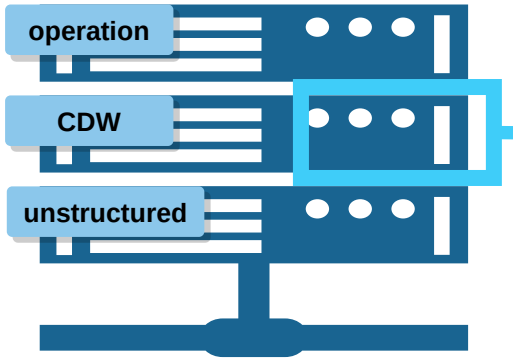
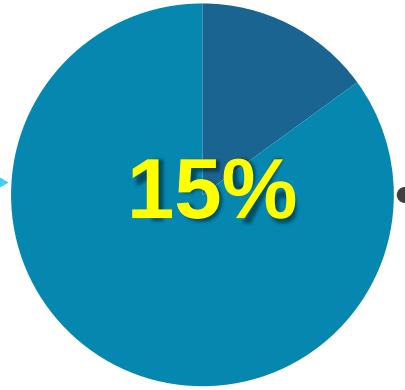
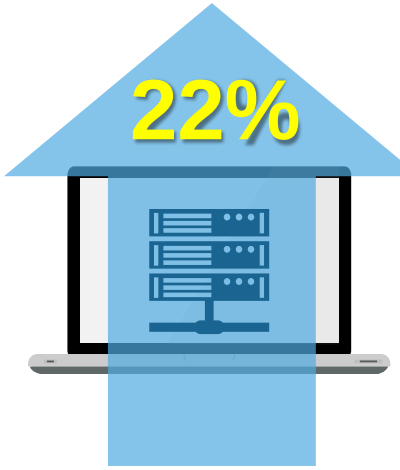
Data usage





Unstructured data volume increased



Using CDW for Simple info search · collection

95%

Only certain percentage of **internal data is used** (**15%**, 14.6TB)

95% users use CDW for simple search/data count purposes

volume of unstructured data increased **22%** annually on average since 2017
As of 2021 it amounts to 590k, **37TB**, But insufficiently used

CDW

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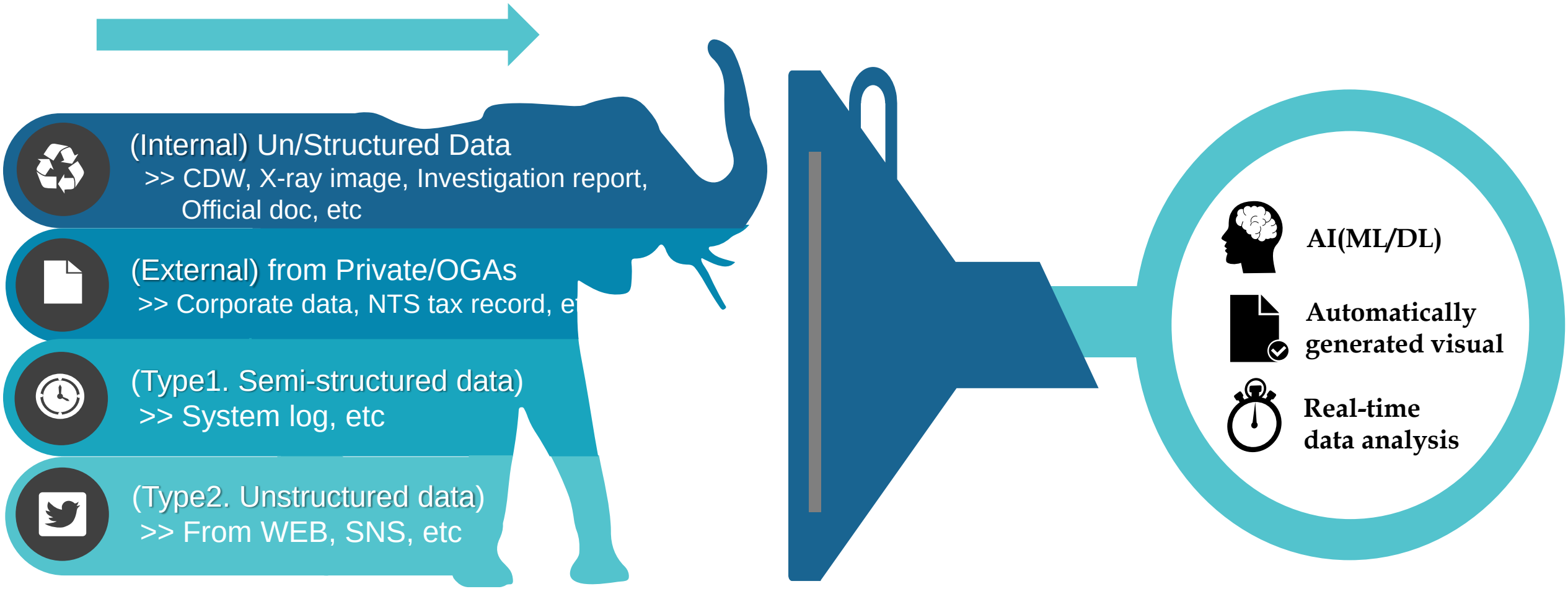
(2018~) Big data-driven (Str / Semi / Unstr data)



Strategic Effort (1) Planning Ahead

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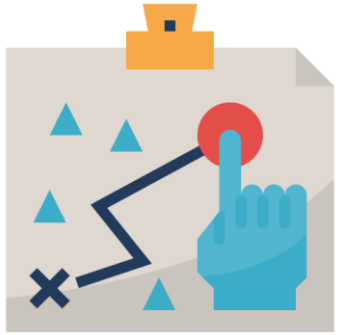
(2017) Research & Development Phase

A Study on the step-by-step
Application of Big data
from Initial Planning to Utilization

(2018~19) IT Strategy Planning Phase



Established mid- to long-term strategic plans
to **reflect** internal and external environmental changes
and **assess** information service level of KCS

Strategic Effort (2) Boost data analytics ability

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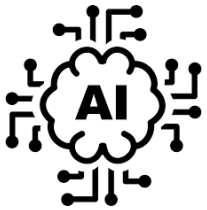

Core ICT Experts

100 (People)

Total Number Trainees('17~'21)

6 (Month)

More than **Half a Year** Of Intensive training In ICT technology

29 (Items)

Perform **Multiple Pilot Project (Big Data analysis)**

Strategic Effort (3) Establish a Big data Center

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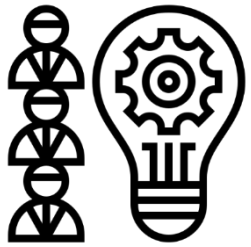
Sorry!

No Dedicated Team ('17, '18. '19)



Task Force Team ('20.1.20.~)

"5 experts"

Establish "Big Data Center" ('20.7.14.~)

"13 experts" ("15", As of Today)

KCS Big Data · AI Model (2017~2019)

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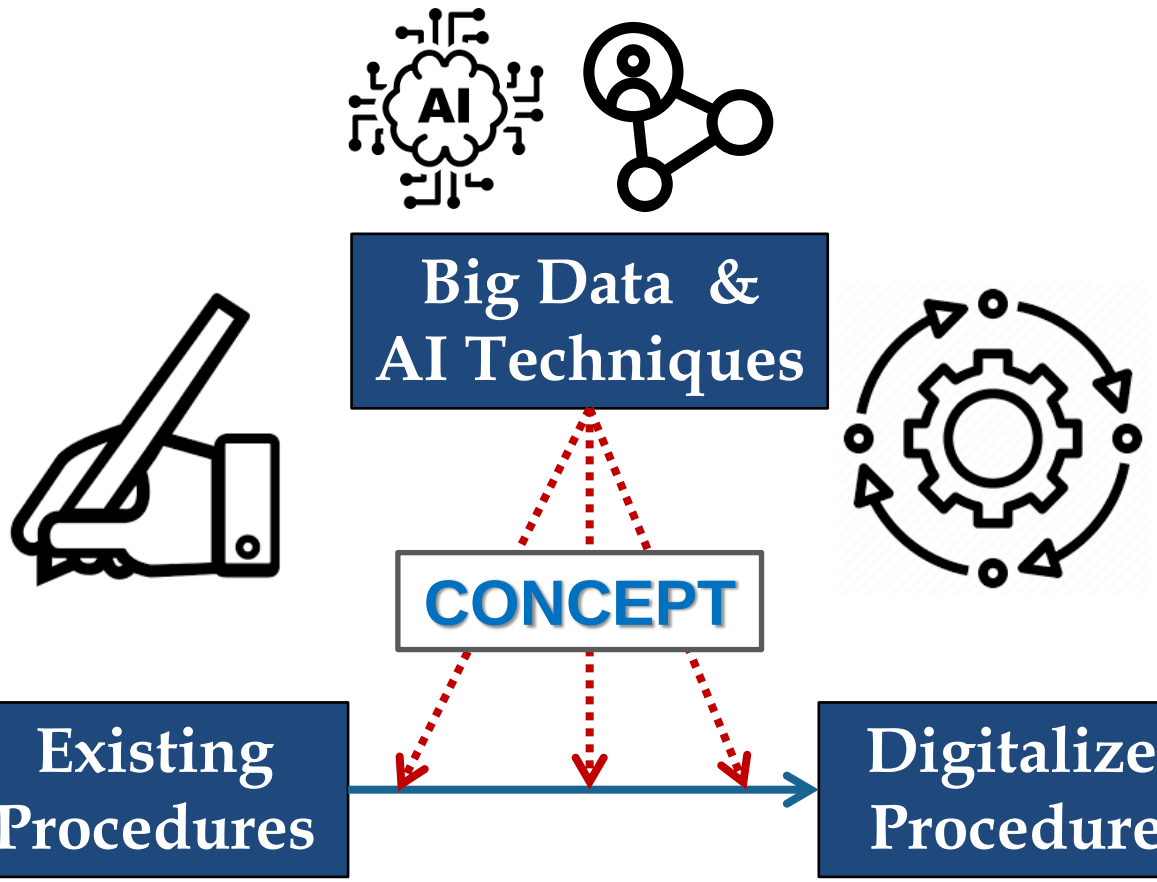

Validation of Business Applicability With Individual Development

(1) AI customs clearance system

(2) AI X-ray

(3) AI trade-finance fraud Monitoring system

BigFINDER

(4) BigFINDER

KCS Big Data · AI Model (2017~2019)

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AI customs clearance system

· (1st) AI Clustering Screening Model

Generate group of high-risk data
for a certain period of time (clustering)
based on the companies & items
to measure **the risk level of import declaration**

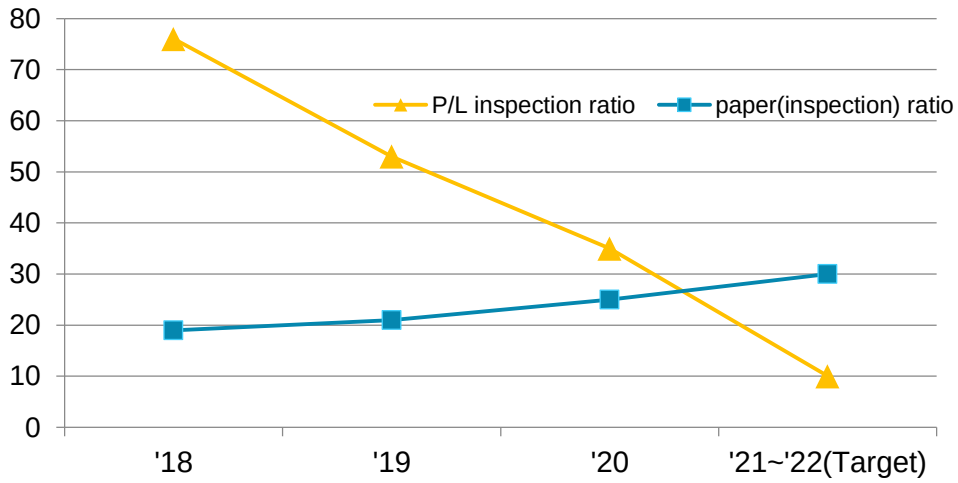
· (2nd) AI Deep learning Screening Model

Learn from clearance data
for a certain period of time
to measure level of risks

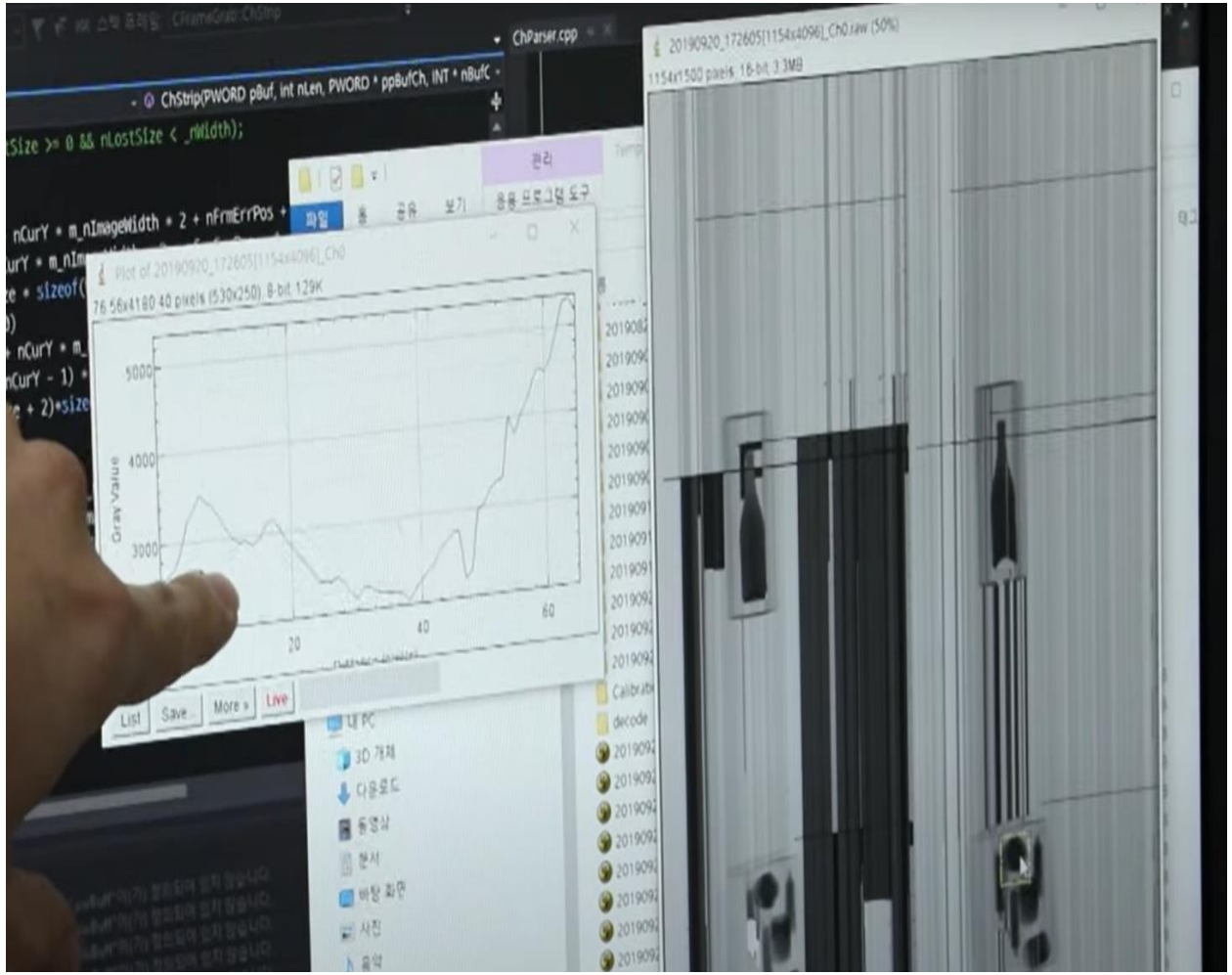
(Choice & Focus)
With AI customs clearance model:

1. Streamlined Clearance for low-risk items
2. Focused Control on high-risk items

< Statistics on ratio of P/L inspection & paper inspection>



KCS Big Data · AI Model (2017~2019)



AI X-ray

Reducing the burden on the reader
as AI automatically displays
the location of hidden illegal items
on the screen

90%

Recognition Rate (2019/ 9 items)

54 items

Readable Variety (2021)

KCS Big Data · AI Model (2017~2019)

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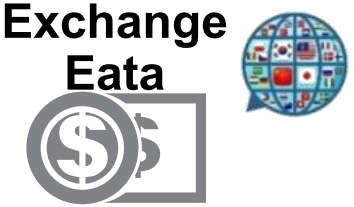
AI trade-finance monitoring system

Transaction Data

Financial Data

Foreign Exchange Eata



Overseas Company Data

Machine learning & Rule-based Algorithms

Identified companies committed Financial Fraud that manipulated price which worth 130million $

KCS Big Data · AI Model (2017~2019)

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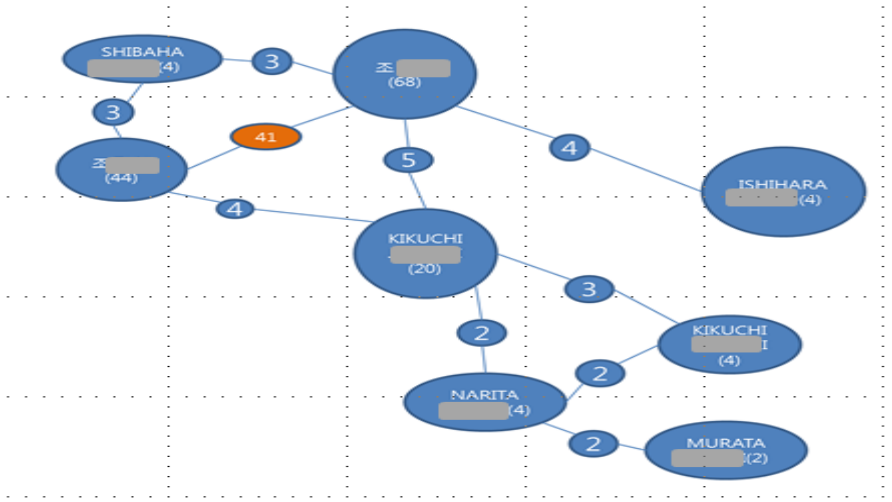
BigFINDER

Correlation Analysis Model for

①Travelers, ②Export-Import supply chain ③Bypass Imports of Delinquent

120minute

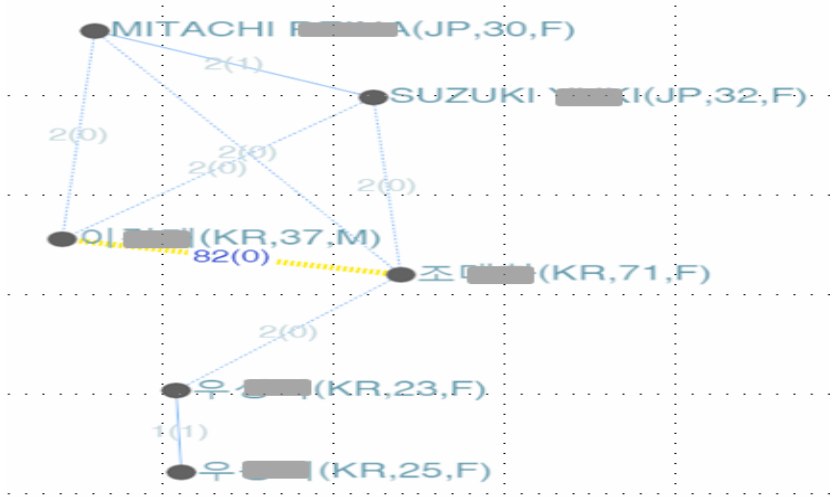
(TIS+PPT)



A manual schematic

1minute

(FINDER)



Visualization through analysis tools

"Identifying Hidden Accomplice of High-risk Entities"

KCS Big Data Portal (launched, Jan 2020)

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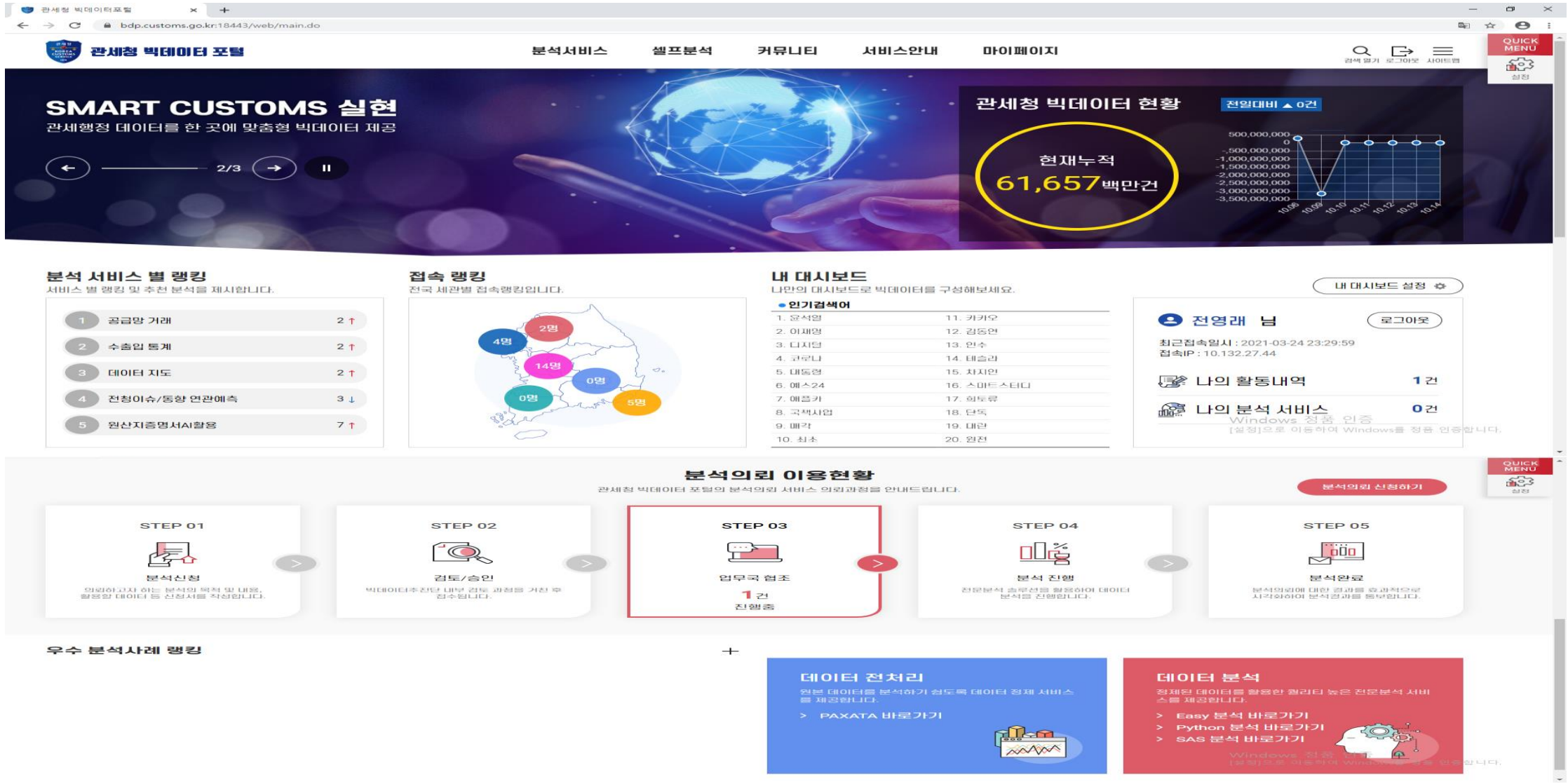

KCS Big Data Portal (launched, Jan 2020)

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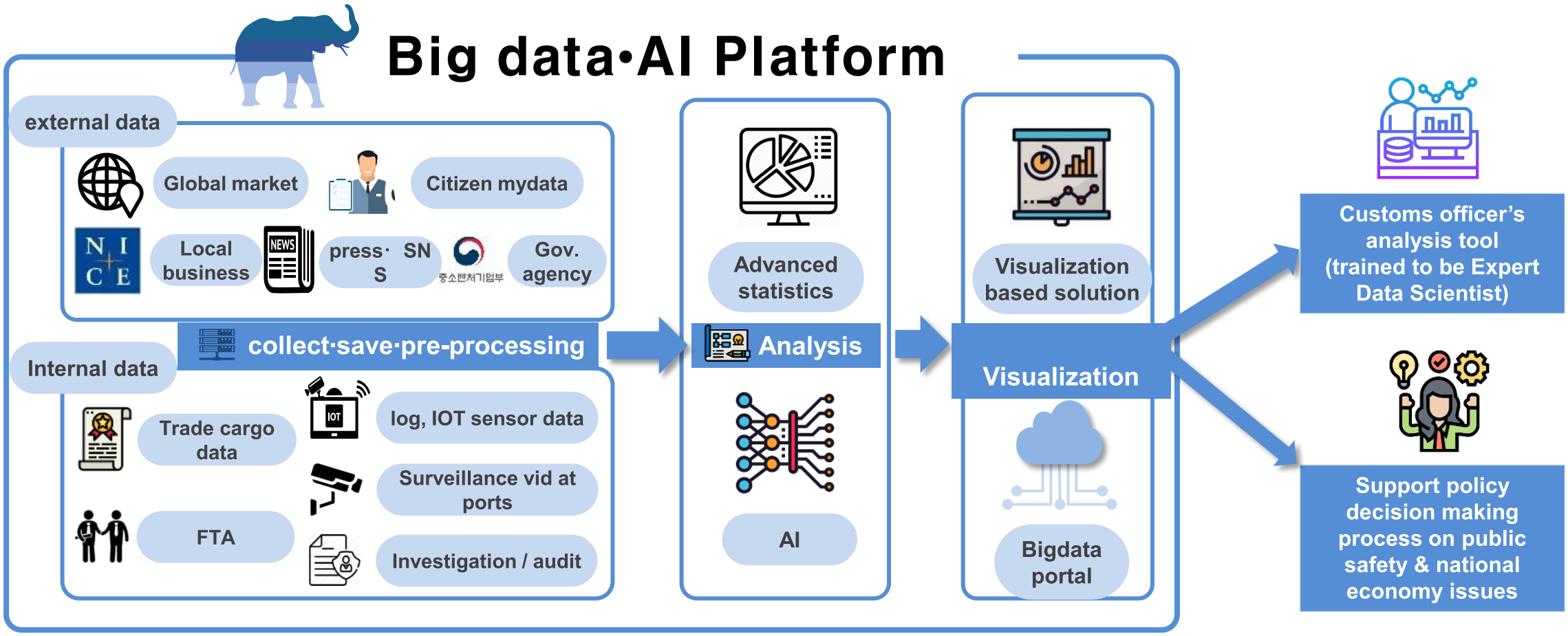
BUDGET : 11 million usd



KCS Big Data Portal (launched, Jan 2020)

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Analysis Model for **Safeguarding customs border**

(1) **Issue/trend prediction**

→ 24/7 monitoring of current affairs (news/social media) & gaining insight through correlation analysis with internal data

(2) **Using clearance requirement data**

→AI learns the declaration data model, data to predict risk level of items declared as not subject to requirement verification

(3) Import goods price prediction

→Providing price info of high-end e-commerce goods, building a "price comparison system" to identify under-valued declaration

(4) Assessing tax-risk

→Calculating risks of companies not subject to regular customs investigation based on their record (Im./Ex., Financial transactions)

KCS Big Data Portal (launched, Jan 2020)

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Analysis Model for **Maximizing Adm. Efficiency**

(5) **Supply chain transactions visualization**
→Visualize local trade chain of commodity prior to their ex/import based on NTS tax record and customs duty drawback history

(6) Unstructured document association analysis
→Providing info to Identify new tax source and disguised illicit activities through datafication of record templates and correlation analysis

(7) C/O recognition automation
→Automizing data extraction (Seals of overseas agencies of FTA partners and their registration process on e-clearance system

(8) Visualizing vessel information
→Vessel arrival/ departure data analysis & visualization

KCS Big Data Portal (launched, Jan 2020)

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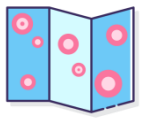
Analysis Model for **Public Service**

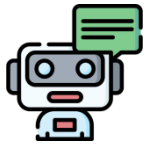
(9) Supporting Small & Medium sized exporters

→Utilizing KCS internal data, the corporate support history of the Ministry of SMEs and Startups to guide customized export support projects.



(10) Customs data map

→Provide data generated from each stage of the Customs Adm. process on GUI-based basis to facilitate the easy identification of the customs data.



(11) Chat-bot service

→Launching chatbot service that provides accurate answers to each individual's inquiries, using previous consultation data.

(12) **Providing HS code prediction**

→Provide item HS classification forecasts by machine learning the description, model, and specifications of declared item.

Ways Forward

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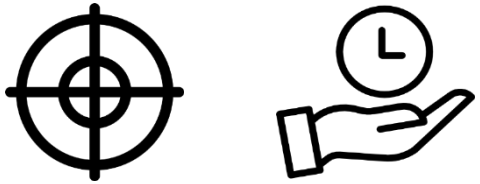
SMART Customs

- Prompt response to issues surrounding KCS through Bigdata
- Supporting evidence-based decision making to implement SMART Customs

Maximize Efficiency



- Improved accuracy of risk indicators
- Reduction of business processing time throughout Customs

Upgrade UNI-PASS

Korea Customs e-Clearance System
UNI-PASS

- Expanding E-government exports by enhancing the value of UNI-PASS, the KCS's NO.1 intangible asset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Thank you!