Development of a Collection System to Provide the Information of Denial List

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1. Introduction

Interest in illegal transfer of strategic materials is increasing due to the occurrence of technology leakage of nuclear power plant simulators in 2019 and Japan's export restrictions to South Korea. In addition, as exports of nuclear power plants are diversifying to various countries, it is essential to review whether buyers and end users are included in the Denial List(DL).

DL is defined as organizations and individuals whose trade is restricted for international security in the Public Notice on Export Control of Strategic Items.[1] In addition, conformity of DL is one of the criteria for export license procedure. DL is provided by Korean Security Agency of Trade and Industry through the Yestrade webpage.[2] However, it does not reflect the latest list frequently updated.

Therefore, there is a need for a system that is able to periodically collect the DL information from webpages of governments and institutions that regularly provide the information of DL. The system was developed for the purpose of providing the latest DL to the licensee and regulator during the export license procedure

2. Data Collection and Method

DL is provided by the UN Security Council[3], governments of the US[4], UK[5], and Japan[6], and the list of organizations and webpages that provide the information of DL are as follows.

Table 1: The List of Organizations and Webpages that Provide the Information of DL

Institute	Webpage
United Nations Security Council	https://www.un.org/securitycouncil/
U.S. Department of State, the Treasury and Commerce	https://www.trade.gov/consolidated-screening-list
HM Treasury	https://www.gov.uk/government/publications/financial-sanctions-consolidated-list-of-targets/consolidated-list-of-targets
Ministry of Economy, Trade and Industry(METI)	https://www.meti.go.jp/english/policy/external_economy/trade_control/index.html

In the case of the UN Security Council, the information related with DL is provided in the various format such as PDF, XML, and HTML. However, HML is selected for the convenience of parsing. As respects PDF, text extraction is required separately after downloading the file, and HTML is difficult to apply a specified standard immediately.

As regards the United States, it is provided in CSV and JSON formats, and since parsing exceptions may occur, JSON is chosen to improve quality.

The UK also provides a variety of file formats and, like the UN Security Council, parsing was conducted in XML format.

Japan provides the information only in PDF format, and the data is organized in tabular form. Therefore, it was decided to utilize the Tabula library, which has the advantage of processing data inside the table.

3. Design and Development of the DL Collection System

The DL collection system regularly accesses websites of the UN Security Council, the US integrated information service site, the HM Treasury, and METI to download a list file, and conduct string parsing in the file to collect the information.

DL data is transformed into structured data through parsing and saved into the database to replace the existing data. Data is displayed according to the user's search conditions. Figure 1 shows the overall procedure of the DL collection system through direct access to the homepage.

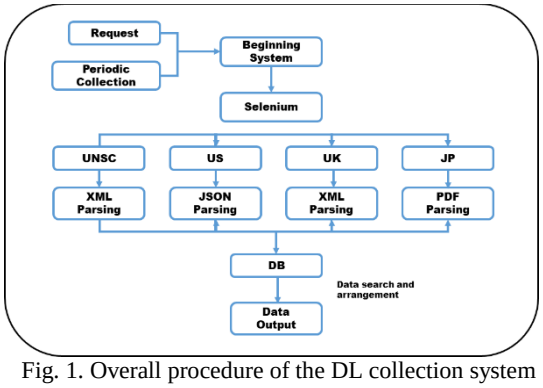

Fig. 1. Overall procedure of the DL collection system

The system is initiated to collect data at the request of the user or on a regular basis. The DL collection system connects to a web browser through Selenium library. [7] Web browser access is conducted in the order of the UN Security Council, the US integrated information service site, the HM Treasury, and METI. The collected information is integrated and stored in the DB, and the

DB displays the information of DL according to user request.

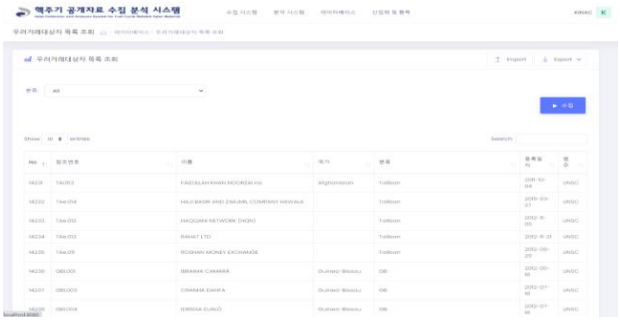

Fig. 2. Screen of the DL collection system

4. Conclusions

The DL Collection System was developed for the purpose of providing the latest DL to licensees and regulators. The system collects and stores data using a parsing method optimized according to the type of data provided by the website of each country and the UNSC. Database is developed to be able to search in various information of DL according to the user request. As a future work, the DL collection system and NEPS(Nuclear Export and Import Control System) will be systemically linked for practical use. Hence, both licensees and regulators can be provided with the information of DL during the export license procedure.

5. Acknowledgement

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