# Utilization of AI in JPO

February 2021

**Japan Patent Office** 



## Purpose for making use of AI technology

### Change of JPO's work

Advancement of technologies
Expanding search target
Increase in trademark applications
Retirement of experienced officials

### **Progress of AI technology**

Machine Learning
Natural Language Processing
Deep Learning

Making use of AI technology

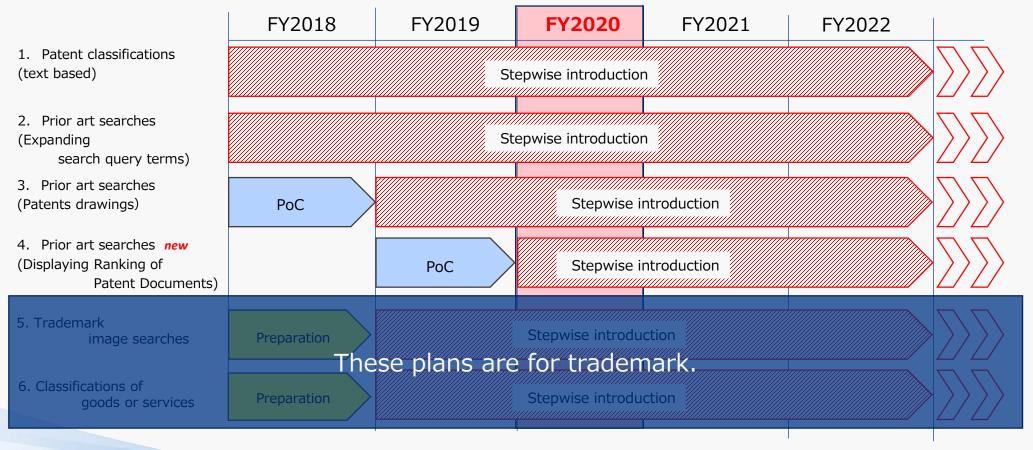
# Goal!

**Sophisticated** and **efficient** operations



### **Action plan**

- JPO has made activities for making use of AI technology based on Action plan since FY2017.
- Action plan was revised in FY2020 based on the result of activities in FY2019.



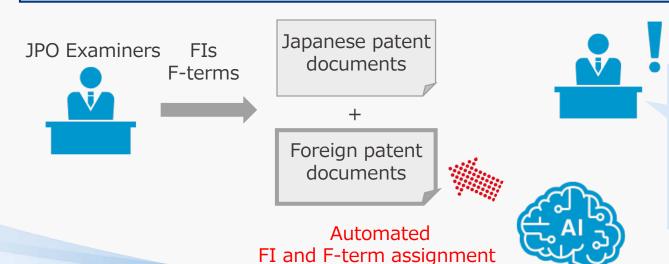
<sup>(\*)</sup> The above actions are based on rough estimates and progress may vary depending on the development of demonstrations, advancement of the relevant technologies and other circumstances.

### **Patent classifications**

#### **Main Points**

**Issue:** JPO examiners couldn't use FIs and F-terms (JPO-specific search indexes) to retrieve foreign patent documents though they are useful to retrieve relevant documents to Japanese applications.

<u>Solution</u>: Assigning FIs and F-terms to foreign patent documents automatically, JPO examiners can conduct collective search on Japanese and foreign documents with the indexes.



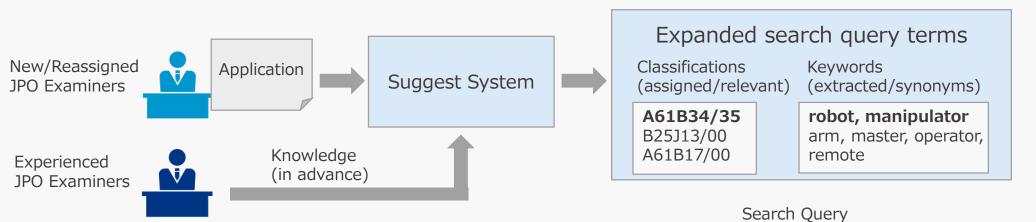
Examiners can retrieve both Japanese and foreign patent documents collectively from the same technical point of view!

## **Expanding search query terms**

#### **Main Points**

**Issue:** It's difficult for new/reassigned examiners to select effective search query terms.

**Solution:** Possible classifications, keywords and synonyms based on the accumulated knowledge and experiences of experienced examiners help new/reassigned examiners a lot.



With Advanced Knowledge and Experiences:

- · Knowledge of classifications of the experienced technical fields and related technologies
- Rich knowledge of a variety of synonyms

Japan Patent Office

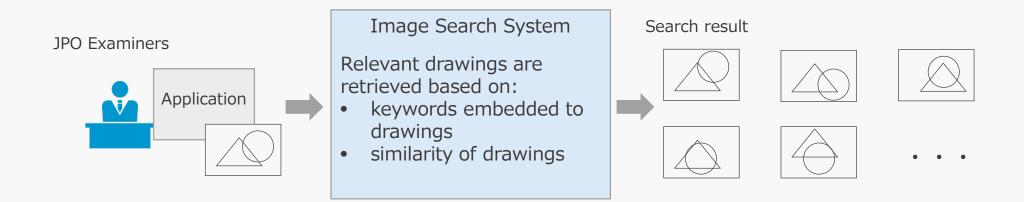
(A61B34/35+B25J3/00) AND (robot+manipulator+arm+master)

## **Patent Image Searches**

#### **Main Points**

**Issue:** Sometimes drawings contain very important information especially regarding shapes or structures of things. But text search queries are not so effective to retrieve such useful drawings.

**Solution:** The information originated from drawings of the application is thought to be useful to obtain relevant drawings.



### Displaying Ranking of Patent Documents

#### **Main Points**

**Issue:** Examiners had to read hundreds of documents to retrieve a relevant document.

**Solution:** Examiners can read the most important document first if the candidate documents are ordered by the possibility to be cited.



#### Search System

Re-rank the documents with the machine-learned model.

The model is learned with:

- cited or not
- similarity of feature words
- difference of the publication years
- similarity of assigned classifications

etc.

#### Search Results

- 1. JP2018-100007A
- 2. JP2018-100005A
- 3. JP2018-100001A

• • •

100. JP1998-100001A

Possibility to be cited

High

Low

# Thank you!

