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## Japanese Prior Art Search, How We Do It?

Using Japanese patent search in the area of electronics as an example

Normally we follow the following steps to perform a Japanese patent search:

1. Understanding the target patent/technology;
2. Developing key concepts;
3. Performing a few preliminary searches;
4. Defining classes and key word strings to be used in the searches;
5. Deciding the search strings and database(s) to be used in the searches;
6. Performing the searches, and refining the search strings and performing improved search(es) using the refined search strings if necessary;
7. Screening the hits generated from the searches to eliminate search noise, and downloading full patent documents of the screened hits;
8. Reviewing the full patent documents retrieved in previous step, and performing a follow-up search(es) if necessary; and
9. Reporting.

**In Step 1**, like any search firm normally does, we seek help from our clients, the technology expert in the related area so we can understand better the essential elements or features of a target patent or target technology, to avoid searching for the wrong documents.

**In Step 2**, we develop key concepts that are expressed in Japanese for the essential elements or features of interest based on the understanding for the target patent or technology.

**In Step 3**, we perform a few preliminary searches including a concept search using NRI database based on the key concepts developed in Step 2, patent family member search for the target patent, and file history search using JP-Net;

**In Step 4**, we have a brainstorming among our search team members to define the classes and key word strings based on the concept developed in Step 2, and to extract classes and key word strings from the hits generated in the preliminary searches in Step 3.

**In Step 5**, our tasks are to decide the optimal search strings based on the result from Step 4, and the databases to be used in the searches.

The search string selection and formation is a case-by-case process, but usually we use following priority order:

- 1) F-term<sup>\*1</sup> classification search, plus wide IPC classes/full text key words search;
- 2) F-Index/ F-I facets<sup>\*2</sup> classification search, plus wide IPC classes/full text key words search;
- 3) IPC classification search, plus wide F-term classes/full text key words search;

In most of our searches, we do not use classification only search because we consider that the possibility of miss-classification by Japanese patent examiners is quite high. We often use combination of a classification search and full text key words search. For example, if we search for power management for dynamic memory, we would use F-term classification search with such search strings:

(5B024 AA01+ 5B024CA23+ 5B024CA00+ 5B024DA20).

Plus we would use wide IPC classes/full text key words combination search with search strings such as:

(G11C11? + G11B05?) x (電源+電池+パワー)

For certain technologies, full text key word string search would be more appropriate. For example, if we search for a cell phone with a proximity sensor, we would consider a full text key word search first because the term of “proximity sensor” in Japanese is very unique; almost everybody would use the same Japanese term to describe this feature. However, because of the high noise of full text key words search, we usually would use either a wide F-term class or wide F-index, or wide IPC class as a filter to reduce the search noise.

For classification search, we often use PATOLIS database. For full text search, we prefer NRI database considering the database functionality and search precision. After the search, we combine the hits from PATOLIS and NRI, and use a tool to eliminate the repetitions.

If the full text search produces too high a noise, we may search claims and abstracts, but usually we do not search for titles and abstracts, because we consider such searches are too narrow.

**In Step 6**, we perform the searches using the search strings and databases selected in Step 5. If the hits are too small, such as less than 100, we usually would expand the search scope by eliminating certain limitation in the search strings. If the search hits produced are too large to screen, such as exceeding 2000, we usually take two different approaches depending on a case-by-case situation: a) refining the search strings to narrow down the hits, and b) removing the hit noise by screening the titles of the hits to reduce the number of hits to a manageable level (usually less than 800).

We usually start a more focused search to look for relevant art that can determine whether a target claim is lack of novelty. If this focused search does not work, we then search for a wider scope to look for relevant art that can anticipate the inventive step of a target patent.

**In Step 7**, hits that are generated from different searches are combined and the repetitions are removed. Hits that are obvious search noise are eliminated by screening the titles of all the hits, and then full patent documents of the remaining “good” hits are retrieved/downloaded.

We use a tool called GetIPDL to download full patent documents from JPO to save significantly document retrieving cost for our clients. GetIPDL can download 300 full Japanese patent documents in one access so we usually need to download 2 to 3 times.

**In Step 8**, we manually screen and review all the full Japanese patent documents downloaded in Step 7. Unfortunately there is no reliable computer tool to screen/review Japanese patent documents. Human intelligence is still far more reliable than computer intelligence in this area. We do, however, have our own tools to help us screen Japanese patent documents published after 1993, by marking and highlighting the terms/phrases we look for in the documents. Japanese patent documents published before 1993 cannot be marked or highlighted by using these tools because these documents are not image files that cannot be recognized by these tools.

We normally start with the screening for relevant art that can determine whether a target claim is lack of novelty. If there is no luck to uncover novelty prior art, we then look for relevant art that can anticipate the inventive step of a target patent.

In this step, once we unearth relevant art in the screening/reviewing process, we send these arts to our clients to seek their feedback. Based on our clients’ feedback, we may refine our screening/reviewing criteria, and refine the searches in Step 7, or perform follow-up searches.

**Step 9** is the last step in our Japanese patent search process. We list up the prior art uncovered, get English abstracts from JPO or translate either abstract or main claim(s) if English abstract is not available for certain Japanese patent documents, and get machine translation for full Japanese patent documents published after 1993. For patent documents published before 1993, we use an OCR tool to convert the image files into text files for using in the machine translation. Because OCR tool cannot recognize some Japanese characters if the resolution of the document is not good, which is almost true for most of the old Japanese patent documents published before 90s, the resulting machine translation output may be very rough to read.

**Notes:**

\*1: The F-term classification system was developed in 1987 by the Japan Patent Office (JPO). This system consists of themes and terms. The F-term system is used by Japanese patent examiners in the JPO who give appropriate F-terms, together with IPC categories, to each patent document published by the JPO. F-term is a system for classifying Japanese patent documents according to the technical features of the inventions described in them.

\*2: F-Index/ FI facets system is an extension to the IPC created by the Japanese patent office, which extended the system to over 170,000 unique sub-groups. This system is very precise, and very numerous.